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THE BUILDERS' JOURNAL & ARCHITECTURAL RECORD

August 8, 1900.
No. CCLXXXVII.

Effingham House,
Arundel Street,
Strand, W.C.

An Architectural Causerie.

The Last of Highgate Archway.

Old Highgate Archway has just disappeared, to give place to a new, a more pleasing, and much more convenient structure which itself has been progressing to its final completion while the old landmark has been in course of demolition. Highgate Archway has ever since 1813 served to mark the northern approach to London. Spanning the deep cutting through the crest of Highgate Hill, and made at that period for the purpose of providing an easy and direct route on the Great North Road out of London, instead of by the steep and circuitous road over North Hill, Highgate, it carried Hornsey Wood Lane across the cleft thus formed, and was useful if not beautiful. Before it and the cutting were made the rural districts of Finchley were quite cut off from London by these comparatively Alpine heights, which were, as the old coachmen expressed it, "a murder to horses." Accordingly, in the early years of the century a commercial enterprise was started for the purpose of tunnelling through the hill-top, and the work was in full progress when it was brought to a stop by the collapse of the tunnel. Highgate Hill is a great outstanding knob of London clay, a substance both difficult and dangerous to pierce. The falling in of the works took place one day in April, 1812, happily before the workmen had arrived on the scene of their labours. After this happening, it was decided to make an open cutting, and the existing Archway Road, rather over a mile in length, was thus formed, with the great Archway half way along its course. That now vanished building was scarcely necessary at that time, for Hornsey Wood Lane was never at any period a place of great resort, and the traffic along it could have been diverted at small cost, and with little inconvenience made to cross the Archway Road by a circuitous route passing either its southern or northern approach. Nor, indeed, is the Lane even now more than a quiet byway, and were it on that account alone the old and ugly Archway might well have been suffered to remain. But the advancing tide of London's brick and mortar has brought a vastly increased traffic along the Archway Road, and the heavy piers of the structure, which narrowed the footpaths and occupied three parts of the roadway, blocked local improvements. Therefore it has had to be removed, to be replaced by an elegant iron and steel arch, whose abutments are placed far back on either side of the cutting, which will give room for any conceivable widening that is ever likely to be required. This work has been an undertaking of the London County Council, and bears the arms of the various parishes and districts financially interested.

It must by no means be supposed that the making of the original Archway and of the road leading through it was a public-spirited act. It was the work of a company, whose total expenses were very large and whose tolls, exacted at the toll-gate at the southern end of the Archway Road, were proportionately high. Even pedestrians, not chargeable as a rule, paid their pennies here, and sixpence was levied on every laden or draught horse. It was not a profitable undertaking, even at these rates, and the tolls had a very decided effect in stemming the advance of Suburbia in this direction. In 1861, when the abolition of tolls within a radius of 50 miles from London was a burning question, the company owed the Consolidated Fund no less than £13,000. The Government bought it out for £4,000, receiving £9,000 in instalments spread over fifteen years, after which period the road was to be declared free. The Archway Road was accordingly opened free of toll in 1876.

C. G. H.



HIGHGATE ARCHWAY. DRAWN BY C. G. HARPER.

The R.I.B.A. and the Registration Bill.

The attitude of the R.I.B.A. on the matter of "the statutory examination and registration of architects" has been aptly likened by a Fellow of the Institute at a recent provincial meeting to that of "the dog in the manger," and he possibly had in his mind at the time the statement in opposition to the Bill issued by the R.I.B.A. to members of the House of Commons when the measure was set down for the second reading last month. This statement is on the lines of the petition presented by that body some ten years ago against the Bill, and the old arguments are again raked up, one of the objections being that all who were actually practising architecture prior to a fixed date will be entitled to register, purposely ignoring the fact that any proposed Act of Parliament, in order to receive consideration must protect vested interests. It is also suggested that in spite of the Bill any person could practise architecture under the title of "Surveyor," a fallacy which need not be enlarged upon here.

Again, it is stated that the Bill defeats its avowed objects by exempting the professional members of the Institution of Civil Engineers and the Surveyors' Institution. These two bodies were included in the first Bill, but very naturally objected, and were left out when the Bill was reframed and introduced in its present form, and if the R.I.B.A. were as representative of the architectural profession as the other two institutions are of theirs there might not be such urgent need for statutory registration, as the R.I.B.A. would then be, as it should now be, the *one* representative registering body; but as it only registers less than one-tenth of the architects in the British Isles it cannot be looked upon, in spite of Royal Charters, as otherwise than a voluntary Metropolitan Association, membership in which is a luxury rather than a necessity to the very large majority of architects.

It is difficult to follow the R.I.B.A. in their contention that the public will gain little by the Bill because the ordinary dwelling-house is not erected as a rule under an architect's superintendence; but even if this were so, and only a little is gained, that is worth something, and while it is not supposed that even

under a Registration Act everyone who wishes to build must necessarily employ an architect, yet, when it becomes desirable to do so, the public would have some guarantee of his qualifications, and the tendency would be to employ architects where now distrust prompts the employment of a "practical" man whose claim to that title is that he is a builder.

It is admitted on all hands that the Institute has accomplished much which it admits may be commendable in the Bill from an educational point of view, but its scope is too restricted, and its well-wishers would desire to see it by one stroke constitute itself *the* educational centre for the training of architects.

In the A.A. Notes for June it is stated that the new President, who was one of the framers of the Bill and has strong views in favour of registration, would be personally prepared to tear it up were the R.I.B.A. to frame a better, and this exactly coincides with the statements publicly made by those who so actively propagate the principle in the provinces that if the R.I.B.A. will undertake the matter the younger society will step aside, give them the benefit of what has already been done, and co-operate with them in every possible way; and no doubt, were some definite pledge given, even the Registration Bill Committee would withdraw their measure, but only in favour of another introduced by the R.I.B.A.

But opposition to the measure in such a form as that under discussion only tends to lay bare the inconsistency and indecision of the senior body. To place such a statement before Members of Parliament is to give them no credit for common sense and fair-mindedness. These gentlemen, unlike some members of the Institute, rejoice in the fact that they are free to express their opinions on any matter brought before them with absolute fairness, and they may be trusted to give the matter the attention it undoubtedly deserves. The statement, while emanating from the Council of the R.I.B.A., does not express the feelings of the majority of its members, who, being loyal in every possible way, do feel that here is a matter in which they may be permitted to hold opposite views even if they hesitate in every case to publicly express them. It cannot be denied that the feeling in the provinces particularly in favour of an Act of Parliament (not necessarily the proposed Bill) is too strong to be ignored, and that if the Institute do not take up the challenge many who now hesitate to adopt a definite attitude, hoping to see the Institute move, will throw in their lot with the supporters of the movement, and the Institute must eventually yield to outside pressure or be in its turn ignored.

The point is that the *principle* of statutory examination and registration is one upon which all are agreed: it is only on the method of carrying this principle into practical effect that differences arise, and even this finally resolves itself into a question of detail. It is evident that *an* Act of Parliament is the only practical solution to the difficulty. The Bill now before Parliament is opposed by the R.I.B.A. They are invited to frame a better or to find some other means of doing what practically amounts to extending their own examination to all desirous of entering the profession. They will do neither the one nor the other: they consider neither their own interests nor those of the profession at large, preferring to leave questions of this kind to the younger and more active institutions. The dog-in-the-manger attitude is not an impressive or dignified one, and it is apt to pall even upon its admirers if persevered in too long. X.

On Reflection.

A Profound Mystery.

THE statue of Sir Sydney Waterlow in Waterlow Park, Highgate, which was unveiled by the Princess Louise on the 28th ultimo, adds another mystery to the Metropolis. It is asked, as it was of the fountain in the midst of what was once Piccadilly Circus, What does it mean? Looking to Sir Sydney's connection with the Metropolitan Industrial Dwellings Company the statue might perhaps be taken to symbolise the union of Philanthropy and Five per Cent.; the felt hat may indicate the softness of his heart; and the umbrella carefully folded in its case that his company shelters from the weather; but what is the explanation of the key in his left hand? It may possibly mean that the Metropolitan Dwellings Company do not exact "key money" of their tenants as some of the other dwellings companies are reputed to do, but this explanation appears far fetched and is possibly not the right one. The pedestal of the statue presents another subject for cogitation. To what period of Art do the mouldings with which it is adorned belong, and why are some of the members placed upside down? Was the pedestal designed by the architect to the London County Council, who have charge of the park, or was it designed by the Chief Officer of Parks and Open Spaces in his leisure moments? These are some of the questions which suggest themselves to an outsider, and call for a reply. In every other country in the world (with the exception of England) the design of the pedestal of a statue is looked upon as a matter for grave consideration, necessitating the employment of an architect in co-operation with the sculptor, but in this country a square block of stone with a few perfunctory mouldings is all that is deemed requisite, and it may be safely asserted there is scarcely a statue in London with a well-designed pedestal.

An "Arcadian" Suggestion.

"Now Fleet Street is being widened comes an opportunity to beautify it too." So says the "Morning Leader," and proceeds to show, pictorially, how it can be done. There is some reason to fear that tall business premises will rise on the sites of the old "Punch" office and the shop opposite it which lined the narrow passage leading to St. Bride's. In such a case the new buildings would blot out the view of the church which their one-storied predecessors were specially designed to allow. To obviate such a disaster our contemporary comes forward with a suggestion—an artistic suggestion—that it states "would be an ornamental feature in Fleet Street." We are glad to know this, because in the artist's hands the idea becomes truly horrific. We sincerely trust this arcade of glass and iron, covered with a profusion of rococo ornament and destitute of architectural character or feeling, will not rise to quarrel with the Classicism of Wren's steeple in the background. But possibly we are not intended to take this thing seriously; perhaps it is one of those jokes that our daily papers occasionally work off on their suffering readers, an equivalent to the salad joke put forward some months ago by the "Daily Chronicle" as a test of humour. We are egotistical enough to think we can improve the idea. For if the owners of the ground accept the "Morning Leader's" idea, and forego the profits obtainable by letting offices to the Fourth Estate, with a little more inducement they might relinquish the site for an open space, and, with six trees and a few garden seats, what a paradise might be unfolded to the throngs in Fleet Street! The columns of a building paper could not hope to describe it: only the wealth of imagery permissible in our contemporary's columns would do it justice. There the jaded editor, resting in verdure's shade, could gain the inspiration that begets a "largest circulation," and his overdriven sub, taking his daily doze, would dream of the country and the babbling brooks, the cows and the subtle walks in the glimmering twilight, courting the rosy-cheeked ——. But that is another story.

Desecration of the Tower.

ANYTHING more atrocious than the new guard house at the Tower of London could not well be imagined. Not that the building itself is any worse than the general run of buildings designed in the present age; but to set down this fiery red-brick erection with its staring stone dressings under the scarred grey walls of the White Tower, pregnant with a nation's history, is a piece of vandalism that could only be accomplished in the nineteenth century. It would be interesting to know why a new guard house was needed at all, for no one can pretend that the Tower is an active fortress upon whose efficiency the safety of the City in time of war depends, and the garrison it possesses is there placed more as a courtesy to its past power and grandeur, for convenience sake and as a guard to the regalia, than as an active fighting force. As the years go by the public is being gradually shut out of the Tower altogether, and it is becoming evident that from motives of economy the authorities desire to turn the place into barracks and end its more fitting career as a museum of feudal history. But even the total exclusion of the public from the Tower would not justify the destruction of its beauties by such buildings as guard houses, and it is small balm to antiquarian feeling that the Roman citadel foundations and well have been generously preserved while the new erection remains to shriek our shame and inappreciation to the coming generations.

Widening Piccadilly.

THE advantage of widening Piccadilly by cutting off a piece of the Green Park, as proposed by the First Commissioner of Works, is more apparent than real. Our experience of this thoroughfare leads us to believe that the stoppage in the traffic occurs at either end and not in the middle of the street, which would be the part most benefited by the proposed improvement. The police authorities, however, say that the alteration will benefit them in regulating the traffic and we suppose they are the best judges. But if thousands of pounds are to be spent on Piccadilly the question of widening the Circus end should be seriously considered. It will be very costly, but it is a very necessary work, the need of which is more apparent every day. Doubtless the improvement would have to be carried out by degrees; but if further delayed the ultimate cost would be greater than if commenced to-day.



EVERY MAN'S INALIENABLE RIGHT.

SOME HANDICAPS OF AMERICAN PROVINCIAL ARCHITECTURE.

BY E. C. GARDNER.

BY "Provincial Architecture" is meant all architecture that originates outside of Boston and New York in the East, and a few of the largest cities in other parts of the United States. In this discussion of the subject, domestic buildings are not critically considered, because such criticism would be a sort of invasion of private rights, including the right of every man who builds himself a house to make it as ugly and illogical as he pleases, and because it would be necessary to prepare a special dictionary of terms before an intelligible line could be drawn between the utilitarian art of house building and the fine art of architecture.

Concerning the illustrations, it may be explained that they are not given as especially depraved examples of contemporary architecture. It is needless to say that they are not presented as examples to be followed. The most of them are the familiar, largely imitative, and drearily common-place buildings to be found everywhere. They have been achieved by the individual or combined efforts of architects considered "successful" in their local fields and of enterprising business men who are able and willing to leave their "stamp" on the community which educated them, of shrewd business committees whose prominent qualification for their position is a supposed ability to buy the value of three dollars with an expenditure of two, and of public servants who for the time of their official life are called upon to decide affairs of which they are more or less ignorant and for which, under other circumstances, the training of half a lifetime would be thought necessary—sources from which, instead of platitudes with occasional nightmare attachments, something of permanent dignity and beauty should have enriched the time and place in which they have been produced. Although actual and recent buildings, they are not verbally identified; in fact, that is a matter of no consequence, but the accompanying titles will indicate their relation to the text.

The permanent residents of each provincial city in the older portions of the country have certain characteristic social customs and manners, certain modes of speech, certain business habits, and other external peculiarities, easily perceived but not easily described, which give a local flavour and colouring to each community. These include fashions and tastes in building. But aside from such minor variations there is no important difference in the architecture of provincial cities of a certain class, say those ranging from 50 to 250 thousand inhabitants; and in them all it is, as a whole, so poor, so devoid of the merit that entitles a work of art to respectful admiration and careful preservation, that if it were known that all the buildings in any one of them were about to be annihilated it would be difficult to select a dozen which any person having even a rudimentary knowledge of architecture would care to have rebuilt in its present form. That is to say, apart from association and other sentimental motives, there would be found almost nothing worth saving for its architectural excellence. I believe that is true of at least nine-tenths of provincial cities in the United States.

When we consider the liberality, not to say the extravagance of our large business blocks; the ample, not to say wasteful appropriations for school houses and other public buildings; the enormous sums given to churches, educational and philanthropic institutions; the increasing number of educated architects; and especially when we consider the almost unlimited resources in the way of instruction, investigation and imitation afforded by travel, by literature and by the completeness with which all the best architecture of the world from the time that architecture began to be to the present time has been photographed and brought within our easy reach—when we consider all these things, the general worthlessness of the architecture by which we are surrounded furnishes a most amazing instance of the failure of apparently adequate means to reach a desired end.

Remembering what a permanent and conspicuous influence architecture has had upon national character, how from time immemorial it has been the one art that both reveals and determines the character of its creators and contemporaries at any period, it is certain that no greater service could be rendered to the age



ASPIRATION.

we live in than the cure or mitigation of this extraordinary and discreditable state of affairs.

As regards general influences, vanity is perhaps our most ponderous handicap. This appears to be of the deplorable variety which makes us unwilling to confess our ignorance, even to ourselves; unwilling to admit that what we possess, what we invent, what we preach and practise, is not the very best that has ever been done in the way of possessing, inventing, preaching and practising. Of course this painful accusation applies only to architecture. In all other respects we Yankees are doubtless the most modest people on the face of the earth,



THE "ORDERS" ARE THE ARCHITECT'S FIRST LAW.



FOR PRESENT PROFIT AND A JOY FOR EVER.

always excepting our English cousins. This is not implying that everybody is in the darkness of ignorance and the fog of vanity. There are conspicuous exceptions even among laymen; but in the knowledge of architecture it is certainly true of the great majority. Any doubt on this point may be effectually dispelled by a few hours of intelligent observation along the principal streets of any provincial city, the "taste" therein manifested doubtless indicating something above the average intelligence of the entire population.

Leaving ignorance and vanity out of the question as being practically incurable except by the slow processes of evolution, there are several nearer and possibly preventible causes of our architectural poverty. One of the most serious and discouraging is the attitude of the local newspapers. I have never seen or heard of a newspaper, however high its journalistic standards, however earnestly it strives to be impartial, however faithfully and without regard to profit or popularity it espouses what it conceives to be the right side of questions that have a right and a wrong side, however valiantly it tells the truth in other matters of public and private concern—I have never seen or heard of a paper whose influence upon the architecture of its local field was not damaging rather than beneficial. That isn't the worst of it. For the life of me I don't see how it can be otherwise.

Nothing is more essential to the healthful development of art in all forms than intelligent public criticism; judicious recommendation of the good and frank, explicit, detailed condemnation of the bad. Not dogmatic assertions, but impartial judgments, sustained by clearly stated and well-established principles. Music, the drama, landscape, architecture, painting and monumental statuary are criticised wisely and often most helpfully by the competent writers employed by the best provincial journals. But the moment they touch the architecture that lies nearest them, and of which simple but uncompromising criticism would be valuable, their pens are dipped in oil. As I have just remarked, they must be, because here questions of taste and professional ability are entangled with private personal rights and interests. It will not answer to declare in good set terms that the new bank of Mr. A. is an extravagant monstrosity; that the new church of the United States is an abortion; that the forty tenement flats on Blank Street are a hodge-podge in the external design, a small Ghetto and a large fire trap within; it would be a strange piece of insolence and ingratitude to suggest that the library, museum, gymnasium, or Casino that our liberal fellow citizen has presented to the city or town is from the architectural point of view a monument of ignorance and ugliness. On the contrary, each and all of these buildings are sure to be described as fine examples of the skill of the architect, especially if he is a new-comer in town, and of the owner's or donor's wisdom. The reporter's vocabulary is ransacked for suitable adjectives to describe them, both in the main body of his "copy" and in the still more conspicuous and misleading headlines.

Now, it is undoubtedly true, whether happily or otherwise, that the opinions of the great majority of people in all matters æsthetical are largely determined by the comments and intimations of the public journals. So it happens that in architecture whatever the newspapers approve (and to an extent they are obliged to approve every new growth, even if it is a parasite or a mushroom, or be accused of a lack of proper public spirit) is accepted as good, and, woe the day, is sure of imitation. Even if we leave the owners and the donors out of the case, what would the young architect who is just entering upon a career of usefulness say if the work of his budding genius, which may be truly original, should be characterised in the daily papers as both original and ridiculous? How would the old architects whose "ear-marks" appear on all the streets of the city until through long familiarity they have become agreeable, as the odour of the stable is agreeable to the ostler—how would these faithful but helpless old architects like to be told that they were never anything but builders of average intelligence, who learned to wield the T-square in their youth and to copy some of the mouldings that are shown in the reputable old books on the "Orders," or to appropriate the disreputable details of the "middle ages" between 1850 and 1870?

A complete lifting of this journalistic handicap seems impracticable. A partial mitigation of the evil could possibly be accomplished if the papers which maintain a fairly just and able criticism of other forms of art, a criticism that is instructive to laymen and stimulating to the artists, would refrain from all mention of unworthy architecture, commending cordially and in detail whatever is really worthy of imitation and commendation.

The enormous preponderance of poor, or at best negative, architecture (which is perhaps the same thing) and our inevitable familiarity with it is another conspicuous obstacle in the way of architectural reform. This familiarity is not of the kind that breeds contempt; it rather tends to respectful tolerance and ignorant admiration. A common instance of this is found in the prevalence of certain characteristics in dwellings of the medium class in different cities. The residents of other cities find them



THE COMMITTEE WANTED "SOMETHING RICHARDSONESQUE."



FOR THE STUDY OF LITERATURE, SCIENCE AND—ART.

unattractive, if not positively disagreeable. Those who see them every day find them pleasant and home-like. Familiar examples of this are the flat-headed two-storey-and-attic houses, with "cellar windows in the top;" the two-storey buildings with the so-called French roof; the chuckle-headed gambrel-roofed houses covered from sill to ridge pole with an eruption of shingles; the rectangular red-brick block, with solid white shutters, of Philadelphian suburbs. All these and many more are types of what may be called local fashions. (If Philadelphia is not strictly provincial at present, it has a traditional reputation to that effect.)

Now, a house or anything else may be interesting and pleasing to a great number of people simply because it conforms to a prevailing and familiar mode; but art has no more concern with custom and fashion than it has with politics and sanitation. In minor matters fashions change quickly, and their influence for good or bad is of short duration. But in architecture the eccentricities and vagaries which result from the prevalence of some passing vogue are obtrusively permanent above ground long after the only reason for their existence has been dead and buried. The effect of this is as though all the women who ever wore poke bonnets, hoop skirts or "mutton-leg" sleeves must continue to wear them to the end of the chapter and only the rising generation be permitted to invent and follow new fashions. This might lead to a picturesque assortment of costumes, but it would not be more incongruous, variegated and uncouth than the domestic architecture of a modern city and its suburbs. (Having disclaimed any intention of criticising domestic architecture, I ought to say that the above is introduced simply as the most convenient illustration of the influence of fashion in building, an influence that prevails in all classes of buildings, but is the most conspicuous in dwellings.)

The effect of this thoughtless and more or less unconscious preference for what is familiar is distinctly obstructive to such advance in architecture as ought to follow the vast resources and still vaster ambitions of the time in which we live. It throws into popular disfavour everything, however excellent, that is not actually commonplace. It is obvious that any general and substantial improvement in architecture must depend on the right cultivation and direction of popular taste, and this is always guided by what is conspicuously displayed rather than by a knowledge of what is really good. The improvement in architecture that has followed great conflagrations in the last half century shows how much more rapid this popular education would be if this load of vicious example and precedent could be lifted, even if it has to go up in smoke. Now, this form of handicap is relatively far more serious in the cities which I have classed as "provincial" than in those of more cosmopolitan character, because in the former individual instances of departure from established precedent stand out more conspicuously. This is also illustrated in matters of dress, equipages, and in all minor social customs and conventions.

Undoubtedly, the best architecture the world has known in the past has been devoted to the service of religion, either of the kind known to us as Christian or pagan. At the present time the most important, if not the most admirable architectural monuments that can claim any originality are probably found, not among ecclesiastical buildings, which, when not absolutely bad are mainly imitative in spirit if not in actual form, but among those intended for municipal or other public and corporate purposes. It is for such public buildings that the most logical plea for thoroughness, dignity and elegance can be made; upon these the most lavish outlay is expected. We say with great propriety that it is fitting for a rich and intelligent people—I put the short adjective first advisedly—to manifest its wealth and intelligence in the character of its public buildings, whether they are for local or national use.

Far be it from me to depreciate the wisdom of our public servants. There is no reason to suppose that the members of city governments, the common councilmen, and the boards of aldermen from among whom the city property committees, or whatever their official titles may be, are chosen, are either more or less ignorant of good architecture and of art than other average laymen, although their ignorance may be more damaging, because more stubborn and aggressive, a generous conceit of his own wisdom and a pachydermatous insensibility to criticism being essential to political success. But the fountain must not be asked to rise higher than its source, and it is futile to expect the best in municipal architecture until its selection is determined by some more trained judgment, by some more special education in the most complex and difficult of all the arts than the accidental knowledge and "taste" of the ordinary "public servant." Even when "experts" are invited to assist in making a decision between rival designs their recommendations are seldom regarded unless they happen to agree with the opinions already formed by the officials who "know what they like" even when they can give no intelligent reason for their preferences, and who are not apt to be altogether pleased by the implied doubt of their wisdom.

It is one of the unsolved puzzles why an



THE PUBLIC SPIRIT OF ITS CITIZENS DETERMINES THE DEVELOPMENT OF A CITY.



PLAINNESS AND DIGNITY ARE NOT INCOMPATIBLE.

otherwise intelligent community should entrust one of its most important functions, one requiring for its wise administration the highest degree of technical skill and special training, to men who know no more of architecture than an unlettered boor knows of astronomy; they have seen buildings ever since they were born, and he has seen the stars. It would hardly be more absurd to appoint from the members of a city government a committee to write medical prescriptions for the patients at the city hospital.

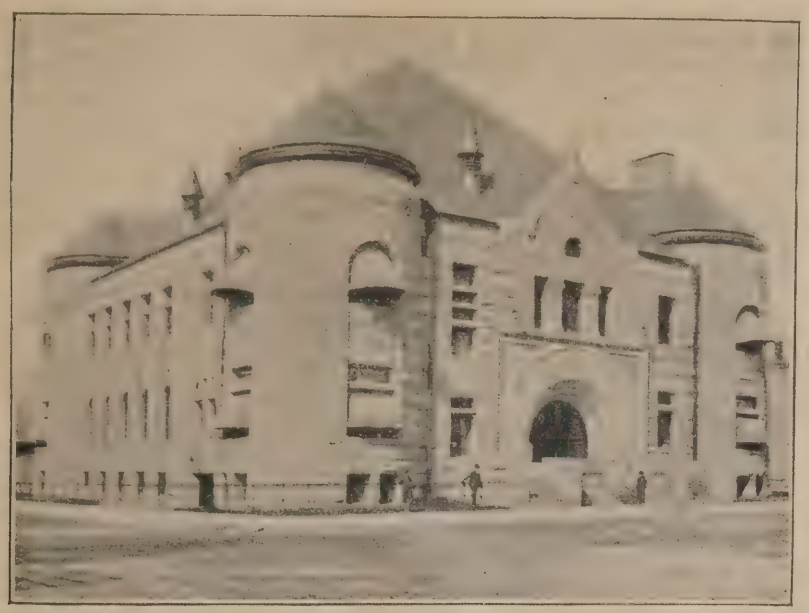
Nearly related to this obstacle is the fact that in small cities there is no proper inducement for the most competent architects to give their services to public work. I am well aware of the ignorance, the vanity, the jealousy, the fantastic notions, the often stupidity and occasional vulgarity of architects; they are mortal men and I may speak of this form of handicap later. But it is also true that there never was a time in the history of the world when there were such ample opportunities for invention, such vast facilities in the way of construction and materials, such a high degree of cultivation among so large a number of architects and such disinterested devotion to lofty ideals as a present. Artistically the States may be behind certain nations of Europe for the moment, but there is no excuse for it remaining so, since everything from the tops of the highest mountains to the innermost recesses of the art schools is accessible. But, as I have said, there is no proper inducement in provincial cities for the best architects to undertake public commissions, for the simple reason that architects are rarely selected for public work on account of the excellence of their plans or of their established reputation for rectitude and ability. The city in which it is my happy lot to reside is not more culpable, less righteously governed, or more indifferent to good architecture than other cities of its class; but I am confident that there has not been a public building of any sort erected by this municipality, since it became the custom to employ architects, the plans for which have been adopted solely for their architectural merit. Various degrees of personal and political influence have been exerted. It is undoubtedly true in cases of competition that the best plans have sometimes been selected, but when that has occurred it has not been on account of their excellence alone; the verdict has been affected by some other motive, not, perhaps, of sufficient weight to have led to the adoption of the least meritorious among several plans, but quite sufficient to have brought in the second or third best if the same influence had happened to go towards them. It would seem possible to mitigate if not entirely to remove this difficulty by the adoption of such competitive conditions as would make sinister influence impossible, but who shall ensure the faithful observance of the conditions? So, after all, the matter comes back to the old, old story of upright men in public places.

An apparent cause of the poverty of provincial architecture is the incapacity of provincial architects. This is not as serious as it seems, for the reason that there are few cities in which there is not at least one thoroughly trained architect, who only needs the opportunity afforded by the larger wealth and enterprise of the great cities to do as good work as can be found where those favourable conditions exist. But there does also appear to be in the smaller cities a larger proportion of nondescript "Practical Architects and Builders" who for personal and supposed economical reasons are liable to be employed as architects by men who care little and know less of what might be done in the way of excellent design even for the most simple and inexpensive structures. Especially do personal motives enter into the question of selecting the architect. A man who would not think of employing a friend or relative to paint his portrait for the edification of his posterity, or even to take his photograph, still less to set a broken bone on account of his friendship or relationship, does not hesitate to give him a "job" in architecture in order to help him in business. The consequence of this kind of personal favour is conspicuous and abundant. It is common enough in great cities, but in them it is less marked and has less influence upon public taste.

Another marked condition in the subject under discussion is the prevalent custom of entrusting important work to some architect away from home. Instead of improving the local architecture by exciting a healthy emulation, this is more likely to have an opposite effect. Fifty, or perhaps in some sections thirty, years ago, there were few but "home-made" architects, evolved from lazy or ambitious carpenters, in the small cities. Then it was inevitable that really good work must be obtained out of town. At the present time, as I have said, there is scarcely a city even among the smaller ones in which at least one architect with as good training as the best schools in this country and Europe can give has not hung out his shingle. If the work that really calls for superior professional skill is sent away from such a competent resident architect he soon decides that there is neither honour nor reward for the prophet who stays at home. Naturally he abandons the field to the second- and third-rate men who always stand ready to rush in, and who never rise above the dead level of mediocrity. Owing to this same sort of prejudice, if local architects are liable to compete with those from outside there is likely to be a



ROMANESQUE AS SHE IS SPOKE.



THE "BROWNIES" IN ARCHITECTURE.

decided bias in favour of the outsiders. This is commonly disavowed, especially by public officials who have political ambitions, but not always. In a recent competition for an important public building in a New England city one of the building commissioners who was to assist in the selection of the plans that were to be submitted openly declared before his appointment was confirmed that he should surely oppose the acceptance of any plan presented by any local architect, regardless of its merit. It is difficult to say which was the most amazing—the fact that local architects should have been willing to compete under such circumstances or that the man should have been appointed to serve on a commission whose members would be gravely compromised by any deviation from strict impartiality. But then his official position was not obtained by popular franchise and he was himself a local architect. I mention this as a clear and I believe a by no means unusual instance of the lack of high ethical standards in the business relations of architects and their possible clients, as well as one of the forms of handicap to which provincial architecture is peculiarly subject.

On the other hand, a more serious blight sometimes comes from the small politicians who endeavour to increase their own chances of popular favour by a pretence of public spirit in the employment of so-called "home talent." This handicap prevails most disastrously in the large towns and small cities whose local business is not sufficient to tempt men of more than mediocre ability. This is all the more deplorable because the best sites for the display of good architecture are found where land is abundant and inexpensive, and where there is an opportunity for the skilful adaptation of the architectural design to natural surroundings, which, though not always grand, may at least be striking, picturesque and generous.

To give one more instance in a list that might be considerably extended, I think it is true that in provincial cities of the middle and larger class there is, in comparison with the great cosmopolitan cities (perhaps on account of the lower cost of living) an increased proportion of untrained, incompetent and unprincipled architects, men who try to obtain work by dishonest means, who seek and accept illicit commissions, and, alas for poor humanity, who fancy it is possible to exalt their own work by disparaging their contemporaries. And it is not alone the local irregularities and rascalities that must be encountered, but work that might be expected to be done by the resident architects of the smaller cities seems to be considered fair plunder by the dishonourable practitioners and professional drummers of the big ones. Men whose reputation at home is still comparatively undamaged, and who would shrink from unprofessional practice where they are well known, appear to feel that any means of thrusting their hands into the public crib of the smaller cities is permissible. That is to say, the line that separates honourable business enterprise from unprincipled wire-pulling and sinister scheming seems to be more easily crossed among strangers.

It is hardly necessary to say that some of these obstacles in the way of good architecture exist everywhere. The only reason for including them in this category is that in "provincial" regions they are greatly exaggerated.

DWELLINGS FOR THE POOR.

THE report of Bailie D. M. Stevenson, who attended the Congress on Cheap Dwellings held at Paris on the 19th, 20th and 21st of June, has been submitted to the Glasgow magistrates and has received their approval. The report stated that although there was divergence of views as to the best methods to be employed, there was absolute unanimity as to the urgent need for dealing with the problem of the housing of what they called the "disinherited classes" on a much more extensive scale than has ever been contemplated so far. The leading French members favoured a great extension of the system of building societies for the erection of tenement houses—"maisons collectives." Some of these societies have been remarkably successful (notably in Paris, Lyons, and Marseilles) on the lines of the Glasgow Workmen's Dwellings Company, but other delegates pointed out that it was hopeless to expect the work to be done adequately by semi-philanthropic agencies, seeing that for Paris alone not less than five hundred millions of francs—£20,000,000 sterling—would be required, and therefore that legal sanction ought to nable local authorities and savings banks to lend the necessary capital to such societies at the rate of interest current for public funds. The question of model lodging-houses—"maisons garnies collectives"—was very fully discussed. The reporter, M. Paul Langer, after investigating the work done in a number of countries, had come to the conclusion that the houses erected by Lord Rowton in London, where lodgings for men were provided at 6d. a night, ought to be copied and extended as rapidly as possible in all large cities. Bailie Stevenson explained to the Congress that, whereas Lord Rowton's lodging houses had only been recently erected and were for men alone, the Corporation of Glasgow had built separate lodging houses for men and women thirty years ago, at which the nightly rent was from 3d. to 4½d. per person; that a family home had been erected by the Corporation five years ago for the accommodation of widows and widowers with children dependent upon them, and that, although the family home does not yet show profit, it is on the fair way to do so, while the whole enterprise—capable of housing 2,700 to 2,800 lodgers—yields an overhead annual return of fully 5 per cent. on the capital invested. Wednesday, June 20th, was given up to the discussion of cottage homes—"maisons individuelles"—and the best means for enabling workmen and artisans to become owners of them.

A most interesting discussion was that on the subject of "Under what form is the intervention of the State, of municipalities, or of public bodies possible and desirable in the construction of cheap dwellings?" The reporter in this case was M. Eugene Rostand, of Marseilles, Member of the Institute of France, President of the Savings Bank, &c., who summed up the result of careful inquiries into the whole question in France, Great Britain, Germany, Belgium, Holland, Denmark, Sweden, Austria, Russia, and even Brazil, in three conclusions:—I. That the direct intervention of public authorities as formulated by the Socialist schools is incapable of examination, based as it is on a collective hypothesis which has never been properly defined, or on a similarity which does not exist between needs in respect of housing and needs in respect of public services, such as the post office, railways, lighting and drainage. II. That the direct intervention of public authorities as formulated by the State schools—"écoles étatistes"—(a) Is in itself illegitimate; (b) Is useless; (c) Would be less productive; (d) Would be incapable of rendering the service more cheaply. III. That public bodies have, nevertheless, a precise and considerable part to play in the movement for the amelioration of the housing of the people. M. Rostand laid particular stress on his second conclusion, and the bulk of the audience appeared to agree with him.

In the discussion which followed, Bailie Stevenson, as representing the Corporation of Glasgow, strenuously controverted the second proposition on the following grounds: (a) That a city can have no higher duty than the proper housing of its citizens, particularly those who are least able to look after their own interests; (b) That it is hopeless to expect philanthropic enterprise to provide anything like the amount of capital required; (c) That experience of the public enterprises carried out by the Corporation of Glasgow, such as gas, water and tramways—the explanation of which, by the way, came as a great surprise to the audience—proved, on the contrary, their superiority over similar works executed by private bodies. (d) That the very opposite results had been obtained in Glasgow, where, notwithstanding similar prophecies, there had been no need to "falsify the natural play of things at the expense of the ratepayers."

After further discussion, a compromise was arrived at: the first and second conclusions were withdrawn, and the Congress agreed that it was not wise, meanwhile, to adopt any absolute generalisation; that it was preferable to remit the whole question back for further consideration to the bodies who had sent delegates, seeing that the form of intervention by the State and by municipalities is susceptible of variation, according to the constitutions of the respective countries, their habits and customs, and the gravity of the evil requiring to be remedied; and that, therefore, the whole matter had better be reported upon again, and discussed at the next Congress, to be held at Dusseldorf in 1902, in the light of the further information which will be forthcoming.

Alterations to Holy Trinity Church, Stepney. Dr. Tristram, Q.C., Chancellor of the Diocese of London, in the Consistory Court of London, granted last week the faculty asked for by the vicar and churchwardens of Holy Trinity, Stepney, to authorise alterations and improvements in the church. It is desired to form a chapel at the north end of the east aisle of the church, to place a holy table there for use for small congregations, to erect vestries on either side of the south end of the church and a parish room on top of them extending across the south end of the church, and to enlarge the chancel. The work will cost about £2,000, which sum is to be raised by contributions.

MANCHESTER SANITATION.

MR. G. V. POORE, writing to the "Times," calls attention to the highly successful issue of an experiment conducted at Manchester. The difficulties of Manchester in getting rid of their accumulations of refuse have been unusually great, because the ordure from nearly 80,000 small houses has to be systematically removed and dealt with.

It was in 1886 that the city of Manchester bought the moorland known as Carrington Moss, separated from Chat Moss by the Ship Canal, with the object of providing an outlet for its refuse. The Carrington estate is 1,100 acres in extent, and was mainly an unmitigated peat bog, having an average depth of about 13ft. Considerable sums have been spent on the construction of a wharf and farm buildings, the cutting of deep trenches to facilitate drainage, the making of roads and the provision of narrow tram lines. In 13 years this estate has received more than half a million tons of refuse from Manchester—ordure and muck for fertilising, clinker and hard material for road making—and to-day the city finds itself in possession of one of the most fertile tracts of land in the country, the whole of which is let to first-rate tenants at an average rental of £2 per acre. These tenants use some 25,000 tons per annum of manurial matter, for which they pay the Corporation at the rate of 1s. 3d. a ton, and thus the Carrington estate returns some £3,500 per annum to the ratepayers, while the outgoings tend gradually to dwindle. Carrington is not a "sewage farm." The muck is dry, and is spread on the surface of the land and ploughed in in the ordinary way. There is no excess of water. Sewage farming in which the living humus is drowned by tons of water leads surely to agricultural bankruptcy. Mr. Poore has had ocular proof of the fertility of this reclaimed land. The hay harvest was just over and had been a good one, and the standing crops of wheat and oats, potatoes and carrots would be hard to beat in any part of England. The wheat was especially good, and one field of 17 acres, which Mr. McConnell, the manager, estimated would yield over 40 bushels to the acre. Much of the land is now passing into the hands of nurserymen and market gardeners.

The physical change which has taken place in this bog as the result of the agricultural and other operations which have been carried out upon it is very interesting. The downward drainage by the deep trenches and the upward drainage by the heavy crops, which to a large extent prevent the rain from percolating, have resulted in the sinking of the surface and the general compression of the bog so that the land tends steadily to get firmer. Formerly, when ploughing it was necessary to put "pattens" upon the horses' feet in order to prevent them from getting "bogged," but this necessity now seldom arises. The farmhouse at Carrington stands on solid and deep foundations, but that the land around it is gradually sinking is well shown by the fact that it is found necessary to provide an additional step for the back door at recurring intervals. Mr. Poore suggests that this great experiment merits systematic observation by men of science. A few "surface" wells for the periodic examination of the water by chemists and bacteriologists are much to be desired, and the changes of earth temperatures, the progressive alterations in the physical condition and the flora and fauna of the soil ought to be systematically recorded. The success attained at Carrington Moss has induced the Corporation to purchase some 2,500 acres of Chat Moss, which is now being subdued under the experienced guidance of Mr. McConnell, so that eventually the Corporation will be in possession of a fertile estate of 3,600 acres. Allowing 10 per cent. for roads and other works they will have about 3,240 acres under cultivation, or land capable of producing annually 13,000 quarters of wheat and 8,000 tons of straw where none grew before. Assuming that the land is capable of receiving 20 tons of refuse per acre *in perpetuo*, the city will be in possession of a "destructor" capable of consuming about 65,000 tons of organic refuse per annum, and each ton of refuse will ultimately return about a bushel and a half of wheat and 2½cwt. of straw (the chief ingredients for 100lb. of bread and perhaps 1,000 straw hats).

NEW SCHOOL AT LEEK.

THE Technical and High School at Leek, illustrated in one of our inset plates, was opened on July 28th, when the foundation stone of the William Carr Gymnasium (Nicholson Institute) was laid. The school buildings have been erected for the Leek School of Science and Technology and High School and County Silk School. The gymnasium is the gift of Mr. William Carr, of Leek.

The school buildings are of simple proportions, with embellishments sparingly introduced. The front is built of thin Wall Grange sand-faced bricks, the window frames being put in on the outer face and painted white. The lunettes over these windows—under the arches—are filled with decorative modelling by Mr. A. Broadbent. The subjects on the front include literature, science, art, music, agriculture, commerce and physics with chemistry. There are other subjects on the east side, such as needlework, weaving, manual instruction, dyeing, cookery and astronomy. A covered portico connects the existing school of art with the front entrance to the new schools, which is surmounted by Justice on one side and Time on the other. A number of old cottage buildings have been pulled down, enabling spacious quadrangles to be formed on the south front and on the west side of the new school buildings. These will be planted and laid out as town gardens for the use of the public. The playgrounds for the day scholars will be formed on the north side of the new buildings, looking out towards the park and the Roches, &c.

On the east of the new schools the erection of the William Carr gymnasium has been commenced. Mr. Carr has generously provided £1,000 for the erection and furnishing of this building. It has an octagonal tourelle at the front angle, which merges into a circular frieze to be sculptured by Mr. Broadbent in stone: subject, The Olympian Games. The roof will be of copper. The gymnasium itself is 70ft. in length by 28ft. in width, and has a raised platform at one end and a gallery for spectators at the other. It has also spacious dressing rooms and a lavatory with shower-bath, &c. Two decorated plaster ceilings—taken from the ancient manor house in the market place, recently pulled down—were acquired by Sir Thos. Wardle, who has presented them to the gymnasium, where they will be fixed. The fitting up and apparatus of the gymnasium will be fully up-to-date, as in the most modern military gymnasia.

The accommodation in the school is as follows:—On the ground floor: Chemical laboratory, 31ft. by 22ft., with benches for twenty students, blow-pipe table, shelving, &c., four fume closets, combustion counter, demonstration table and sliding blackboard and eight nests of bain-marie dye pots for experimental dyeing. Attached to the chemical laboratory is the balance room, 15ft. by 7ft., with shelves and stone slabs for the balances. The domestic school (cookery and laundry) is 27ft. by 22ft., and is fitted up with desks, demonstration table, kitchen range and gas stoves, sink, cupboards, shelving, sliding blackboard, laundry tables, &c. The physics laboratory is 27ft. by 20ft., and has a demonstration counter and platform with sliding blackboard, long side table, cupboards with sinks, three double benches for twenty students, apparatus cupboards, blow-pipe table, suspension rail, &c. The manual instruction room and weaving shed are lighted by north skylights. The manual instruction room is 29ft. by 20ft., and contains ten double wood-working benches, one master's desk and platform and sliding blackboard, one side-table cupboard, tool racks, timber cantilevers, &c. The weaving shed is about 30ft. square, and contains a Crossley's gas engine indicated 8 brake h.p. of the latest type, two lines of polished steel shafting, &c., and various power and hand looms and machinery connected with silk working and spooling, &c. The engine is enclosed in a pilastered plate-glass screen with wire-wove glass roof. The ground floor also comprises chemical and other store rooms, boys' lavatories and cloak rooms, separate entrances for boys and girls, a crush hall (in which are placed the male students' lockers), corridors, &c. The height from ground floor to first floor is 16ft., but the weaving shed and manual instruction rooms are higher. A mezzanine floor is formed off the staircase, giving a mistress's common room and cloak room, &c., and a bay for the girl students' lockers. All the appointments of the administrative rooms — fire-grates and fenders, coal boxes, inkstands and gas fittings have been designed by the architects. The first floor varies in height from 14ft. to 18ft. On the first floor is the lecture theatre, 31ft. by 22ft., with steep gallery constructed on the "isacoustic curve" principle, which ensures every student seeing over those in front of him. This room is furnished with electric lantern, lantern screen, diagram screen, sliding blackboard, fume closets, demonstration counter, dark blinds to the windows, &c. Opening from the lecture theatre and giving access to the Nicholson Institute reading room is the preparation room, which also adjoins the head master's room, 13ft. 6in. by 15ft. The head master's room is furnished in the same way as the head mistress's. On the north end of the first floor is the kindergarten classroom, 34ft. by 20ft., furnished with the newest and best appliances in kindergarten single desks, tables, chairs, &c. It has also portable blackboards, stock cupboard, teacher's desk, &c., and the walls are hung with a selection of Fitzroy pictures. The west classroom is for thirty-two students, and is 25ft. by 22ft. The east classroom is for thirty-five students, and is 20ft. by 23ft. The girls' cloakroom, lavatories, &c., are upon this floor. On the upper floor, which is about 13ft. in height, is a large classroom or continuation of the domestic school for needlework, dressmaking and millinery, 43ft. by 20ft., a music room, 16ft. by 13ft., and an administrative office, 21ft. by 14ft. (which gives access to the Nicholson Institute galleries). This contains some curious painted chestnut wainscotting from the Chateau de Lormant, near Bordeaux, formerly the residence of the Archbishops of Bordeaux, whose arms appear on the panels. The Black Prince lived in this chateau, and his son, Richard of Bordeaux, was born there. The wainscotting was rescued from destruction by the architect, Mr. Larner Sugden. It had been torn out of the chateau and made into a fowl-pen at a farmhouse.

Messrs. W. Sugden and Son, F.R.I.B.A., of Leek and Hanley, are the architects for the buildings and their furnishing and equipment. The builders are Mr. T. Grace and Mr. M. Carding, of Leek. Messrs. Truswell and Sons, of Newcastle, have put in the heating apparatus. The furnishing has been done by Messrs. Overfield and Co., of Leek, and the Bennett Furnishing Company, of Glasgow. The wood used for the fittings is Orham stained green and French polished. The decorative metal work is by Messrs. Ramsden and Carr, of Fulham. The laying out and planting is being done by Mr. M. Mellor, of Leek. The rooms throughout have glazed brick dados and distemper colouring in cheerful but subdued tints. The outlay on the new buildings when finished, with caretaker's house, &c., will amount to £7,000, exclusive of the gymnasium. The cost of furnishing has been about £1,800 in addition. The cost of the site was £2,000 and about £1,300 has been spent in removal of old cottages, &c. This amount has been raised by Urban Council loan, grants from the County Council, Mr. Carr's gift and other public subscriptions, &c., but a deficit of about £2,000 still remains to be raised.

New Government Buildings.—The House of Commons voted the following amounts last Thursday:—£53,000 for miscellaneous legal buildings; £16,000 for expenditure in respect of science and art buildings; £24,000 for constructing a new harbour and refuge at Peterhead; £456,403 for rates and contributions in lieu of rates in respect of Government property, &c.; and £202,685 for expenses of erection, repairs and maintenance of public buildings in Ireland, and for other purposes.

PARIS EXHIBITION.

HEATING AND VENTILATING SECTION.

By OSWALD WHEELER, A.M.I.M.E.

THE section of the great French and International show relating to Heating and Ventilating Appliances is more of interest to observers of national customs and ideas than of service to those who wish to see what their rivals are doing. It is not worth a special journey, though it should not be missed by the engineer who goes to see Paris and its wonderful fair.

The stands of practically all the French firms of heating and ventilating engineers who exhibit are in a separate building—"Chauffage et Ventilation"—on the riverside, near to the Alma Bridge, on the opposite bank of the river to "Old Paris." In the adjoining building of "Hygiene" is the Cordier ventilating fire-grate, perhaps the only genuine heating and ventilating appliance in the section. It should be a good one for French wood fires, but is unsuited to our bituminous coal. The flames play slightly on and the hot gases pass between a row of vertical but somewhat sloping forward pipes about 1½ inches in diameter, inside which the air passes up to a long air box at the stove top, parallel with the hearth. From the ends of this box the air enters the room by shuttered grilles. A very similar design was, and we believe is still, made in the United States, and a few were brought to England; however, they were much too powerful for our climate and our fuel, though they may serve well in the north of Scotland, where peat and wood fires are still fairly usual. The casting of the grate is well worth the notice of the practical ironfounder, and attention should be given to the method of sweeping the chimney.

The "Chauffage et Ventilation" building mentioned above contains apparatus for heating water for domestic and industrial purposes, as well as apparatus for heating buildings. Practically all the French exhibits are in this building. Some of the potters—sanitary and otherwise—have porcelain and faïence stoves and chimney-piece grates, but being clay-workers, and not engineers, their articles are shown in the Pottery section on the Quai d'Orsay. The exhibits of other nations are found in the space allotted to each in the "Decoration et Mobilier" section—decoration and furnishing of public buildings and dwellings—on the Esplanade des Invalides. Here the German, Austrian, &c., equivalents of our Waring, Heal, Howard, Johnson and Appleyard, &c., show suites of furniture in rooms, and the heating appliances (ventilating ones are very scarce) are usually the stove or grate which the national custom demands. Some of the German grates are copies of English ones, and in looking at all these continental appliances one must be careful to accept nothing as the article considered by the maker to be the best, in being the most scientific, with all the latest improvements. In the German section certainly the appliance is more likely to be in accordance with the latest arrival of the passing phases of "Art," and in all cases must the balance be weighed between the claims of reason and fancy, sustained practice and unproved theory. The exhibits of Messrs. Boyle, Blackman, Musgrave, and Lumby, Son and Wood are all close to each other on the upper floor, not very far from the Great Hall (Salle des Fêtes) on the Champ de Mars; the catalogue is not clear, but squares 4 and 5 on Plan V. will nearly locate them. Doulton's and Jennings' stands are close by. The radiators of the Swiss firm Sulzer are on the ground floor, near to the entrance to the Swiss Village. Some of the smaller nations have put the articles in the national pavilions on the riverside. The American exhibits are not all together, but many of the best are on the upper floor, close to the English and Irish firms abovementioned.

The catalogue is made on a system that everyone does not at first drop into. The stands are not numbered, as is usual in an English exhibition, and the catalogue list does not agree with the rotation of the stands. The catalogue mark is "Groupe XII., classes 66 à 75." The names of the exhibitors are arranged in alphabetical order, and as you walk round and notice some article you find its official description under the name of the firm exhibiting it. Each country has its own list of exhibitors, and the countries also are in alphabetical order in French. First on the list come France, of course; then the French colonies Algeria and Tunis, their islands in the West Indies and Pacific, and then other nations in the following order: Germany, Austria, Belgium, Spain, United States, ourselves—Grande Bretagne, including Canada, Australia, and all our Colonies. A series of maps of the Exposition grounds are on the first few pages of the catalogue, and these maps are divided into squares, marked A, B, C, &c., across the page, and 1, 2, 3, &c., down the page. In the list at the right hand side of the name and entry is the number of the map and the letter and number of the square in which the stand may be found; thus, PL. 1.—D. 3. The letters PAV. mean that the article will be found in the pavilion of the nation of the exhibitor. The cataloguing is not always accurate, especially in the foreign lists, for the catalogue seems to have been printed before the articles were in their places: those arriving too late were crowded out of the assigned quarter, and had to be put wherever room offered. The French lists are reliable. The maps also have printed on them Gr. XII., &c, and Cl. 74, &c., on the buildings which contain the respective groups and classes.

The French exhibit, taken as a whole, shows that in that country, just as in our own, low-pressure steam is the coming, in fact we may say the crowned, king in popular favour. The French engineers are fond of gill surface, either cast-iron gills encircling wrought-iron pipes, as shown by Messrs. Grouvelle and Arquembourg, of Paris, or of cast iron throughout, as made by the same firm and several others. This firm says the expansion will not break the gills, and that the results are highly satisfactory. In the main one concludes that the French are rather behind us in this matter, and it may be expected that extended experience will show them, as it has shown us, that gills can easily be overdone, and that plain pipe surface gives the highest efficiency for the longest period of time. The boilers and fittings for low-pressure steam seem to be all right; some fittings seem too light to be durable, though this is doubtless due to the difference between the national ideas of form and shape. The Paris Gas Company has a fine stand at one end of the building, but the virtue of the majority of the articles ends with their good looks, for their use will tend to increase the revenue of the company more than the comfort of the buyer. Gas appliances for heating various things seem to be popular in Paris, and the geysers are worth examining. Coils are not approved of, long straight pipes being used. Some geysers supply either hot or cold water from the same tap, by means of double passages. Geysers and steam kettles are found on several stands.

There are several absurdities and monstrosities of course. The Société de Chauffage Hygienique show a gas-heated steam boiler, whose steam is carried by pipes to tall thin iron tubs of water heated by this steam; no doubt they will soon find that results quite as good and much more economical are to be had by heating the water direct, or by using steam direct. There are also stoves for burning coke or charcoal whose winding passages and gills and fins will soon become so choked with dust that they will not work. In fact, one must never forget that the waste that Nature seems to have made necessary and unavoidable in all the imitation appliances designed by man is just as delusive as it is plain to see, and thus tempts men to try to obtain the impossible. And in looking at the French appliances we must remember that in their large towns separate houses are rare, and flats the regular and standard domicile.

The Godin stand of Colin et Cie should certainly be seen by every ironfounder and metal enameller: it is the largest and best collection of enamelled ironware that the writer has ever seen. The firm make baths and stoves for the English market, and report good business with stoves. The baths are enamelled white, although those for themselves are of a French grey tint, a pure self enamel and much more durable than the mixture that makes the white that is demanded here in England.

Mechanical ventilators are represented by the radial pressure fans of Farcot in the "Chauffage et Ventilation" building, and by the screw-bladed fan of the Société Industrielle de Creil in the machinery section near the electric plant on the Champ de Mars, not far from the Salle des Fêtes and the wine exhibits. Both are very good. The Creil is the only screw fan in the Exposition; its blades are correctly formed, and in this and several other points is ahead of all rivals. Farcot fans are also at work in the Agriculture Section, but they are not numerous enough to give first-class results in so huge a building.

The continental articles are scattered all over the place, in the pavilions of their respective nations, in the "Mobilier and Decoration" and in the "Industries Diverses" sections. The stoves are always good-looking, and may usually be taken as highly finished articles of the standard national style.

The English and Irish articles (there are no Scottish) are placed on the upper floor of the enormous building on the Champ de Mars. They are not far from the "Education et Enseignement," which we would call the schools, nursing and hospital departments. Many of the American stands are here too, and the combined show, despite the atrocious nickel ornament on the American cooking stoves, compares well enough with the French show on the riverside. Messrs. Lumby, Son and Wood have a fine stand of boilers that well sustain the reputation of their native land. Messrs. Hartley and Sugden have a rather larger show in a little building of their own, with coloured leaded glass window panels, outside the Great Britain annexe on the Esplanade des Invalides, Plan No. 1, square F.3. Messrs. Boyle, the redoubtable champions of natural ventilation, are, perhaps ironically, placed side by side with the Blackman Ventilating Company, who are equally in earnest and successful with mechanical ventilation. The Boyle articles are well got up and finished, but the Blackman stand is larger and shows a portion of a drying-room. Messrs. Musgrave have a nicely-arranged stand of well-finished stoves, and evidently have a large French connection. They also show a basement air heater or calorifer with a fan for blowing the air over it, as applied to a school in the south of Wales. The fan is not a true screw, and could certainly be improved on, and one would think the calorifer could also.

The American stands adjoining are all interesting: the one most worthy of attention is that of the J. L. Mott Ironworks, of New York. The radiators are of good appearance, easy to keep dusted and clean, have a simple but very good joint. The boilers, too, are good for hot water at least, though British people may doubt the suitability of some of them for steam. The Magee Furnace Company shows a combined hot air and water generator.

The chief American section (that on the Esplanade des Invalides) is all ventilated by small screw fans with four brass blades, driven by electric motors. Each one stands on a bracket on the partitions between the stands, and propel the air diagonally along the causeways. They keep the place very pleasant and cool and are a good example of successful mechanical ventilation.

Our Colonies' exhibits are behind the white building of Algiers, under the Trocadero, on the left as one looks across the river to the Tour Eiffel. In the "Chauffage et Ventilation" catalogue our Colonies have no separate list—they are indexed under "Grande Bretagne."

There are eighteen books of catalogues, at 3f. each. No. 14 is the volume for heating and ventilation, and also for woodwork, furniture, wall decorations and tapestry, faïence, tiles and glazed bricks. If you cannot speak French, write, or, better still, print, on a piece of paper, "Catalogue Général Officiel, Tome XIV.," and present it to the young woman at one of the numerous tables or kiosks where catalogues, views and souvenirs are sold. She will hand it to you in return for the money.

There is no need to fear being overcharged, fo the French are certainly honest.

The benches and garden seats in the Exposition grounds are all free, just as on the Boulevards, but the chairs must be paid for. The Exposition is divided into four quarters, and a chair ticket is available for the day in its own quarter only. However, the price is only 1d., and 4d. a day for a seat anywhere is very cheap.

THE HOUSING QUESTION.

IMPORTANT CONFERENCE OF THE SANITARY INSTITUTE.

A LARGELY attended and thoroughly representative conference on the Housing of the Working Classes was held on Monday and Tuesday in last week in the lecture hall of the Royal Medical and Chirurgical Society, Hanover Square. The conference was convened by the Council of the Sanitary Institute and was attended by delegates from local authorities in all parts of the country. According to the programme the discussion on the first day was to deal with "Unhealthy Areas and Displacement of Town Population," and on the second day with "Improved Houses for Town Dwellers" and "Improved Means of Communication," but, as a matter of fact, the speakers for the most part seemed to discuss any aspect of the housing problem that appealed to them, and the special question of means of communication was hardly touched on at all.

The Chairman's Address.

The chair on the first day was occupied by Mr. R. Melville Beachcroft, L.C.C., who, in opening the proceedings, expressed a hope that the question of the housing of the poor would be recognised as a non-party one. Speaking of the work done by the London County Council, he admitted that their great Boundary Street Improvement, which involved the displacement of 5,400 persons and the substitution of a model colony of municipal dwellings for 15 acres of dirty hovels, was an event which not only invited but demanded criticism. For a time it was believed that the results achieved were not such as to justify a repetition of clearances on a similar scale, but a year or two ago other large areas, namely—one in Somers Town and another in Clare Market—were initiated, and were now in course of being dealt with, whilst quite lately three new schemes had been adopted, involving further large displacements, so that additional heavy calls upon the ratepayer in the same direction might be immediately looked for. Whatever conclusion might ultimately be arrived at, it might perhaps be taken as satisfactory that the net cost of the clearances effected so far by the L.C.C. compares favourably per head with that incurred by the Metropolitan Board of Works. The latter carried out 20 clearance schemes, displacing 25,217 persons at a net cost of £59 per head, while the cost per head of clearances effected by the Council under the Housing Act works out at about £50 a head. The difference might fairly, he thought, be attributed to the special compensation provisions of the Housing Act of 1890—in fact, the Council's valuer had more than once stated that the effect of those provisions was to make it anything but a profitable transaction to own slum property required under the Housing Act.

Buying Out Trade Interests.

On the other hand, every large clearance by the London County Council must involve the buying out not only of the slum owners but of trade interests, and it was this which caused the loss to the ratepayer. The commercial value of land in the central districts when cleared was always largely in excess of its value as a site restricted to the erection of dwellings. For example, the sites on which the existing dwellings of the Council had been erected by them stood in their books at a total value of £95,000, while the commercial value was estimated by their valuer at £230,000; the difference between these two figures represented the cost which had to be borne by the ates. The question whether the present method of dealing with unhealthy areas was the best one was not, however, a purely financial one, but largely depended on the effect it had on the overcrowding difficulty. The question put by Lord Rosebery, "What is to be done with the residuum which you displace?" had still to be answered. It was easy to pass a resolution, as the County Council did a few months ago, that in future they would find accommodation for a number equal to those they displace, but not so easy to avoid displacement until new accommodation was provided; the crux lay in providing accommodation for those displaced who ought to be accommodated on the spot before the actual displacement; and, in his opinion, no clearance scheme should be allowed to pass which failed to make this provision. These persons belonged naturally to the poorest class, and in the new buildings hitherto provided the rents were too high for them and the restrictions too great. As overcrowding was the cause of an area becoming insanitary, it followed that a strict application of the law against overcrowding ought, in at all events the great majority of cases, to effect the required cure. If an area was found actually unfit for human habitation, instead of buying it up the local authority should be able to insist that the houses on it should cease to be occupied until the area had been reconstructed. The owners would then be driven to find the means of reconstruction themselves, and the only duty, condemnation once made effectual, that would then devolve upon the local authority would be to see that accommodation was found for those displaced whose business necessitated residence on the spot. Experience showed that a very small proportion of those living on an insanitary area actually needed to live on the spot (out of 6,000 disturbed in connection with the new street from Holborn to the Strand only 774 belonged to the class whose work rendered residence on the spot a necessity), and the Borough Councils, who would now have the same power that the London County Council had of providing dwellings under Part III. of the Housing Act, ought to be able, with the knowledge at their disposal, to meet the wants of these.

Enforcing Existing Laws.

He noticed with pleasure the recent circular of the Local Government Board reminding local authorities generally of the very large powers they possessed for securing the proper sanitary condition of all premises within the area under their control; and, although recent decisions might go to prove that amendment of some kind of Part II., as well as of Part III., of the Housing Act was required, the fact remained that if the existing law against overcrowding were but rigorously enforced not only would there be no unhealthy areas to deal with, but a stop would be put to the influx of population, and rents would go down. So far as the metropolis was concerned, the danger ahead of them was not so much how to deal with unhealthy areas within their border, as how to prevent them from being created just outside that border. It was high time that both the London Building Act and the Public Health (London) Act, 1891, were made applicable to districts within, say, ten miles of London and other populous towns.

Mr. T. BLASHILL pointed out the difficulty of arriving at any satisfactory solution of the housing problem in London so long as a great clearance scheme could cost £50 per head of the population displaced. As an alternative to this costly method he advocated a scheme for compelling owners of areas pronounced insanitary to form themselves into a syndicate, and for casting the onus and cost of clearance upon them. This scheme could, he contended, be carried out at a cost of less than £11 10s. per head to the public authorities.

The Housing Act of 1890.

Mr. W. HOLDER, of the Hull Corporation, made some suggestions for improving the action of Part II. of the Housing of the Working Classes Act, 1890. His Corporation looked upon Part I. of this Act as cumbersome and costly, and preferred to carry on its cleansing and reforming work by the simpler and more reasonable machinery provided under Part II. Last year they pulled down 96 houses in Hull. An amendment of the Act they found desirable was that when once the first action for closing of an insanitary dwelling is adopted no evasion of the subsequent demolition order shall be permitted if the premises cannot be made sanitarily safe as a dwelling house. They in Hull were much hampered by legal gentlemen advising their clients that they can avoid a closing order by converting what was a dwelling house into a stable, office, or warehouse. An obstructive owner could then prevent an entire renewal by placing a stable in the middle of a number of demolished houses. In many places slum properties existed in the best neighbourhoods and business centres. The enforced demolition of the whole benefited the owners, because in the place of the rookery the area was entirely denuded of its foulness, and it became opened out for the better class of properties and erections, and yet this might all be upset by the action of one owner converting an old, decrepit slum house in the centre of this plot into a stable. This should not be permissible. Another amendment would be the enlarging of the definition of "dwelling house:" when it was defined as "any inhabited building" the restriction enabled an unlet dwelling house to stand as a menace to the respectability and renewal of neighbouring houses.

Homes for the Very Poor.

Mr. J. DOUGLASS MATTHEWS, F.R.I.B.A., read a paper and exhibited plans designed to show the practicability of providing the very poor with healthy dwellings at low rents, without loss to the community. The plans showed three classes of tenements: No. 1, a one-room apartment with bed recess, to be let at 2s. 6d. per week; No. 2, a living room with parents' bed-room and cubicle for a child, and also scullery, to be let at 4s. per week; No. 3, a living-room with parents' bed-room, two cubicles for children, also scullery and detached W.C., to be let at 5s. 6d. per week. Each of the suites opens direct from the landing of a fireproof staircase—in the centre of the building—and is fitted with a ventilated food cupboard, dresser, coal store and sink which also serves the purpose of a lavatory. The chief feature in the plans is that each tenement is self-contained, and the sleeping places open out of the living room. The parents' bed room is sufficiently large for all practical purposes, and is enclosed the full height of the room. The cubicles are large enough for sleeping and dressing, and the enclosure next the room is only 6ft. 6in. high, thereby allowing cross ventilation. As the fireplace in the living room would be constantly in use, the chimney would be a valuable extractor of foul air. The buildings are designed in height and space to accord with the London Building Act, so that every portion will be amply lighted, and good play yards are provided in the rear. The requirements of the Public Health Act are also respected. The method of construction is of the simplest character, at the same time being substantial, and provision is made to guard against the rough usage of the probable tenants and to minimise constant repairs.

These dwellings, Mr. Matthews maintained, could be erected at a price which would give a return of 7 per cent. on the capital. The scheme required, however, that the public authority should purchase sites in close proximity to the centres of trade, and let them on building leases for sixty years, at a ground rent equal to that which would be given for working-class dwellings in the suburbs, say 5s. per foot frontage (£7,000 per acre); further, that the public authority should advance to the lessee, at 3 per cent., and that the inhabited house duty should be remitted.

There were many other speakers, including Dr. Sykes (St. Pancras), Mr. Cooper (Aberdeen), Mr. Godbold (West Ham), Mrs. M. Dockrill (Dublin), the Lord Provost of Glasgow, who spoke of the difficulties of adopting the Housing of the Working Classes Act in Glasgow, Mr. Alderman F. Lupton (Leeds), who explained the Leeds procedure of buying land for housing and re-selling it on stringent conditions, Mr. Harper (Cardiff), who inveighed against the Local Government Board

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and its ways, and Mr. Alderman Purcell (Liverpool).

Mr. Anderson (Liverpool) moved and Mr. Smith (St. Pancras) seconded a resolution declaring that the present method of dealing with insanitary areas was extravagant and unsatisfactory and suggesting that Parliament should provide some inexpensive tribunal on the spot for deciding what areas were insanitary and enabling local authorities to proceed at once to deal with them. After some discussion, an amendment moved by Mr. H. M. Close (St. Pancras) and seconded by Mr. Holder (Hull) was agreed to in the following terms:—"This conference is of opinion that the present method of dealing with insanitary areas is extravagant and unsatisfactory, and urges Parliament to provide some less expensive and more expeditious mode of procedure."

In the afternoon the members visited the L.C.C. dwellings at Millbank, Westminster, and on the Boundary Street area.

An Animated Discussion.

At the second day's Conference Sir Sydney H. Waterlow presided. The room was crowded, and the proceedings were animated throughout. Towards the close of the three hours' discussion Dr. Wynter Blyth, who occupied the chair for the latter part of the meeting, imposed a five minutes limit upon the speakers, but in spite of this time could not be found for all who wished to address the Conference. Sir Sydney Waterlow devoted his opening address chiefly to an account of the work done by the company of which he has been chairman for thirty-seven years. They had spent a million and a quarter of money in the erection of 5,600 tenements, occupied by nearly 30,000 persons. The first four blocks, built in 1862, each contained 70 rooms, and cost £42 per room. There had been a gradual increase in the cost until this year it reached £75 per room; the increase was mainly due, Sir Sydney thought, to the fact that more money had to be paid to the workmen for shorter hours and less work. The outgoings in the shape of rates had also greatly increased. There could be no doubt that the heavy increase at each quinquennial assessment deterred capitalists from promoting new building companies. At the present time the average rent charged by his company was 2s. 3d. per room per week, but in the newest buildings they had to charge 3s. per room, and the rooms had all been readily taken up at that price.

Dwellings Outside London.

Speaking of the Act passed this Session enabling the London County Council to erect working-class dwellings "outside their district," Sir Sydney Waterlow expressed the opinion that such a scheme would not accomplish the result anticipated by some. The cost of the dwellings would be as great as, if not greater than, in London, and the time spent on the railway or in the tramcars would be a serious loss. The cost of living would be higher, and in his opinion it was not good policy to separate the weekly wage class from the more wealthy parts of the community. The Government should be more liberal with reference to the charge they made for money advanced on mortgage by the Public Works Loan Commissioners. The plan upon which he had always acted was to attempt in the first place to meet the wants of that portion of the working class who are earning from 25s. to £2 per week. As the pressure of this class in finding decent homes was lightened, and better accommodation provided for their use, the class immediately beneath them would shift into the quarters they vacated, and this would be repeated until the lowest of all, those who were least likely to appreciate decent homes, would slowly but surely receive their share of the benefits enjoyed by those above them. Improved dwellings for the working classes meant a reduction of death-rate: in the dwellings erected by his own company the death-rate in 1899 was 11·5 in the thousand, as compared with 19·8, the average death-rate in the County of London. The loss of rent was very small indeed; the class they were trying to help were worthy of being helped, and it would be a good thing if many more companies could be started with the same objects, for what one company can do may be done by another company.

The Kind of Dwelling Needed.

Mr. H. Percy Boulnois, who was unable to be present, sent a communication which was printed and distributed to the members. Dealing with the question of the best kind of dwelling to be erected for the poorer labouring classes, Mr. Boulnois maintained that most of the dwellings hitherto erected had been too elaborate and too expensive in rental to attract those for whom provision was really required. The accommodation must be simple and even unattractive, or otherwise a better class tenant would be attracted; the rent aimed at should, if possible, approach some such unit as one shilling per room per week. Could this be done under existing circumstances without taxing the more fortunate or harder working members of a community? It certainly would not if the price of land exceeded a certain limit, but he believed it could be done with land of the value of about 15s. per square yard.

The building might be either of the "block" type, or preferably rows of self-contained cottages, two or three storeys in height, with two- or three-roomed tenements. The rooms must not be too large or lodgers would be introduced, there need be no larder, as this class of tenant had veritably to live "from hand to mouth." There need be no copper for washing, as what little fuel was bought was used for cooking and washing might now be done at the nearest public washhouse. The living room might be the kitchen and there should be a small scullery fitted with a sink and cold water tap. There was no need for a hot water tap, as this meant a boiler and extra fuel. Any hot water required would be heated in a kettle or pot on the sitting room range, which should, of course, have a small oven and hot plate. Each tenement should, if possible, have a separate W.C. All the plumbing must be the best possible, but no lead must be used, and everything must be strong and unbreakable. The buildings should be of plain but good brick. There was no necessity for plaster on the inner walls; with good brickwork a bright colour wash was all that was required. The floors should be of concrete, with grooved and tongued floor boards or pitched joints, and absolutely impervious. There should be as little woodwork as possible, and the doors should be thick "ledged" doors not easily broken. The windows should have very small panes of glass so that repairs might be very cheap, but they must be large and easily opened for light and air. All stairs, window heads, door sills, and any "dressings" should be of concrete. Only in this direction of cheapening construction could the problem be solved.

Mr. Whitmore (Hackney) spoke of the unfairness of landlords raising their rents immediately after each quinquennial assessment, and reducing them just before the next assessment, so as to save rates; also of raising rents when they were compelled by sanitary authorities to execute repairs. Such practices should be made illegal. He advocated the establishment of some authority to fix the rent of all property of less than £40 a year, and also an enactment to enable local authorities to borrow money repayable over a period of a hundred years. These drastic proposals Mr. Whitmore wished to embody in a series of resolutions, which were duly seconded by Mr. Thomas Adams, of Plumstead. It was evident, however, that the Conference generally was not in sympathy with these views, or the way in which they were put forward, and the "previous question" was moved and carried. From the dangerous paths of political wrangling the Conference was recalled by a most admirable and practical address by Alderman Thompson, of Richmond.

What Richmond Has Done.

Alderman Thompson explained what had been done at Richmond in the building of workmen's cottages by municipal effort. But he thought the right principle was not to rule out any form of enterprise, municipal or private, which aimed at relieving the house famine by providing more and cheaper houses for the working classes. There was practically a "corner" in building land on the outskirts of London, and this ought to be broken down. If you could compel owners to sell land for building at reasonable prices, others would come into the market and there would be a general reduction in prices. The land now was let out a little at a time and fancy prices were paid. If they could get 10,000 acres at £500 an acre they could house a million people quite cheaply. Land should be in the hands of the local authorities empowered to lease it to private individuals or companies who were willing to put up sanitary houses. In great cities it was only possible to erect block dwellings, but at Richmond they had been building six-roomed cottages which let at 7s. 9d. a week, and allowed a good margin of profit with land at £1,000 per acre, paying London prices for materials and wages. Alderman Thompson proceeded to speak with some indignation of the Local Government Board, which issued an insulting circular asking local authorities to do their duty, and at the same time put all manner of obstacles in their way. Some of the regulations of the Board were very absurd and unnecessary: they said that if you put a third bedroom in a cottage you must have a 14in. wall to carry it, but a 9in. wall was quite sufficient. If they could borrow money at 2½ per cent. for 60 years for the building and 100 years for the land they could let their houses at 1s. per room per week, which should be regarded as a standard price. He concluded by moving: "(1) That in the opinion of this Conference the Local Government Board should at once extend the period of repayment actually granted to local authorities for building loans under Part III. of the Housing of the Working Classes Act, 1890, to the full statutory period of 60 years, and that they should relax and vary the restrictions on building cottages, especially in the direction of enabling more rooms to be provided at a less cost per room where this can be done without prejudice to considerations of sanitation and safety; and (2) that Parliament should be asked to extend the period for repayment of housing loans to 100 years in the case of land and to facilitate the advance of money by the Public Works Loans Commissioners at the market rate of interest for the purpose of housing the working classes."

The L.C.C. Architect.

Mr. W. E. Riley (superintending architect of the London County Council) followed with some criticisms of the various working-class dwellings illustrated at the Paris Exhibition and some details about the work carried out by the L.C.C. Cheapness of building, he said, was essential in dwellings of this class, but he strongly urged the desirability of giving the best internal finish possible, so that everything might be sound and sanitary. Then, if money allowed, it might be spent on adorning the exteriors, but that should be quite a secondary consideration. In designing workmen's dwellings they needed a fixed minimum standard; then everyone should try and do better in each case. Mr. Riley exhibited and explained various plans and gave some particulars as to cost. The average return on the housing operations of the London County Council was 3½ per cent.

A Private Company's Work.

Mr. E. Bond, M.P. (Chairman of the East End Dwellings Company), gave an account of the experience of his company in providing dwellings for a class rather left out by other companies and by the London County Council, viz. people who did not earn more than 15s. to 21s. a week. It was no use putting up buildings unless they were going to pay. Therefore there was no use in building model cottages delightful to the eye and pleasant to show to the ignoramus, who was apt to think a great work had been done because some cottages had been erected and let at 8s. or 10s. a week. The problem was an economic one: it was a question of wages and of rent. They had to consider what was the best accommodation that could be given to allow a reasonable return for the outlay. To the man or woman who was earning a very poor wage indeed you could only give a poor house. You could not put up houses that did not yield a return on the money

borrowed. The great difficulty in London was not so much the cost of land as the rise in rates of wages and the prices of building materials. When his company began their enterprise the cost was £50 to £60 per room, now it was £70 to £80. Local Government Board restrictions—some of which were wise, though others were needlessly stringent—and the increase in rates were other difficulties. He thought the problem was best faced by private enterprise; but whether by private or by public enterprise they must make up their minds to allow people to live in single-room tenements and to dispense with ornament, making the buildings as sightly as possible by means of coloured bricks. It was impossible to supply a self-contained tenement at rents the people could pay. The experience of his company was that they could not let their rooms at less than 3s. 6d. per room.

Municipal Dwellings in West Ham.

Councillor TERRETT, of West Ham, gave an outline of the work that is being done by the West Ham Corporation. With a rapidly increasing population and rates at 9s. in the pound they had great difficulties to face, but they had tackled the housing question and were now committed to a scheme for housing 1,200 families. In the matter of cost they did better than the London County Council, which had to pay 8¾d. to 10d. per foot cube for its Millwall dwellings. The West Ham Corporation built double tenements consisting of three rooms and a scullery downstairs and a similar tenement upstairs, with separate entrances from the front and back, at a cost of 6¾d. per foot cube for the first 20 and 7d. for the last 34. They built by direct labour, paying as much or more than London Trade Union rates and using the very best material. The tenements were lighted by electricity in each room, and for this the tenants paid 6d. per week. They were now building 90 more dwellings and putting a bath in the scullery; the cost would work out at about 6¾d. per foot cube, and the average rental would be 2s. to 2s. 2d. per room, not including the scullery. These tenements consisted of four rooms and a scullery upstairs and three rooms and a scullery downstairs, and they hoped to get about 8s. for the upper flats and 7s. for the lower ones. The rooms were large, the front room downstairs measuring 15ft. by 11ft. 6in., and one of the bedrooms 9ft. by 12ft.

Mr. C. J. HAIR, A.R.I.B.A., urged the importance of providing new dwellings before destroying the old. Municipal bodies tried to please everybody and make their schemes pay, but they could not do it. He related his experience in the erection of model dwellings at Southampton, frankly warning the Conference against some of the mistakes that had been made in connection with that scheme.

A Lincolnshire Eldorado.

Mr. W. E. HARRIS delighted the meeting with a racy account of what he and others had accomplished in Lincolnshire. They bought freehold land and built on it at a cost of £30 per room, the tenant becoming his own freeholder by paying monthly instalments. This, Mr. Harris explained, was "none of your Jabez Balfour business," and the prospect he unfolded was such a rosy one that a member of the Conference was led to ask what was the single fare to Lincolnshire. The meeting was in a somewhat hilarious mood by this time, but it listened with respectful attention to Mrs. DOCKRILL'S earnest plea for the poorest class, who were often overlooked in these housing schemes.

Mr. A. B. MCDONALD, the city engineer of Glasgow, gave a few details about Glasgow tenements, the cost of building which did not exceed 4¾d. or 5d. per foot cube.

Mr. G. BERNARD SHAW (St. Pancras) contested Mr. Bond's dictum that a scheme which did not yield a monetary profit was an unfruitful one. In view of the vice and crime and disease resulting from overcrowding, the provision of healthy homes was a wise expenditure of public money.

Dr. COLLINS, L.C.C., pointed out that local authorities were bound by the Local Government Board and the Home Office and the methods of these authorities varied from time to time. The housing question was a sanitary one. It was not for Dives to leave Lazarus at his gate covered with sores, or Lazarus might spread pestilence, which knows no geographical limits and laughs at Local Government Board regulations.

Mr. ISAAC YOUNG, of Battersea, discussed the question from a sanitary inspector's point of view, and Mr. A. M. FOWLER, of Manchester, whose argument was cut short by the operation of the five minutes limit, was understood to defend the system of back-to-back houses widely adopted in Leeds.

Dr. CHALMERS (Glasgow) called attention to the case of an almost forgotten class—those who would not go into the model dwellings, the thriftless and indifferent who would not comply with any standard of discipline. How to deal with these was a problem still unsolved.

The resolutions proposed by Alderman THOMPSON, to which several amendments were proposed and in turn rejected, were then put to the meeting and carried. A suggestion to extend the sitting was rejected, and the Conference closed with votes of thanks to Sir Sydney Waterlow and Dr. Wynter Blyth.

In the afternoon a visit was paid to Richmond, where the delegates inspected the dwellings erected by the Town Council and were afterwards entertained at tea by the Mayor. Most of the delegates also availed themselves of the opportunity afforded by the Sanitary Institute of inspecting an interesting collection of plans and models bearing upon the subject of the Conference, which were displayed at the Parkes Museum, Margaret Street, W.

PERMANENCE OF PIGMENTS.

FOR a period of from three hundred to four hundred years white lead has been the mainstay of the painter for the preparation of his paints, and notwithstanding the introduction of such pigments as barytes, zinc white, Charlton white, lithopone, patent white leads, &c., it still retains, says the "Decorative Gazette," its foremost position, and there are many painters who refuse to use any of the substitutes which are put on the market from time to time and puffed up on the strength, perhaps, of a chemist's laboratory tests. It is not claimed that white lead is a perfect pigment, but, so far, experience has shown that it is superior to anything else in regard to permanence. The question in regard to the use of white pigments, as regards the permanence of paint made with them, is how long does it take to test it in this respect—one month, one year, two years, or any number of years? The advocates and manufacturers of new white pigments make their tests on a small scale and over a comparatively short period of time, and perhaps finding them then to be good proceed to puff them up as permanent. But it is just possible that the conditions under which the experiments were conducted are not those to which the article will be subjected in actual practice. A paint has to stand for five, six or eight years, or often longer, the action of the weather, sun, rain, sleet, hail, frost, wind, fog, and so on. Experimental tests can hardly be carried on for such a period of time that the paint can be exposed to these influences for a sufficiently long time, and therefore the scepticism of the laboratory tests by the painter is not to be wondered at. A paint applied to a house might look well for four years, and it would be pronounced permanent; another twelve months' exposure sees, however, the formation of cracks, and when the house wants repainting this old paint has to be burnt off. A case has been known where a house has been painted with a mixture of barytes and zinc white. After some years it still appeared good, and it was given a coat of white lead, and this was repeated two or three times; then, at the end of twenty years, the paint began to crack and leave the wood. Evidently the barytes and zinc paint would not last twenty years, although one hears many encomiums as to the great permanence of such a combination. Zinc white has been described as a permanent paint material. Well, it may be for inside work, but let it be used for outside work. It will stand for four or five years and look well. Put another coat on, and again after another five years it also looks well. Put another coat on, and now, perhaps, the effect of time begins to tell, and the paint begins to crack and chip and leave the wood. Evidently a test extending over ten years is not enough to test the durability of zinc white. How is it with white lead? Well, cases might be cited of places painted and repainted with genuine white lead and good linseed oil for a period of over one hundred years, and the paint is as good to-day as could be wished. It is this circumstance that induces painters to pin their faith to white lead and to look askance on the short-lived tests of the many substitutes which have been brought out during the past twenty-five to fifty years. The accumulated experience of a hundred years is not to be placed against that of only perhaps ten years.

Correspondence.

Architects' Assistants' Salaries.

To the Editor of THE BUILDERS' JOURNAL.

KENDAL.

SIR,—I am taking a great interest in the correspondence going on in your valuable journal on the subject of Architects' Assistants' Salaries. I agree with "Hopeful" that it is, to a certain extent, the fault of the assistants themselves that they are underpaid. I do not agree with "Junior" that an assistant just out of his articles could not get 25s. to 30s. a week, but would have to take 20s. to 23s. All pupils in the office in which I am are started with a salary of 30s. a week when out of their time. Three or four who have left our office since I went have all of them got situations at 30s. to 35s. a week, although they were not turned 22 years of age. I agree with "Vigilans" that there should be a society formed to raise the standard of assistants' salaries. By this means assistants would have some grounds on which to base their charges.—Yours, &c.,

INTERESTED.

To the Editor of THE BUILDERS' JOURNAL.

ST. ALBANS.

SIR,—I have followed the opinions on the above subject in your valuable paper with great interest, and feel bound to take exception to the view expressed by "An Art Worker." To commence with, he quotes an isolated case, and furthermore has the effrontery to compare our salaries with those of "ordinary clerks in business establishments!"

Surely, in view of our long and expensive training, and the fact that we are members—however humble—of a worthy profession, this is indeed the "comparison odious." Our work is most highly skilled, embracing as it does an infinity of subjects, and I have yet to learn that any special ability and training are necessary to become an "ordinary clerk."

It would be far more to the point to have the views of the "young fellow" himself upon the adequacy of his salary.

I shall be most pleased to render to "Vigilans" any assistance in my power towards his practical scheme.—Yours, &c., REFORM.

The Mining Department of the Yorkshire College is in need of more accommodation. It is proposed to erect a building for the special use of the department. There is a suitable site in connection with recently acquired land in College Road, which the Council of the College are prepared to assign for the purpose. It is suggested that the building should be of three storeys. On the ground floor, according to the provisional sketch plans prepared by Messrs. A. Waterhouse and Son, the architects to the College, there will be an assaying laboratory, the professor's private room a balance room and a small research laboratory; on the floor above a lecture room, a diagram room and a preparation room, and on the top floor a museum. These plans, however, are subject to modification. It is estimated that £4,000 will be required to cover the cost of the building and its equipment, and the Mining Committee has decided to appeal to those interested in mining for subscriptions.

Enquiries Answered.

The services of a large staff of experts, including all those engaged on "Specification," are at the disposal of readers who require information on architectural, constructional, or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Party Wall.

EALING, W.—X. Y. Z. writes: "I am proposing to make some additions to a house in London, which involves rebuilding a party fence wall as a party wall. I have served notices under the London Building Act, 1894, upon the adjoining owner and occupier. The former has consented to the alterations, but the latter will not consent, and refuses to appoint a surveyor to represent him as provided by the above Act. He says Sec. 91 does not apply to the adjoining *occupier*. Can you tell me if he is right in this, and, if so, what is my remedy?"

The word "owner" in the 91st sec. includes a person in occupation otherwise than (1) as a tenant from year to year, (2) for any less term, or (3) as a tenant at will. If the adjoining occupier holds in any of these three ways he is not an "owner," and is not bound to appoint a surveyor: otherwise he is, and if he makes default for 10 days after service of the notice X. Y. Z. may appoint one in his place. If the adjoining occupier is not an "owner," X. Y. Z. can proceed without any reference to him.

H. P. B.

Architects' Remuneration.

HALIFAX.—FAIRATION writes: "I thank H. B. P. for the trouble taken in trying to answer my questions in your issues for July 11th and 25th. It pleases me to find the replies given, so far as they go, favour my position in reference to the use and allowance for old materials. I am only sorry that I have not apparently made my queries sufficiently clear for him to grasp the awkward position I am placed in by my clients attempting to cut down payment. I took the work to carry out according to the services stated by Clause A in extracts from account sent herewith, my clients accepting same, subject to payment on amount of outlay. The commencement of operations was delayed for a considerable time between the tenders being received and actual works commenced. Additions arose as per Clauses B and C in office account, payments of which are not demurred to, except less cost of old materials refused. In carrying out the foregoing work, old buildings on the site had to be measured and particulars got in detail of materials which might be available for incorporation in the new erections, thereby saving the expenditure of money that would have had to be incurred for new materials in their absence, and handicapping myself in specifying their use, as it is much easier to have a free hand in describing entirely new work than to be encumbered by an incongruous mass of old materials arising from demolished buildings. Extra labour was thus incurred and more pains were required to be taken in detailing old materials for re-using, which only tended to reduce the commission to the architect. Consequently, if the value of old materials are not chargeable for remuneration, some payment should be forthcoming for services involved in enabling contractors to allow for same in estimating, and the clients saving thereby in actual money out of pocket in building new erections. H. B. P. says that the note appended to my original query increases the confusion, as it would seem from it that the old materials, or some of them, consist of work not taken down, but allowed to remain so as to form part of the completed building. It was far from my intention to convey such an idea, and in letting several professional friends read the note they understood it in the light I wished to convey, viz: Old work taken down and the materials re-usable in new erection. The contractor was stopped when the new erections were only part done, and I was called upon to measure him off and make out a statement as to work executed and value of materials on the ground at the time of stoppage, I stating that this was a service not contemplated in sending in terms and should be allowed for; but the legal adviser says this was necessary to be done, to show how the contractor stood, the querist stating that the work could have been completed without getting out a statement, and if there was anything in hand at completion of work it could have been handed over to contractor or his representatives. In any case it is only fair the services rendered should be paid for, being over those contemplated, and might have been called upon to be carried out by an independent surveyor. As far as the schedule for professional practice and charges of architects are concerned, if they are not law, they ought to be available, as showing morally that an architect ought not to be called upon to do all kinds of additional services not originally contemplated without receiving reasonable payment for same. The contractor died and trouble arose with his creditors in winding up the contract, certain matters having nearly gone to arbitration, yet I am informed that neither for the extra services connected with foregoing, nor if I had had to attend an arbitration, would there have been any renumeration due to me: so it would seem that all sorts of services and labour can be piled upon an architect without any redress so long as the employers simply state in accepting terms that the same are approved subject to paying an outlay. Measuring off extras and deductions, as required in this case, are usually allowed for, and half commission paid for latter, seeing plans and specifications were prepared and tenders got in, and additional drawings necessitated in carrying them out, which, if not allowed for, proves a dead loss and money out of pocket to the architect, as well as an incentive to make deductions as small as possible, seeing his commission is lessened thereby. Measuring up works in London and many large towns is carried out by the quantity surveyor as a separate business and charged to employers independent of architect's renumeration.

"The following are the extracts from office account: — *Clause* (A): *Terms.* — Making survey and taking levels of present premises and surroundings, as well as plotting and making plans with levels denoted thereon, showing same prior to commencing new work; getting out preliminary and contract plans, sections and elevations, also draft and fair copied specifications for the several trades, together with a set of duplicates of foregoing for the guidance of clerk of works and contractors in carrying out the new works, as well as superintending the carrying out of same to completion, including visiting contractors' workshops; preparation of detail and working drawings, ascertaining amounts due and certifying cash on account; interviews and correspondence, as well as attendances upon committee; preparation of quantities for the different trades, obtaining particulars and getting out builders' accounts, — per cent. on £—. (B) Ditto, ditto, in taking down and rebuilding old erection. (C) Ditto, ditto, on additional work incurred in increased accommodation. (D) Measuring off extras and deductions and getting out accounts."

We can only refer our correspondent to our previous answers. He undertook to do certain work on the terms that he should be remunerated by a percentage on the outlay. We have told him what, in our opinion, is the meaning of "outlay" in this particular case. For that work he can get no more than the agreed-on percentage. If he has done other work, not included in the contract under which he became entitled to that percentage, he can claim payment for it.

H. P. B.

Colouring Parchment.

CREDITON.—J. E. B. writes: "How can plans prepared on parchment be coloured so as to get an even tint?"

Before colour is applied to plans on parchment the surface of the parchment should be rubbed over with pounce, which is a white powder, and the colour should be mixed with ox-gall. Both materials can be obtained at an artists' colourman's shop. It is impossible to get the colour absolutely even, and the enquirer may have to go over the work again and again to get a satisfactory depth in tone. Walls are best blacked in in ink.

E. D.

Terms.

DUDLEY.—A STUDENT writes: "Will you kindly tell me the meaning of the following terms in the building trade which I have come across in my reading:—(1) Double-faced moulded skirting; (2) Stone Lime—what is the difference between this and other lime? (3) 'Stubbing'; (4) Steining to wells; (5) Fletton Bricks."

(1) We are unacquainted with the term, which we are inclined to think is incorrectly stated. A double moulded skirting consists of two or more members. (2) "Stone" lime is a London nickname for grey chalk lime, obtained in the south of England from the lower chalk beds, principally from Sussex, Surrey, Hampshire, &c. It is a fat lime, good for use in mortar, but feebly hydraulic. (3) It depends in what connection "stubbing" occurs, but a common meaning for "stubbing" is "grubbing up." (4) Steining to wells means the lining of brickwork, ironwork, &c., to a dug well. (5) "Fletton" bricks are now a well known variety coming from various firms at Fletton Siding, Peterborough. Our correspondent will learn that bricks from various districts sometimes acquire a reputation for certain qualities, and are then called by their place of origin. "Fareham" reds and "Staffordshire" blues are instances.

Cornice.

MANCHESTER.—ANXIOUS writes: "I should be pleased to have your opinion of the brick cornice shown on the sketch enclosed (not reproduced), which is the gable of a villa residence. Should the lines of chimney shafts continue unbroken through the cornice or the cornice be continued through the chimney shaft."

We see no reason for the employment of a cornice here, and therefore advise our correspondent not to use one. The application of cornices has become one of precedent without understanding. In this case, however, the needful line of shade can be obtained by extending the eaves over or the cornice might be replaced by a very flat band of ornament stopped against the chimney shaft. Constructional lines should always be emphasised rather than weakened.

Haig-Brown Memorial at Charterhouse.—A memorial bronze statue of the Rev. Dr. Haig-Brown, for many years Master of Charterhouse, has been erected outside the chapel at Charterhouse School, Godalming. The execution of the memorial was placed in the hands of Mr. Harry Bates, who, however, died before he had completed his task, and it was finished by his pupil, Mr. Henry Poole, under the supervision of Mr. Onslow Ford. Dr. Haig-Brown is represented as seated and wearing his gown. In his right hand is a rough model of the school chapel, an indication of the fact that he was the founder of the new buildings.

No. 17 Fleet Street.—At last week's meeting of the London County Council the General Purposes Committee reported that in regard to No. 17 Fleet Street, commonly known as Wolsey's Palace, which the Council has agreed to purchase and restore at a cost of £27,300, the freeholder was now claiming £21,349 as the amount of the purchase money instead of £20 000, the difference being stated to be the amount of the vendor's expenses and liabilities paid or incurred in pulling down the back and side walls and rebuilding a portion of the party walls, as well as the surveyor's and architect's fees. Having carefully considered the matter the committee recommended that the vendor's solicitors should be informed that the Council was not prepared to authorise the expenditure of a larger sum in the purchase and restoration of No. 17 Fleet Street than that agreed upon in April last. After some discussion, in which several members spoke strongly against such a high price being given for the building, the recommendation was adopted.

Bricks and Mortar.

APHORISM FOR THE WEEK.

"*Remember, therefore, and write it on the very tables of your heart, that you must never, when you have to judge of character in national styles, regard them in the decadence, but always in their spring and youth.*"—JOHN RUSKIN.

The Decoration of St. Paul's. THE following letter, signed by Messrs. J. M. Brydon, John Belcher, A.R.A., John F. Bentley, W. D. Caröe, Edward W. Mountford, Thomas E. Collcutt, Mervyn Macartney, Ernest George, Edward S. Prior, Ernest Newton, J. Oldrid Scott, Leonard Stokes, A. Sugelow, James Brooks, E. R. Robson, Alexander Graham, Basil Champneys and J. J. Stevenson, has been addressed to the Dean of St. Paul's:—"Dear Sir,—Interest in the progress of the works at St. Paul's remains unabated, and it will be a source of satisfaction to all admirers of Wren to find that some portions of the stencilling and some of the wooden rosettes which are attached to the stonework have been removed from beneath the dome. We venture to express the hope that the experiments now in hand will result in the cessation of work which, in our opinion, is out of sympathy with the character of the building and injurious to its dignity. We would specially direct attention to the panels which have been introduced, without reference to Sir C. Wren's intentions, into the spandrels upon each side of the diagonal arches of the octagon. A new and prominent feature is also being added to the building which is open to grave question—namely, the red and gilded iron railing now being placed upon the main cornice. If a railing be necessary in this position to enable the mosaic and painted decorations to be seen we respectfully submit that it should be something extremely light, after the manner of many good examples in Italy, and that it should be devised so as to carefully abstain from affecting the proportions of the building or interfering with the design of the attic. The railing in question seems to us to have both these defects, and in this regard differs from the old railing at the west end, which not only avoids any interference with the architecture, but is a thing of beauty in itself. We trust that this new railing may be reconsidered in greater sympathy with the architectural demands and qualities of our metropolitan cathedral and, if possible, abandoned."

Art Masters. THE twelfth annual general meeting of the members of the Society of Art Masters was held last week in the Lecture Theatre of the Victoria and Albert Museum, South Kensington. The chairman, Mr. W. Wallis, in the course of his presidential address, pointed out that Parliamentary action in connection with their work had centered in the Education Bill, the further progress of which was deferred until next year in order that it might be considered during the recess. The most satisfactory feature of the Bill was the provision making it compulsory on local authorities to spend the whole of the beer money for educational purposes. But therewith arose the anxiety as to the proportions in which the money would be allocated—whether art instruction, hitherto insufficiently subsidised, was to gain or suffer. The importance of art instruction in relation to industries appeared to be most inadequately appreciated by Parliamentarians, and it was of the greatest necessity that their society should do their best to remedy such a state of things. The tendency to look upon schools of art as separate institutions was distinctly on the decline, and they were more and more becoming branches of large schools appearing under the fascinating name of technical schools. There was no want of evidence that in many places workmanship was regarded with greater favour than draughtsmanship. Lectures now appeared to be accepted as the substitute for practical instruction in art. It was essential that governing bodies should include experts and that art masters should have entire control over their departments in order to check retrograde modern tendencies. The report of the council and the statement of accounts having been unanimously adopted, Mr. Shelley was elected chairman for the ensuing year and Mr. Stevenson vice-chairman.

Covent Garden Theatre. IT is proposed to considerably alter and improve Covent Garden Theatre before the next season. Mr. Edwin O. Sachs is the architect, and the alterations are estimated to cost £15,000. The whole of the stage is now being cleared away. The scenery will in future be pulled up and down by electric motive power. The scene dock is being lowered to the street level, while the roof of the stage is being raised 20ft. Formerly one opera only a day could be set, whereas scenery for three operas will next season be hung there, balanced by weights, so as to be easily pulled up or down. The centre of the stage will be one enormous platform, divided into four parts, each worked by electric motors. The new stage will be quite flat, the "rake," of which managers were at one time so proud, being hopelessly old-fashioned. By touching an electric button scenery can be raised without folding; the wardrobe will all be handy on the stage level, and electric elevators will bring "properties" from the rooms above. The electric light also will be entirely rearranged. Important alterations will likewise be made in the auditorium. The side stall entrances will be abolished, and two more pit-boxes will thus be formed. The central entrance and "Fops' Alley" will be retained, and there will be two new exits beneath the pit-boxes on either side of the proscenium. The proscenium itself will be abolished. Lastly, a new asbestos curtain will prevent any danger of fire between stage and auditorium.

Celtic Gold Ornaments. A SUMMARY, prepared by the Treasury, of facts and correspondence with respect to certain Celtic ornaments found in 1896 at Limavady, in the north-west of Ireland, has been issued as a Parliamentary paper. It states that the gold ornaments in question had been found in 1896 by a farm labourer whilst ploughing the lands of Mr. Gibson, near Limavady. They passed into the hands of Mr. Gribbon, a jeweller, of Belfast, by whom they were sold to Mr. Day, a collector of antiquities and a member of the Royal Irish Academy, who sold them in 1897 to the Trustees of the British Museum for £600. In answer to a question in the House of Commons on March 29, 1898, the Attorney-General for Ireland stated that on the facts, so far as he had been able to ascertain them, these articles were, in his opinion, treasure trove and belonged to the Crown. Ultimately a committee was appointed by a Treasury minute, dated October 24, 1898, to investigate the matter, and, in answer to an opinion of the Irish law officers that the ornaments were *primâ facie* treasure trove and the Trustees were bound to give them up to the Crown if required to do so, the Trustees contended that the ornaments had been found in a field which, until the last 60 years, formed part of the bed of the sea; that in these circumstances the articles could not have been hidden with a view to their recovery; and that they are not, therefore, treasure trove within Blackstone's definition of that term. On February 2, 1900, Sir R. Webster, Mr. Atkinson and Sir R. Finlay gave the joint opinion that the question whether the ornaments were treasure trove or not was a question of fact, depending on whether they were originally hidden or merely lost, but even if the evidence before the committee of enquiry was established treasure trove ought to be found in this case; that assuming the ornaments were treasure trove they could be recovered from the Trustees of the British Museum, and that they were not prepared to give an opinion as to whether the Trustees would have any remedy against Mr. Day. With regard to certain additional information which had been obtained as to the place in which the ornaments were found and the circumstances of the discovery the law officers of the two countries gave the following further joint opinion on March 20:—"Upon the facts now stated being established we are of opinion that the articles in question should be adjudged to belong to the Crown as treasure trove." This further opinion was, on May 17, forwarded by the Treasury for the consideration of the Trustees of the British Museum. Sir E. Maunde Thompson, replying, on May 31, on behalf of the Trustees, said they were bound to hold possession of the objects unless the claim of the Crown to them as treasure trove should be legally established. Even if the claim of the Crown to the ornaments as treasure trove should be established it should be a matter for grave consideration whether the rights of the Crown should be exercised by the removal of the ornaments from the national museum of the United Kingdom. The Treasury, on June 15 last, instructed their solicitor to take steps to obtain a judicial decision on the question whether the ornaments are treasure trove.

The New Great Seal. THE reasons for making a new Great Seal within the past year are simply that the wear and tear of the old one, which was engraved in 1878, have superannuated it, and the task was entrusted to Mr. de Saulles, the Mint engraver. The designs were approved by the Queen, and have now been modelled. The seal on its "principal" side represents the Queen seated on her throne, the arms of which are supported by lions. Her Majesty is crowned, vested in a richly-embroidered robe and habited in the royal ornaments with the ribbon and star of the Order of the Garter. In her right hand she holds the sceptre, her left reposes on the arm of the throne. At her feet is an ornamented cushion embroidered with the rose, shamrock, and thistle, placed on a footstool. The throne is adorned with a wreath of laurel confined by a ribbon. On the Queen's right is a figure of St. George, fully armed, and bearing a lance with pennon. On her left stands St. Michael resting on his sheathed sword. The panels supporting these figures bear respectively the sword and scales of Justice surrounded by laurel leaves. The Counter-Seal represents the Queen crowned, mounted on her palfrey, and in the royal mantle. In her right hand she holds the sceptre, in her left the orb. In the field to the right are the royal arms on a shield encircled by the Order of the Garter with its motto. Above is a scroll with the words "Dieu et Mon Droit," and on either side the rose, shamrock and thistle. Below, in the distance, is the sea, with an ironclad and a sailing vessel, suggesting the naval strength and trade of the United Kingdom, which are further indicated at the base by the presence of a trident, dolphins and conventional waves, which are continued in the ornament on either side the lower part of the Counter-Seal. The general treatment is Renaissance.

The Start of the Housing Question. THE housing question, as far at least as the Metropolis is concerned, is, says the "London Argus," of comparatively modern growth. It was no further back than 1844 that the first practical effort was made to grapple with the problem. That year witnessed the foundation of the Society for Improving the Condition of the Working Classes, with the Queen and the late Prince Consort as its most prominent patrons. The objects of the society were very comprehensive. They were: 1st—By arranging and executing plans, as models for the improvement of the dwellings of the poor, both in the Metropolis and the manufacturing and agricultural districts; by establishing the field garden and cottage allotment system, and also friendly or benefit and loan societies upon sound principles, and reporting the results with a view to rendering them available as models for more extended adoption. 2nd—The formation of county, parochial and district associations, acting upon uniform plans and rules. 3rd—The establishment of a system of correspondence by means of which clergymen, magistrates, landed proprietors and others would be encouraged to render assistance in their own districts. Through the efforts of the society model buildings were erected in Bloomsbury, Hatton Garden, Drury Lane, and other parts of London, and in addition valuable work was done in arousing the public to the impor-

tance of an improved system of artisans' dwellings. An offshoot of the movement was the Metropolitan Association for Improving the Dwellings of the Industrial Classes, which was the first organisation to work on joint-stock lines. This body erected in St. Pancras and Spitalfields blocks of buildings which were not unworthy forerunners of the Rowton Houses of our own day.

Local Trading. Cosmopolitanism has been one of the great curses of modern architecture, and we sympathise considerably with the writer of the following letter that appeared recently in the "Sheffield Independent," but still, whatever may be said, materials cannot often be obtained so cheaply from local firms as from large Metropolitan ones, and often local work is not equal to that required. Fairplay writes:—"Allow me to ventilate a matter which is felt by a large body of citizens to be a rank injustice to many Sheffield tradesmen. Taking one of many parallel cases, it is to be regretted that there can be found in the city of Sheffield architects who specify material and fittings (which are required for the various buildings which have been and are now in progress throughout the city) to be supplied direct from firms in other towns, and in many cases actually order the goods themselves, to the great detriment of the local tradesman, thus depriving the builder, the joiner, the ironmonger and other trades of the business and profit they are entitled to. Does the architect, may I ask, pocket the profit himself, which should, in all fairness, belong to others, or why does he specify the goods must be purchased from such and such a firm in Birmingham, Wolverhampton and other towns, the same firms being enriched at the expense of the ratepayers of Sheffield? To say the least, it savours much like some secret commission business. It is to be hoped this kind of unfair dealing will be promptly checked, as it affects directly and indirectly all classes of the community. Those who find the money and those who engage architects will be doing a common duty by insisting in their terms and agreements with them that Sheffield tradesmen get fair play. Let the architects have fair play also, and stick to their profession. Sheffield tradesmen, if allowed, can supply goods equally as well and cheap as outside firms in every particular, and no idle excuse of economy that might be raised in defence can screen those who are guilty of such practices."

Housing in Liverpool. A conference of delegates from trade unions, co-operative societies, places of worship and other bodies interested in the housing problem was held recently under the auspices of the Liverpool Housing Committee. The committee has for its object the promotion of the erection by the municipality of healthy and comfortable houses for the people. The overcrowding difficulty is of long standing in Liverpool, as evidenced by a pamphlet issued in 1871 by Dr. French and the Rev. Charles Beard, in which it was stated that at least one-third of the population of the city lived in houses the arrangements of which were a menace to both morality and health. Of course a great amount of insanitary property has been demolished, but in many cases this has made things worse, because the people who inhabited the condemned dwellings are driven into crowding the immediate neighbourhoods still more. The following resolutions were carried unanimously: "This conference urges upon the Legislature to take the following steps towards simplifying the housing problem:—(1) To confer upon towns and urban district councils full powers to acquire and hold land without their boundaries. (2) To extend their borrowing powers as follows—(*a*) time for repayment of loans to be not less than 80 years for urban districts and 100 years for towns, so far as concerns the portion of the loan allocated to building, and even a longer period for that portion secured upon the sites; (*b*) disabilities contingent upon the extent of existing municipal debts to be removed; (*c*) suspension of sinking fund operations for at least three years to be allowed, or a longer period, subject to sanction of the Local Government Board; (*d*) money to be advanced by the Government at 2½ per cent. per annum. (3) To remove any restrictions as to building upon areas cleared under Parts I. or II. of the Act of 1890, or any other special or general Act. (4) To reform the incidence of local taxation so as to throw a considerable share of the cost of all improvement schemes upon urban land values. (5) To relieve rural district councils from need of any consent other than that of the Local Government Board. (6) To confer powers on all councils to compulsorily acquire land on the basis of assessable value after six months' notice to the owner, with power of appeal on the owner's part. (7) To remove medical officers of health from any other than central control."

Bleak House, Broadstairs. It was recently suggested that Bleak House, Broadstairs, an interesting relic of Charles Dickens, should be purchased by the authorities of Broadstairs and converted into a museum. It is somewhat unfortunate that the name "Bleak House" should have been bestowed upon this building, because it is in no way connected with the novel bearing that name. In an article published in the "Pall Mall Magazine," in July, 1896, Charles Dickens the younger states that not a line of "Bleak House" was written in the "tall house near the Coastguards' station, formerly known as Fort House, although a good deal of 'David Copperfield' was." The house itself is a somewhat singular-looking structure, and the exposed situation has probably dictated its name. The name "Fort House" which it originally bore seems to suggest that it stands on the site of some disused fort—even if it may not have been built out of the remains of a fort.

Reports on Competitions. Mr. Campbell Douglas, writing to the "Glasgow Herald" with reference to the Stobhill Hospital competition, says:—"I think it is a difficult thing for an architectural assessor thoroughly to master the manner in which a number of men have endeavoured to solve the problems set before them, and for future guidance in such matters I should like to make the following suggestion, viz., that in some way or other all competitors might be invited to send in criticisms of the other works, and this would form an exhaustive analysis of competitive designs, such as it has never yet been the good fortune—so far as I know—of any promoters to have had within their reach; and our employers—the public—would reap as much benefit as the profession from this suggestion being entertained; and I do not think the difficulties to be overcome would be insuperable."

New Barrack Accommodation. It is stated that the War Office has decided upon an important and extensive scheme for providing additional barrack accommodation for the British Army on the home station. It is stated that it has been determined to keep the Army at its present strength for some time to come. It is, therefore, intended to provide additional quarters for the auxiliary forces. The programme, so far as it refers to the Western military district, is that new barracks are to be built on the Brickfields at Devonport, and another on the War Office ground adjoining the barracks at Crownhill, about two miles from Plymouth, on the Tavistock Road. The new buildings will consist of hutments similar to, but of much more substantial character than, those at Aldershot, and each barracks will comprise about sixty distinct buildings, including four for officers and thirty-two for non-commissioned officers and men, besides married quarters, recreation rooms, canteens, &c. It is also understood that the War Office authorities contemplate the provision of other quarters in the Plymouth district for a brigade division of Royal Field Artillery, which will necessitate the erection of between sixty and seventy hutments. The new barracks at Devonport and Crownhill are to be commenced at once, and finished by the first week in November.

Professional Practice.

Bristol.—At the last meeting of the general committee for the restoration of Bristol Cathedral, Archdeacon Robeson brought forward a report he had drawn up in conjunction with the Rev. W. Mann and Mr. F. Richardson Cross, the hon. secretaries, dealing with the progress of the restoration. The report stated that at the public meeting which inaugurated the work on June 13th, 1892, the requirements brought before the meeting, and for the accomplishment of which the generous support of the citizens of Bristol was solicited, were as follows:—I. Restoration of the central tower and Elder Lady Chapel. II. The internal rearrangement and fittings of the choir, including (1) The reconstruction of the stalls; (2) Marble flooring and steps; (3) Altar table and communion rails; (4) Reredos; (5) Choir screen; (6) Side screens; (7) Bishop's throne. III. Lighting of the Cathedral. IV. The provision of a new organ. Most of these works had now been executed, and they had contributed greatly both to the permanent solidity of the Cathedral fabric and to the seemliness and dignity of the interior. But as the work of restoration proceeded the extremely dilapidated and even precarious state of the more ancient portions of the external structure, especially on the southern and eastern sides of the choir was forced upon the attention of the committee and of the Dean and Chapter, and they decided to make no further general appeal to the citizens for the completion of the remainder of the interior fittings (such as the reredos with sedilia, the Bishop's throne, the choir screen and the organ) until they could assure them that the building itself was in a sound and substantial condition, worthy of the Cathedral of a great city. This view of the matter was placed before a second public meeting on March 4th, 1896, and the efforts of the Restoration Committee since that time have been directed towards this object. Those efforts were materially assisted by a third meeting on June 29th, 1899. The work has been carried out under the guidance of the late Mr. Pearson by Messrs. Cowlin. Wherever the original stonework was in a sound condition it is stated to have been carefully and religiously preserved. During the progress of the work just described, but independently of the Restoration Committee, a costly reredos has been erected. The committee suggest that the sedilia, the completion of the choir screen, the Bishop's throne, a more dignified pulpit, and an organ more suited to modern requirements may well be the objects of private gifts, or be offered as memorials of distinguished citizens or benefactors of the Cathedral. The total sum contributed amounts to £19,331 17s. 10d. Of this, £13,152 4s. 6d. has been paid to the builders, Messrs. Cowlin and Son. Their work includes the following items:—Restoration of central tower, £4,895 17s. 3d.; Elder Lady Chapel, £1,866 12s. 5d.; northern side of cloisters, £712; and the entire restoration of the exterior fabric of the choir, choir aisles, Berkeley and Newton Chapels and south transepts, with roofs, parapets, pinnacles, &c., £4,490. The reconstruction of the stalls cost £1,407 10s.; the marble flooring and steps, £1,367 15s.; and other internal improvements, £1,125 14s.

Brynmawr.—The new parish church of St. Mary, Brynmawr, was consecrated recently. The former structure, consecrated in 1872, did not long withstand the climatic vagaries of this exposed neighbourhood, for Mr. T. Nicholson, architect, Hereford, in September, 1891, concludes his lengthy report as to its state and condition with the remark:—"Wretched in design, slight and flimsy as a building, beggarly in aspect, this church comes not within the category of structures worthy of restoration; and far gone as it is in general dilapidation and decay, its reparation would be a wasteful expenditure of money, and hopeless would be the task of converting it into a sound and satisfactory state." Steps were taken with the view of rebuilding, and last year the Bishop laid the foundation stone of the new church, which has been built by Mr. J. Jenkins, of Brynmawr, under the

superintendence and from designs prepared by Messrs. Nicholson and Hartree, of Hereford. The first design for the new church was made in 1891, and plans and specifications were prepared, but for various reasons the work was delayed. Ultimately these plans were abandoned, being considered too costly, and in October, 1895, the plans for the present building were prepared. The old church, which consisted of a nave, chancel, west porch, and north lobby, was pulled down to make way for the present structure. The style of the new church is of the Decorated Period, at the end of the 13th and beginning of the 14th centuries. It consists of a nave at present 60ft. long and 25ft. wide, with north and south nave aisles of similar length and 10ft. 8in. wide, all capable of future western extension. An organ chamber is placed on the north side, and a vestry and porch on the south side of the chancel, also a temporary porch on the south side of the nave. The general walling is built of native stone from the Gilwern quarries (the north and south aisles with such stone from the old church as could be utilised), arranged externally as hammer-dressed random-ranged work, the internal treatment being similar, but of a smoother and finer description. The present temporary west wall of the nave and aisles is built of 14in. brickwork, having three of the windows from the old church inserted in it, and owing to its exposed position slate is hung on the outside. The roofs are constructed of wrought open timber framed work, the construction visible internally, boarded over on the upper side of the rafters then overlaid with felt and covered with Bangor slates, the chancel roof, in addition, having moulded ribs, cornice and curved braces. Over the whole area of the building is spread a thick layer of concrete, and thereon laid in the chancel and nave and aisle gangways encaustic tiles from Messrs. Godwin and Hewitt's Victoria Tile Works, Hereford, and under the spaces occupied by the sittings in red deal block flooring. The nave is seated with the benches preserved from the old church, altered and adapted, and the aisles filled with chairs. A large 4-light tracery window occupies the east end of the chancel, and the nave aisle is lighted by 2-light windows, all the windows above the springing of the heads being filled with tracery. A sedilia, credence and piscina are placed in the south wall of the chancel. The pulpit was purchased from the vicar and churchwardens of Sutton, Surrey, and the font from Messrs. Jones and Willis. The future enlargement of the church will comprise the extension of the nave and aisles 17ft. towards the west and the building of the south porch.

Cardiff.—The corner-stones of two new branch libraries for Roath and Grangetown have just been laid. The site of the new building at Grangetown is situated at the junction of Clive Street and Redlaver Street. It will have accommodation for 150 readers and 7,000 volumes in the lending department. The building, which has been designed by Mr. E. M. Bruce-Vaughan, F.R.I.B.A., whose plans were adjudicated to be the best of those received in open competition, will cost £2,750, of which sum £625 has been spent in preparing the foundations. The site itself cost £520. The building is being erected by Messrs. D. Thomas and Sons, contractors. The site of the new library at Roath is at the junction of Four Elms Lane and Newport Road. The building, which is being erected from the competitive designs of Messrs. Teather and Wilson, architects, Cardiff, is placed upon the triangular site in such a way that the wider portion would be retained for future extension. Storage room will be provided for 7,000 volumes, and this can be extended, if found necessary, to shelve 12,000 volumes. There will be accommodation for 200 readers.

Chester.—Mr. Justice Grantham and a special jury recently heard at Chester Assizes an action brought by John Macnamara, architect, Altrincham, to recover certain fees and damages for libel from John Henderson Brown, retired Manchester cotton spinner, residing at Riverside Hall, Altrincham. Mr. Brown is a man of considerable wealth, and on retiring from business he decided to invest, so it was stated, about £30,000 in land and buildings. He commissioned plaintiff to buy land at Altrincham and prepare plans and quantities for the erection of a new Altrincham Post Office and several shops. During the erection of the post office a rupture took place between the parties in consequence of the plaintiff using Accrington bricks where defendant had stipulated for Ruabon bricks, and Mr. Brown summarily dismissed plaintiff. In a letter to a third party the defendant complained that Mr. Macnamara had not treated him fairly, and reflected on his ability as an architect. The jury awarded plaintiff £1,474 for architect's fees and work done and £250 for libel.

Dewsbury.—New premises of the London and Yorkshire Banking Company, Limited, were opened recently, at the junction of Northgate and Corporation Street. Mr. J. Lane Fox, of Bond Street, Dewsbury, is the architect. The premises consist of a banking room, 34ft. by 31ft.; manager's room, 12ft. by 12ft.; fireproof strong room, 10ft. by 12ft., on the ground floor. The whole of the basement is set apart for storage purposes, and is lined with white glazed bricks. The entrance is situated at the junction of Corporation Street and Northgate, the doors being of oak, studded with brass. On the first and second floors there are eight offices, with the requisite lavatories and w.c.'s on each floor. The upper floor contains caretaker's rooms, including living room and two bedrooms. The ground floor is in grey granite from the Aberdeen quarries, the upper storeys being in Holmfirth dressed ashlar with bands of granite. Offices on the upper floor will be let off and known as Bank Chambers, and are reached from a separate entrance from Corporation Street.

Ipswich.—Extensive alterations and improvements are being made to the Tacket Street Congregational Church, Ipswich, the principal addition being named "Langston Hall," in memory of the first pastor. Some small cottages in Cox Lane have been pulled down, thus providing an admirable site of about 12 rods for the new Langston Hall. With respect to the present chapel, the proposal is to take down the part of the gallery now used for the choir, and to place the organ—which was built in the gallery—on the ground floor. The pulpit will be set back about 6ft., and the choir will be seated on either side on the ground floor. The organ, which has already been taken down, is to be enlarged by Messrs. Bishop and Sons. On the site of the building which stood at the rear of the chapel a church parlour, minister's and deacons' vestries, a kitchen and other buildings are to be erected. The church parlour will be 32ft. 6in. long by 24ft. wide, with a recess at one end—raised two steps higher than the main floor level—5ft. deep and 14ft. wide, the approach to the new building being direct from the ground floor. It will be fitted up for holding small meetings, and for carrying on the work of the various organisations connected with the church. The heating chamber is to be considerably improved, a large vault discovered at the back being utilised for the purpose. Externally the church parlour will be constructed in Bath stone dressings and Kentish rag facings to match the existing building. The architects are Messrs. Eade and Johns and the builder is Mr. Fred. Bennett, Ipswich.

Liverpool.—A sitting of the Liverpool Consistory Court was held last week before Chancellor Espin. The most interesting business was the granting of a faculty for the restoration or rebuilding of St. Saviour's, Falkner Square, Liverpool, after the recent fire. All but the outer walls were destroyed by the fire. The plans produced by Messrs. Willink and Thicknesse, architects, showed that while it was proposed to retain the classic style of the old building great improvements and embellishment would be introduced. The restored church would have the chancel and entrance, with baptistery, reversed, another departure from the old structure being the abandonment of the gallery. Thus in the restored church the entrance would be from the west end. There were about 4,000 people in the parish, and the proposed seating for 700 would be sufficient. The estimated cost was £9,500, of which nearly £8,000 had been already raised, the insurance, including the organ, being for £4,800. The Chancellor thought the experience here fortified his injunction in favour of insurance, and yet he had met with a church destroyed by fire which was not insured though it had cost over £12,000. The faculty was decreed in the terms of the citation.—The Rev. G. W. Wall, vicar, was granted a faculty for the placing of stained glass in a three-light window of the north aisle at the cost of Mr. J. Gallagher, J.P., in memory of his two infant daughters.—The Rev. M. F. B. Binney, vicar of St. Nicholas', Sutton, near St. Helens, was granted a faculty for the erection of an oak and tiled lych gate, at a cost of £300, by the vicar's wife, in memory of her parents; and for placing stained glass in two windows, at a cost of £100, in memory of William Blinkhorn, of Sutton Grange, by his widow and daughter.

London.—The Wood Street neighbourhood will shortly be provided with adequate fire protection, in contrast to what has been the case for a long time past. The successive disastrous fires in the district, and finally the Cripplegate conflagration, forced home the importance of erecting a fire station in the area, and in consequence of the representations made to them the Fire Brigade authorities a year or so ago definitely grappled with the matter by acquiring from the trustees the freehold site of Lady Holles School in Redcross Street, E.C., at a cost of £31,000. Upon this site a station, intended to take the place of the one in Whitecross Street, is now in course of erection. It is anticipated that the new building will be ready for occupation by November next. The site has an area of about 4,660ft. super, with a frontage of 90ft. The architect's estimate for the building was £12,062, but on its becoming necessary to erect the building as soon as possible the Works Department of the London County Council produced an estimate of £627 in excess of that amount, and it was decided to build on the latter estimate instead of inviting tenders. The new station will be built to the first floor level of Portland stone with granite plinth, and above the first floor level of red brickwork. The engine room will be 33ft. by 47ft., and will be lined with glazed bricks. It will contain standing room for a horsed escape, a steam-engine and a hose cart ready for immediate use, and the chief run out will be exactly opposite Jewin Street. The stabling for six horses will be at the rear of the engine room, with a "run in" central with the horsed escape. Through and top ventilation will be used and the room will be well lighted. The watch room will have a floor area of 180ft., and the recreation room an area of about 400ft. super. The staircase over will lead into the engine room, and the lift will be in the staircase well. A well-fitted laundry, a battery room, 14 coal cellars, a large cellar for the station officer, a workshop, an oil store, storage of wood and a cellar for steam coal will be in the basement, but the space beneath the steam-engine and the horsed escape will be solid to prevent the horses from being frightened at the hollow sound usually experienced with basements. The first floor will contain officers' quarters, quarters for coachmen, and a common bath room; while the other floors will provide excellent accommodation for the men, with two common bath rooms, &c.; and the roof over the stables will form a drying ground and playground. The building, which will be lighted throughout by electricity, is being built under the direction of the superintending architect to the L.C.C., Mr. W. E. Riley.

Prestatyn.—The new public hall for the seaside town of Prestatyn was opened recently. The building is conveniently situated in High Street, about a hundred yards from the station, and the façade includes several shops, with rooms over them which are intended for the Liberal Club. A tower 40ft. high surmounts the entrance to the hall, a wide vestibule leading by two doorways into the floor of the hall and by a short staircase to a gallery constructed over about one-third of the floor space. By means of what may be termed "aisles" the

floor space is considerably increased, and the clerestory is supported by two arches and is pierced by three windows on each side. The platform is partly within an arched recess, the exits from it to the ante-rooms being ingeniously concealed behind the wall from which the arch springs. Ample and convenient ante-rooms are provided, there being communication between all of them and the stage. Provision is also made for the use of the building for dinners, tea parties, &c. The hall is well lighted and ventilated, and may be heated by a high-pressure hot-water apparatus. It will seat about 800 persons. Mr. Thomas Jones was the designer and builder.

Stockport.—The Stockport Guardians have adopted the report of a special committee on the proposed new infirmary. The following resolutions were adopted by the board, viz.:—1. That the new infirmary be erected upon the northern side of the site at Stepping Hill. 2. That the buildings consist of a central administrative block, containing the necessary offices, with residential quarters for the medical officer, steward, matron, and the general staff, also kitchen, stores, boilerhouse, &c., sufficiently large for an infirmary of ultimately about 500 beds. That two double pavilion blocks—one on each side of the central or administrative block and connected therewith by a central corridor—be erected; the block for males to accommodate about 156 beds and that for females and children to accommodate about 166 beds. That a separate block (30 beds) be erected as a home for the nursing staff, and that in addition porter's lodge, receiving wards, patients' clothes stores and mortuary be erected. 3. That the buildings be lighted by electricity. 4. That a communication be addressed to the Local Government Board asking for their general approval of the scheme proposed by the committee. 5. That upon receipt of the Local Government Board's general approval the board invite competitive plans for the erection of an infirmary of the size and description indicated at a cost not exceeding £130 per bed; and that in submitting designs the architects be requested to adhere as far as possible to the recommendations contained in the committee's report. The committee, in accordance with the instructions of the board, submit the names of the following six architects who should be invited to submit competitive designs, viz.:—Messrs. Mangnall and Littlewood, Manchester; Mr. W. H. Ward, Birmingham; Messrs. W. and Segar Owen, Warrington (architects Warrington Union Infirmary); Mr. Arthur Marshall, Nottingham (architect Wolverhampton Workhouse, Nottingham Workhouse); Messrs. Giles, Gough and Trollope, London (architects Bethnal Green Infirmary, Central London Sick Asylum Hospitals, &c.); Messrs. Newcombe, Morton and Knowles, Newcastle-on-Tyne (architects Gateshead Workhouse).

Tullibody, Clackmannan.—A new public hall for meetings and social gatherings is to be erected for Tullibody and Cambus. It is intended to include in the building a reading room, library, and recreation room. The hall will be erected on a convenient site at the head of the Cambus Road leading to Tullibody. It will have accommodation for 250 persons. A small wing at the rear of the extreme north-west corner will contain well fitted up retiring rooms for ladies and gentlemen, besides a lobby and separate entrances to the platform. The cloakrooms, with lavatories adjoining, are to be placed on either side of the entrance hall, while the reading and recreation rooms will enter from the corridor off the main entrance. The large hall will be heated by hot-water pipes and the other rooms by open fire-grates. It is estimated that the erection of the building will cost about £1,400. The architect is Mr. G. A. Kerr, of Mar Street, Alloa.

Whitechapel.—The refuse destructor erected by the Whitechapel District Board of Works in Wentworth Street was opened last Thursday and the foundation stone of an electricity supply station laid. Hitherto there has been a temporary electric station, and the installation has only sufficed for partial public lighting. The new building will meet demands for electricity, not only for increased public lighting but for private illumination and motor purposes. Altogether £100,000 has been borrowed to cover the cost of present buildings and future extensions. The refuse destructor has been built by Messrs. Manlove, Alliott and Co., Nottingham, under the supervision of Mr. M. W. Jameson, engineer to the Whitechapel Board, who is also designer of the electric supply station. It has been constructed on the most approved modern principles, and will not really cost the ratepayers a penny. This happy result is worked out by valuing the steam supplied its neighbour at £3,125 a year. Coal, based upon present prices, would doubtless make the figure much higher. Then there are the residuals useful for road-making and builders. The destructor consists of twelve cells, each of which is guaranteed to consume not less than 10 tons of refuse every 24 hours. The heat thus produced is to be used to work six boilers, each evaporating not less than 2,000lb. of water an hour, and the steam obtained is to be employed in driving the electric lighting machinery. The destructor, however, does not afford all the steam that is required, hence eight Babcock and Wilcox boilers are also to be installed. The electrical equipment is by Messrs. Mather and Platt.

Winchester.—William Burrough Hill, architect, High Street, Southampton, recently sued George Ayling Barnard, architect, of Winchester, for £8 8s. 8d., the balance of fees due for professional services rendered as a witness in a recent action. For the plaintiff it was stated that the action was the outcome of a case heard in Winchester, in which, after three days' hearing, His Honour gave judgment for the present defendant. The claim was against a Mr. Hutchens for an architect's bill, and carried with it costs on the £20 scale. Mr. Hill was the chief witness called on Mr. Barnard's behalf, and had to rebut the evidence of two other architects. Mr. Hill now claimed at the rate of 5 guineas per day and 3 guineas for a qualifying fee, which Mr. Barnard contested. Offers had been made to submit the matter to any architect Mr. Barnard might select, but that gentleman had declined. Mr. Hill, in his evidence, stated that for expert evidence of the kind he was accustomed to receive 10 guineas per day. There were a lot of accounts and plans to be dealt with in the action. Defendant had telegraphed asking him if he would accept half the fees in the event of the action being lost, and he had refused. Defendant stated that in the action he recovered £37. Mr. Hill's charges were £19 18s. 6d., which he considered excessive. Three guineas a day was quite sufficient for the work he did. His Honour, in giving judgment, said that he had never heard of such a disgraceful attempt to get rid of liability which had been incurred. He, as the Judge who tried the case, felt it right to say from the Bench—and he thought it ought to be said in justice to Mr. Burrough Hill—that until Mr. Hill's evidence was given in court he (the Judge) was very much prejudiced against the then plaintiff in that action. If it had not been for the high standard of Mr. Burrough Hill, and the opinion he was able to give of the difficulties and details of those plans, he (the Judge) would have most materially cut down Mr. Barnard's claim in the action, and he would have got considerably under £10. After correspondence and interviews, for Mr. Barnard to dispute the claim of Mr. Burrough Hill was inconceivable, and he regretted very much to see such a step taken by any gentleman who put himself forward as being in the profession of an architect. He believed that the defendant was not a member of the Institute of Surveyors, and therefore he was glad that it did not reflect in any way on the Institute. The plaintiff had shown a praiseworthy reluctance in bringing the case into court, and defendant had evidently relied on Mr. Burrough Hill's disinclination to come into court and, putting it vulgarly, wash the dirty linen. Judgment entered for plaintiff, with costs.

The Rebuilding of Mafeking Church.—Mr. Francis R. T. Balfour, Canon of Bloemfontein, calls for contributions for this worthy purpose. The rectory was destroyed during the siege, and the church seriously damaged.

Surveying and Sanitary Notes.

Letting Infected Houses.—Taking houses or lodgings for holiday purposes being very general just now the "Law Times" directs attention to the very stringent statutory provisions which have been made for the benefit of the public and their protection against infectious diseases. It is enacted by Section 128 of the Public Health Act, 1875, that any person letting a house or room which has been occupied by any person having an infectious disorder without having the house or room properly disinfected is liable to a penalty of £20, and Section 129 of the same Act enacts that "any person letting for hire or showing for the purpose of letting for hire any house or part of a house, who, on being questioned" by any intending tenant "as to the fact of there being or having been therein for six weeks previously any person suffering from any dangerous infectious disorder, knowingly makes a false answer, shall be liable" to a similar penalty or to a month's imprisonment with hard labour. The adoptive Infectious Diseases Prevention Act, 1890, s. 7, respecting the obligation to disinfect, may also be usefully referred to by lodging-house keepers.

Vestries and Public Improvements.—The case of *Gibbon* v. *The Vestry of Paddington* came before Mr. Justice Stirling in the Chancery Division last week. In this matter the vestry sought, under powers given by Act of Parliament, to take compulsorily certain portions of four shops belonging to the plaintiff in Moscow Road, Bayswater, for the purpose of public improvement by widening the road. They duly served notice to treat upon the owner, and negotiations ensued, but the parties could not come to an agreement. Subsequently, the vestry decided only to take part of the premises, but the plaintiff objected, and contended that if they took part they were legally bound to take the whole. Mr. Justice Stirling said he was bound by previous decisions, in which it had been held that if a substantial part of the premises was taken for such a purpose, so that the portion remaining could not be used for the purpose for which it was intended, the owner might compel the vestry to take the whole. He held that in this case a substantial portion would be taken, and therefore the owner could compel the vestry to take the whole. Judgment for the plaintiff accordingly.

Death-rate in Model Dwellings. — The medical officer of health for the parish of St. Martin-in-the-Fields has recently presented to the vestry a very significant report on the sanitary condition of Turner's Court, leading off St. Martin's Lane. The court consists of eleven old houses, which accommodate no fewer than 155 persons. Light and fresh air are wellnigh excluded from the lower rooms of four of the houses by a high wall but 4ft. 3in. distant, and all the houses need constant supervision to keep them habitable. It is not surprising therefore to find that the death-rate in this court is abnormal, and the following table of death-rates is instructive:—

	Turner's Court.	Peabody Buildings.	Whole of Parish.
1895	38·7	12·3	16 5
1896	64·5	12·3	16 2
1897	83·9	17·6	15·2
1898	19 4	8 8	14·4
1899	32·3	15·8	14 1
Average for five years ..	47·8	13·4	15·3

Walthamstow's New Park.—Last Saturday week Mr. Sam Woods, M.P., formally opened the new recreation ground adjoining "The Winns" Manor House in Forest Road, where William Morris was born. The grounds cover an area of nine and a half acres, and abound in spots of sylvan beauty. There is an ornamental lake. A children's playground is to be added, fitted with a gymnasium, a gardener's lodge is in course of erection and a pavilion is being built in the cricket ground, which will

contain accommodation on the ground floor for refreshments, while dressing-rooms, bath-rooms, &c., will be provided. The house is a plain but roomy building, believed to date back to 1760, and it is intended to convert it into a technical institute or museum. Meanwhile it is to be thoroughly repaired, a verandah will be constructed along the whole length of the back of the house, one of the largest chambers will be converted into a refreshment room, another will be used as a branch library and a third as a reading room. The additional property purchased by the District Council cost £4,000 and £7,000 is being expended on the various additions and improvements. A set of public baths were also opened by Mr. Woods. The baths are situated in the High Street, and have been erected at a cost of about £15,000 upon land bought by the Council for £400 nine or ten years ago. The swimming pond is 130ft. long by 35ft. wide, and there are also eight first-class baths for men, fourteen for women, a number of second-class baths, two club-rooms, and numerous offices. In the winter the swimming bath will serve as a public hall, with accommodation for 2,000 persons.

Builders' Notes.

Housing at Birmingham.—At the last meeting of the Birmingham City Council it was decided to purchase land in Yardley Road for the erection of workmen's dwellings. It is proposed that these shall take the form of flats.

Building at Linlithgow.—The Dean of Guild Court passed the following plans last week:—Compounding shed and boiler house proposed to be erected by Nobel's Explosive Company on their property at High East Port; a billiard room proposed to be erected by Mr. McCombie of St. Michael's Hotel; cottage, proposed to be built by Mr. Meek, shoe merchant, on land bordering on the Bo'ness Road.

Collapse of Buildings in Flookburgh, Cark.—A couple of unusual accidents occurred recently. Messrs. Blair, builders, are engaged in building a storehouse, and had got to the height for the roof beam to be laid on to the wall. For some cause or other the outer wall suddenly collapsed, the beam and about 4 square yards of wall falling with a crash. About seven men were working at the time, and one or two had narrow escapes. The other case of collapse was the roof of Messrs. Butler's smithy. It was found that one of the principal ribs had given way, and the strain thus produced had broken the other beams. The great top stones and rigging fell no further than the first room.

The Death of Mr. James Binnian, of Kidderminster, occurred recently, at the age of 86. Mr. Binnian was a native of Kidderminster and the son of a Mr. William Binnian, builder and contractor, who went to Kidderminster in the early years of the present century from Wales. After leaving school he was apprenticed to the building trade. When his apprenticeship was completed Mr. Binnian spent a short time in Birmingham. More than sixty years ago he joined his father in business, the firm being known as Messrs. William Binnian and Son. Upon the death of his father Mr. Binnian carried on the business himself, and early in the "sixties" he took into partnership his son Thomas, the name of the firm being changed to James Binnian and Son. The business has been carried on in the same place in Mill Street for more than seventy years. The firm had a full share of the building work in the district, and Mr. Binnian was once elected Mayor.

Damage to a Telegraph Line.—Sheriff Reid has decided an action in Edinburgh Small Debt Court which is the first of the kind in Scotland. The Postmaster-General claimed £9 8s. 1d. from Adam Loch, contractor, Shandwick Place, Edinburgh, in respect of damage done to the telegraph line below a street in Leith, where defendant was carrying on building operations. Plaintiff alleged that the telegraph line was melted by the heat from a tar boiler which defendant was using. It was contended for the Postmaster-General that, under the Telegraph Act, Mr. Loch was liable, and authorities from the English Courts were quoted in support of the contention. On the other hand, the defendant pleaded that in respect he did not know that the telegraph line was there he should not be held liable. He had only carried out his operations in accordance with the recognised custom of his trade. Sheriff Reid held that defendant was liable, and gave a decree for the amount claimed.

Injured by a Falling Wall.—At the Birkenhead County Court, before His Honour Judge Gwynne James, John Hamilton and Eleanor Hamilton, his wife, of Birkenhead, sued George Henry Morris, of Birkenhead, for injuries received by a wall falling down. The evidence went to show that defendant was the owner of a wall abutting on Mr. and Mrs. Hamilton's premises in Holt Terrace, Birkenhead. This wall was in a very ruinous state, and threatened to fall down at some time or other, being thus dangerous to passers-by. Mr. Hamilton drew defendant's attention to the wall, and suggested that it be attended to. Defendant said that he did not want to repair it just then; he was negotiating with the Birkenhead Corporation for the sale of the wall. The climax was reached when the wall fell, and injured Mrs. Hamilton, who had to be attended by the doctor for seven weeks. His Honour, in giving judgment, said that it was time something was done to make the wall safe. He awarded £15 damages to complainants, and costs.

An Arbitration Case.—At Haverhill County Court, before His Honour Judge Bagshawe, Q.C., William George Jarvis, builder, of Clare, sued Robert Free, maltster, Mistley, for £33 13s. 1d. for work done and materials supplied. For the defendant it was stated that by agreement the parties referred the matter to arbitration. The arbitration was held by Mr. Grimwood, of Sudbury, but the defendant had no opportunity of being represented, no notice having been given him, and he applied at the Divisional Court, where an order was made setting aside the award. It was contended, however, that the agreement to refer to arbitration still stood, and defendant was quite willing that it should. The plaintiff urged that the award having been made the agreement was put an end to. His Honour thought it would be highly improper to remit the case back to the gentleman whose award had been set aside, and he suggested that a fresh arbitrator should be appointed, to be agreed upon between the parties, and this arrangement was accepted.

Case of a Board-school Wall.—At the Portsmouth County Court recently His Honour Judge Gye had before him a case in which the plaintiff was Mr. W. H. Collins, who is the occupier of a piece of land in George Street, Buckland, and he claimed £50 damages from the Portsmouth School Board, the possessors of an adjoining piece of land, for alleged wrongful interference by the erection of a wall overhanging his land, and also asked to have the wall pulled down, and for an injunction to restrain the defendants from continuing to interfere in his use and enjoyment of the land. The wall round the board school in George Street bulged and hung over the plaintiff's ground adjoining; in order to keep this wall from falling over altogether, struts were erected upon the plaintiff's land. As a result of the placing of these struts, which was done during the absence of the plaintiff, his building work was claimed to have been interfered with. The defendants contended that it was idle for the plaintiff to say that he had sustained damage. Plaintiff could have built on the land during the period in question, but did not do so simply because his men were employed on another contract. There was, it was contended, no damage upon which the plaintiff could put his finger. By October everything that the plaintiff could complain of had been remedied. The jury returned a verdict for the defendant board, and costs on the higher scale were granted.

Show-case or Structure?—At the Lambeth Police Court last week, W. H. Ricketts, a builder, of Bedford Road, Lambeth, was summoned by the London County Council for unlawfully retaining a structure to which Part 7 of the London Building Act, 1894, applied. The defendant, in the early part of last year, put up a large show-case in the forecourt of his premises. The attention of the Council was directed to the matter, and a notice was served upon the defendant under Part 7 of the London Building Act, which provides that wooden structures are not to be erected without a licence from the Council. A second notice was served upon the defendant under Part 3 of the Act, the structure being beyond the general line of frontage. The defendant then wrote to the Council saying he was not aware that such structures were not allowed by the Council, and asking them to allow it to remain for a time, to enable him to dispose of it. He called attention to the fact that the case was quite empty, and was labelled for sale. The Council replied allowing defendant two months from November 13 for the removal of the structure. Nothing more was heard of the matter until April last, when the Lambeth Vestry drew the attention of the Council to the fact that the defendant was retaining the show-case in his forecourt, and was using it for the exhibition of various builders' requisites. These proceedings were afterwards instituted. The case was 8ft. 4in. long, 6ft. 6in. wide and 10ft. high. Evidence was called on both sides, the defendant stating that the notice, "This case for sale," had been on the case all the time. It was not fixed in any way to the premises. The articles which it contained were simply stored in it. He was still trying to sell the case, which he did not require for any purpose of his own. In the result decision was given in favour of the Council, and an order made to remove the structure within 28 days. The defendant was also ordered to pay a nominal penalty of 3s. and £2 2s. costs.

Breach of By-Laws.—At Stratford, James Lees Thompson, builder, of 25 Upper Road, Plaistow, was recently summoned by the Barking Urban District Council for committing a breach of one of their by-laws which requires builders to give notice to the Council of the completion of any buildings within a reasonable time. Some of the houses built by the defendant, and numbered from 50 to 70 Cook Street, Barking, had been occupied since February 3rd, and up to the time of the trial no notice, it was stated, had been given to the Council. The defendant had been written to on several occasions, pointing out that a breach of the by-laws had been committed, but these letters had been ignored. Defendant pleaded guilty, but said he had sent a verbal notice to the Council. The Bench inflicted the maximum penalty of £5 and costs 9s.—At the Kirkham Petty Sessions John Wilkinson was summoned by the Fylde Rural District Council for erecting a building before depositing plans, and with using the said building as a house. For the Council it was stated that the defendant had erected several buildings in the district. Some time ago he built a laundry at Marton Moss. He presented plans for an addition to this and for three dwelling houses. Sanction for these was refused. He then proceeded to build, but not in accordance with the plans, and the addition was used as a dwelling house. The Council asked for a daily penalty in that case, but was willing that it should be suspended for fourteen days to give defendant time to get a house. For the defendant it was stated he intended the additions to the laundry to be a retiring room for the workers. The defendant let the laundry to another man, who did not require the additions, and thought they might be used as a dwelling house. It had been arranged that the house should be given up as a dwelling house, and hope expressed that the defendant would be considered ignorant of the by-laws. A fine of £1 and costs was inflicted in the first case and £1 and costs in the second, with a continuing penalty of 10s. a day, to be suspended for 14 days. Costs were also allowed.

Purchase of a House.—The case of *Metcalf* v. *Hosegood* came before Mr. Justice Stirling in the Chancery Division last week. This was an action for rescission of a contract to purchase Thorney House, Palace Gate, Kensington, and some adjoining land at the price of £88,000. The action arose in the following circumstances:—The property in question was conveyed to the defendant by a deed dated

February 1, 1898, and part of it was subject to certain restrictive covenants. The defendant, shortly after he purchased the property, commenced building operations with a view of erecting flats upon it, but encountered some difficulties in prosecuting his undertaking. He had a dispute with the London County Council as to the building line, which, however, was ultimately adjusted. He had another dispute with the trustees of the late Sir John Millais, the owners of an adjoining house, as to the access of light. He fell ill, and partly for that reason, partly through some financial difficulties, discontinued the building operations which he had begun. Lastly, on December 7, 1898, a gentleman named Rogers and the trustees of Sir John Millais brought an action against him (*Rogers* v. *Hosegood*) to restrain him from erecting flats on the site of Thorney House and the adjoining plots of land, on the ground that such erection would be a violation of the above-mentioned restrictive covenants. The pleadings in that action were completed, and the action set down for trial in May, 1899. In the spring of 1899 a Mr. McManus interested himself on behalf of the defendant in the sale of this property. On May 1 he had an interview with Mr. Farmer, an estate agent in the City, and asked him to submit the property to the plaintiffs, who carried on business as architects and surveyors, as one suitable for the erection of flats. At the meeting McManus produced to the plaintiffs plans and particulars of flats to be erected on the site. The plaintiffs' then entered into negotiation for the purchase of the property, with the view of erecting flats thereon. During the course of the negotiations the plaintiffs' solicitor had produced to him an abstract of the deeds containing the restrictive covenants. He also obtained the opinion of counsel on the covenants. The plaintiffs' case was that at no time during the negotiations was the existence of the action of *Rogers* v. *Hosegood* brought to their notice, but that, on the contrary, they were expressly told by McManus, in answer to inquiries on the subject, that there was nothing to prevent the building of flats upon the property. Ultimately the agreement for sale and purchase was entered into, and a deposit of £1,000 was paid by the plaintiffs. On November 21, 1899, the present action was commenced on the ground that the existence of the action of *Rogers* v. *Hosegood* had been concealed from the plaintiffs in circumstances which amounted to a misrepresentation of fact entitling the plaintiffs to avoid the contract. Mr. Justice Stirling, in giving judgment, said that he accepted the plaintiffs' version of the case, and found that McManus had represented to the plaintiffs that there was nothing to prevent a block of residential mansions from being built on the site. That was an untrue statement of fact, because the existence of the action of *Rogers* v. *Hosegood* did prevent the erection of such a block. His lordship further found on the evidence that the statement was untrue to the knowledge of McManus. It was said, however, that the representation was not material, because the existence of the restrictive covenants was disclosed. In his lordship's opinion it was material, notwithstanding such disclosure. At the time when it was made the plaintiffs and McManus were discussing the purchase not as lawyers (there was no lawyer present), but as men of business. The representation was that there was no obstacle to proceeding with the building of flats such as would have arisen from the opposition of the London County Council as to the building line or Sir J. Millais's trustees as to light. If the existence of the action had been disclosed his lordship could not doubt that it would have affected the decision of the plaintiffs, as men of business, whether they would or would not enter into the contract. His lordship further came to the conclusion that McManus must be treated as the defendant's agent, and consequently that the plaintiffs had made out a case for rescission of the contract.

Additions to Abbeydore Workhouse, entailing an expenditure of £2,865, have been approved by the Local Government Board. Messrs. W. P. Lewis and Co. are the contractors for the work.

Keystones.

A Memorial Window at St. Andrew's Church, Bristol, has been erected.

A New Academy at Linlithgow is to be erected. Mr. Fairley is the architect.

The Glasgow Central Stores, Limited, are erecting a large block of premises in Argyll Street, Glasgow.

One Hundred and Fifty Workmen's Dwellings at Edinburgh are being erected between the High Street and Cowgate.

A Clock Tower and Drinking Fountain has been erected at Maidenhead in commemoration of Her Majesty's Diamond Jubilee.

A Memorial to the late Mr. W. O. Foster, of Apley Park, Bridgnorth, is to take the shape of an institute for science, art and technical classes.

Workmen's Dwellings at Liverpool are proposed to be erected in Kempston Street, Gildart's Garden's and Fontenoy Street. The City Council will ask the Local Government Board for permission to borrow £30,000 for the purpose.

The Bristol Society of Architects held their annual excursion last Monday week. Cleeve Abbey was first visited. At Dunster the members partook of lunch, after which they visited the Castle and church. Dinner was had at Minehead.

A New Soldiers' Home has been opened at Warley by Major-General Sir William Gatacre for the men quartered at Warley Barracks, Brentwood. The establishment of the institution is mainly due to the efforts of Mrs. Stephenson, wife of General Stephenson.

The Ruskin Exhibition at Coniston has been very successful in its first week. The wiping-off of the old debt remaining on the Coniston Institute is assured, and sufficient is expected to be realised to raise an architectural monument to Mr. Ruskin in the form of a museum.

The Present Gaiety Theatre and Restaurant will be demolished in the next year or two in connection with the Holborn to Strand Street. The work of building their successors will be begun as speedily as possible on the site of property lying between New Church Court and Catherine Street, Strand.

Ripon Town Hall has been re-opened after extensive improvements from the designs and under the supervision of the City Surveyor, Mr. W. Edson. The plaster, tile and mosaic work has been done by Mr. W. F. M. Blackburn and the joiner's work, glazing and painting by Mr. E. Johnson, both of Ripon.

Restoration of Hessle Church.—Structural and other alterations are about to be made in the old parish church of Hessle, by which it is hoped that some of the architectural features of the church at present obscured will be opened out, and increased accommodation secured in the interior of the building.

New Law Courts for Leeds.—It is proposed to erect in Leeds new law courts. Birmingham has expended on law courts, exclusive of the value of the site, upwards of £113,000. Leeds is urged to act on the same lines, providing a new site for law courts and devoting the Town Hall to municipal purposes.

Art Library for Liverpool.—The Liverpool City Council have accepted a bequest under the will of the late Hugh Frederick Hornby, cotton broker, of a valuable art library and a collection of engravings, autographs, &c, for the use of the public, together with £10,000 to assist in providing a suitable building for the collection.

St. Illtyd's Church, Llantwit-Major, was opened last week after undergoing restoration in its western part. The fabric has been restored as closely as possible to the original Early English architecture. The restoration has been carried out from plans prepared by Mr. Halliday, the diocesan architect, and has cost nearly £11,000.

A Ruskin Memorial Tablet.—The Society of Arts is about to set up one of the society's memorial tablets on the house, 54 Hunter Street, Brunswick Square, W.C., in which John Ruskin was born. The necessary permission has been obtained from the ground landlords (the board of the Foundling Hospital) and the lessees, and the tablet will be erected as soon as it has been prepared.

Isolation of the National Gallery.—In answer to Lord Balcarres in the House of Commons last Friday, Mr. Akers-Douglas said the purchase of property, with a view to creating a clear space of not less than 40ft. wide to the west of the National Gallery, had been agreed to, in principle, by the Government and the vendors; and negotiations were now in progress as to the settlement of the price to be paid. The purchase should be shortly completed.

Bangor Cathedral Undermined. — Bangor Cathedral was recently the scene of a startling incident. During the service the sacristan discovered that near the west end of the building the tiled floor was opening and gaping all around him. The sermon was stopped and the congregation dismissed. The phenomenon is supposed to have been produced by the recent heavy rainfall and the great heat combined. It is, however, significant of the treacherous character of the cathedral subsoil, and, to a certain extent, justifies the fears of some people as to the safety of the venerable structure.

Ironwork in Catherine Court.—An attempt is being made to destroy the remains of a gateway of Catherine Court, in Seething Lane. It is a good specimen of Renaissance ironwork. The tenants are attempting to stop the breaking down of it. The agent's pretext or reason for doing away with it—if not altogether, at any rate from the spot where at present it proves a refreshing relief from the surrounding ugliness—is that the gate is rotten, and consequently dangerous. There are half-a-dozen means of arresting, or at any rate neutralising, the decay and of making the structure safe.

Roman Potter's Kiln Discovered. — Mr. Thomas May, a Warrington antiquary, states that a discovery of a very interesting character, from an archæological point of view, consisting of a Roman potter's kiln and a large deposit of potters' waste, has just been made at Stockton Heath. The potters' waste was mixed with soft clay and charcoal, and was at a distance of 4ft. to 6ft. east from the fire-holes, and about 3ft. below the sod. The whole mass was about 5ft. long, 3ft. wide and 2ft. 6in. deep, and it included fragments of urnæ (jars), mortaria or pelves (mortars), patellæ (dishes), ampullæ (water bottles), urcei (pitchers), &c., in common soft red and black or smoke-tinted (Upchurch) ware, and a few pieces of grey and indented ware.

New Mission Church for Leeds.—At Burley a new mission church at the foot of Cardigan Terrace is being erected. The foundation stone of this church—to be known as St. Columba's Mission Church—was laid last week. The cost is estimated at about £2,000, of which some £1,310 is already promised. Mr. Percy Robinson, the architect, of Leeds, has designed a structure of brick in the Gothic style to seat 500. In addition to the church, a schoolroom with kitchen and ante-rooms, as well as a bell-turret at the west end of the building, are provided for. The contracts are let to Mr. J. T. Wright, Leeds (bricklaying); Messrs. J. Ledgard and Son, Ventnor Street, Leeds (joinery); Messrs. Mountain and Son (plastering); Mr. A. Ackroyd (painting); and Messrs. Teal and Somers (heating apparatus).

Sir W. B. Richmond on Art.—Sir W. B. Richmond, R.A., opened the second annual fine art exhibition in Sayes Court Hall, Deptford, last week. He said it was his strong belief that art in its various forms was the expression of a nation's greatness or its littleness. No great people that had ever lived had been without their literary, musical and artistic characteristics, and it was a striking proof of the greatness of England that it had produced the greatest landscape painter the world had ever seen. He much regretted that so little attention was paid to the artistic education of

the average man. Art, in his opinion, was inherent in the race, and there was not the slightest reason why the teaching of drawing should not be held to be of as much importance as the teaching of reading and writing.

Malmesbury Abbey Restoration.—The work of the restoration and rebuilding of this venerable structure is proceeding steadily. The work is being carried out in three sections, two of which are partially accomplished. The first and most important task was the restoration and strengthening of the six bays of the eastern portion, which are used as the parish church, and in this was included the preservation of the ruined remnants of the original east end. In the second section the chief object was the reparation of the south-west buttress, necessary for the stability of the edifice. These works, it is anticipated, will involve an outlay of £10,000, and a similar amount will be needed to fill up the yawning chasm between the existing nave and the west front. It was by the fall of the west tower in pre-Reformation times that the three western bays of the nave were destroyed. The present abbey dates from the twelfth century, but a church had been built on the same site five centuries before.

English-made Clock for Toronto.—At the Bell Foundry of Messrs. Gillett and Johnston, Croydon, last week, a third bell to be put up by the Municipal Corporation of the City of Toronto to commemorate the completion of the New City Hall Buildings, which were begun in 1889 and finished in the year 1899, was cast. The competition for the work had been first thrown open to the world, and then confined at the second stage to three English firms, of which Messrs. Gillett and Johnston were successful. The clock is to have four 20-feet faces and three bells; the hands are to be of copper, the minute being 9ft. and the hour 5ft. long; the frame of the works is 9ft. by 3ft. Of the bells, three in number, the largest was cast a fortnight ago, and weighs 5 tons 7 cwt., having an inscription setting forth the reason of its erection, and containing in all over 700 letters. The bell is 6½in. in thickness at the sound bowl, the diameter being 6ft. 8in., and 6ft. in height. The middle bell weighs, or will weigh, 27 cwt., and the bell cast last week is to weigh 18 cwt.

City and Guilds of London Institute has conferred the diploma of "Associate of the City and Guilds of London Institute" on the following matriculated students who have this year successfully completed a full course of instruction at the City and Guilds Central Technical College:—Civil and Mechanical Engineering, R. Freeman (Siemens Medal), J. M. Bowrey, A. Bromley-Smith, J. F. Butler, A. H. Clark, W. H. C. Clay, R. H. Collins, A. E. Culley, F. Dennis, B. M. Duke, C. W. Jones, A. J. Knight, S. Leslie, A. J. Munro, F. Osbourn, W. J. Rusdell, J. W. M. Topley, H. B. Unwin and J. A. Wickham. Electrical Engineering, T. L. James (Siemens Medal and premium), V. M. Allen, F. C. M. Berge, J. H. Brown, H. Burgh, H. H. Crockford, B.A., W. A. Del Mar, E. Fawssett, P. Good, S. Gowan, H. J. Humphreys, A. P. Hutchinson, H. L. E. Kennard, W. J. Line, F. G. Maunde-Thompson, G. H. Montgomerie, J. A. Parker, H. J. Thomson and M. A. Wood. Chemistry, E. J. Denney, P. V. Dupré, J. A. Fortesquieu, J. B. Gall, T. H. Page, T. R. Starkey, J. H. West and W. B. Woodbridge.

Crystal Palace School of Art (Ladies' Division) held its annual distribution of prizes recently. This year the school has been removed from the north to the south end of the Palace, where better light and much more accommodation have been secured, and the change has given general satisfaction. The art work of the students was exhibited in the classrooms. The scholarship for the year 1900-1901 was awarded to Miss Constance Bright, who also won the medal for portrait or costume painting. The following other medals and certificates were presented:—For drawing from life or modelling from life, Medal, Miss Isabel Ritter, who likewise obtained the certificate in the class for portrait or costume painting; certificate, Miss C. Bright. For drawing or modelling from antique, Medal, Miss Isabel Ritter; certificate, Miss C. Bright. For painting, landscape, animals, &c., Medal, Miss M. L. Kendall; certificate, Miss Ethel French. For original design, Medal, Miss Eva Marsh; certificate, Miss Isabel Ritter. Certificates were granted in several other classes. The prize for drawing from still life was obtained by Miss Una M. Beaumont.

School Board Accommodation.—The annual report of the School Accommodation and Attendance Committee of the London School Board states that the number of children scheduled by the visitors in May last, including 57,305 over thirteen, attending school was 885,017. The number of children scheduled by the visitors in May, 1899, including 57,456 over thirteen, attending school was 888,466. The number of children of three to thirteen scheduled this year, plus those over thirteen, attending school was less by 3,499 than the corresponding number of children for 1899. The number of school places estimated to be required in May, 1900, was 781,553. The number of permanent school places existing on March 25th last was 752,881. On the same date the number of projected school places was 51,819. In addition to those, there were 18 sites projected or in possession upon which the Board of Education had not been asked to sanction any specific number of school places. The total number of places existing or projected in March last was 804,500. In the excess of deficiency of school places, subdivision by sub-division, the result for the whole of London was a net excess of 22,947. In calculating the deficiency 14,989 places in temporary schools had not been included.

New Patents.

These patents are open to opposition until September 11th.

1899.—Heating Stoves.—14,292. WILLIAM YOULTEN, 159 Victoria Street, Westminster. A stove is divided into two grates, one intended for coal or other fuel and the other for gas, and is constructed so as to revolve about a vertical axis by means of top and bottom pivots. The gas supply can be utilised to ignite the fuel. To prevent the heat from the gas fire igniting the coal when the latter is not in use, a hollow fireclay partition is placed between, the hollow being filled with non-conducting material. It is claimed that the stove allows of an apartment being heated by gas or solid fuel as desired.

Carbide of Calcium.—16,763. C. H. WORSNOP, 6 Carlton Place, Halifax. A mixture of paraffin wax, cocoa butter and sugar in equal parts is heated until fluid and carbide of calcium immersed in the hot liquid until impregnated. The resulting material is called "Acetyloid," and, it is claimed, is unaffected by water, except under pressure.

Glazing for Roofs.—17,366. W. LAWSON, 15 Posterngate, Hull. Covers or cappings are secured to glazing bars by a tubular rivet with open ends in combination with a smaller rivet or bolt.

Bricks for Flat Ceilings, &c.—17,398. P. ROWALD, 22a Marienstrasse, Hannover, Prussia. For the construction of fireproof ceilings and floors hollow bricks are made with flat, roughed tops and bottoms, with sides ogee shaped on section, so that they fit exactly with each other side by side. It is claimed that this shape avoids all side pressure on the joists or T-irons supporting the floors.

Cement Tiles.—17,470. H. BRÖCKER, Markranstädt, near Leipzig, Germany. For the purpose of securing a perfect adhesion of the lap to the body of the tile a cutter scrapes away from the upper surface of the tile, which has been previously smoothed down and covered with colouring powder, a thinner or thicker layer of material in the places in which the laps are to be formed by the putting on of a fresh body of cement.

Decoration of Ceilings, Walls, &c.—18,012. P. TAYLOR, Glendale, Woodham Walter, Maldon. Panels of glass have wall-paper or other material secured on the backs. The panels are secured in position by strips or beads.

1900.—Imitation Stone, Tiles, &c.—6,455. L. HATSCHEK, Vocklabruck, Upper Austria. Slabs or tiles are made from fibrous asbestos and cement or hydraulic lime. The shape or surface is varied by means of presses.

Filtering Sewage.—6,957. A. PUECH, Mazamet (Tarn), France. A filter is formed by gravel on metal supports, which, while contributing to the physical purification, provides two regions, the one aërobic and the other anaërobic, thus bacteriologically purifying.

Interlocking Brick.—9,725. E. H. VORDTRIEDE, 2,019 Sidney Street, St. Louis, Mo., U.S.A. The brick has a rib or ridge along one face adjacent to the edge of the brick and a groove of same curvature along the opposite face. Recesses in one or other of the other faces and keys interlock the bricks.

Fireproof Floors or Ceilings. — 9,738. V. SCHULZ, U6 No. 19, Mannheim, Germany. The metal insertions to stiffen the concrete are made of U-shape.

Ventilating Appliance. — 9,813. J. W. THOMAS, 32 Queen Victoria Street, E.C. To avoid a wind sucking air out of a building so as to cause reduced pressure inside an adjustable valve is arranged in a hood or turret. A pointer on a scale shows when to regulate the valve.

Working Stone.—9,967. T. STIGLIZ, 17 Pressgasse, Vienna IV., Austria. This invention consists of a machine for working stone surfaces in which the tool receives a reciprocating motion in a direction vertical or inclined to the surface to be worked and at the same time a rotation in one direction, the tool being adjustably attached to a sliding block which is movable vertically and horizontally along guide rails.

The following specifications were published on Saturday last, and are open to opposition until September 18th. A summary of the more important of them will be given next week. The names in italics within parentheses are those of communicators of inventions.

1899.—7,457. CRITCHLOW, filter-presses. 12,223, WOOD, combustion furnaces. 14,577, ADAMS, water and waste-water closets and fittings. 15,453, COLE, valves. 15,551, DAVIDSON, means for supporting electric incandescent lamps. 15,623, ELLIOT, brace for drilling purposes. 15,629, WILLSHEAR AND AMOS, refuse destructor furnaces. 15,988, SEFTON-JONES (*Soc. Anon. des Engrais Complets*), quick removal to a distance of town refuse and its conversion into manure. 16,200, OPPENHEIMER (*Actiengesellschaft Mix and Genest*), holders for electric incandescent lamps. 16,880, TOMLINSON, purification of sewage by biological means. 17,253, CUTMORE, water-tight connections for speaking and other tubes or pipes. 17,376, GILES, acetylene gas purifiers. 17,794, KAY, method of forming sloping roads or footways, subways, passages, &c. 18,011, STONE AND CHEELD, wood-planing machines. 18,187, FONTY AND FONTY, apparatus for unloading heavy timber from waggons. 18,497, TREY, construction of drawing boards and blackboards. 18,533, COX AND HARVEY, fire-irons. 18,584, MILNER, water valves. 19,835, HAIGH, tread for wheels, stairs, &c. 21,409, KAPRALIK, cocks or valves. 23,068, RICHARDSON, heating apparatus. 24,911, LEVICK, work-sets for tools and machinery.

1900.—250, ENGELKE AND MEYER, dry gas meters. 520, PRIDMORE, machines for making sand moulds for castings. 1,703, BALDWIN, knobs suitable for use as bedstead knobs, fender knobs, door knobs and drawer knobs. 3,564, MAYER, smoke prevention and combustion of gases in fires for domestic purposes, and furnaces for heating and raising steam. 6,403, WILTON, appliance for arresting and collecting sparks and particles issuing from chimneys. 7,056, VAUGHAN, construction of tanks for water. 8,263, DILWORTH AND CARR, valve applicable to heating apparatus. 8,419, GOLBY (*Schüller*), artists' frame for painting. 8,467, HADDAN (*Chisholm*), excavators. 8,468, HADDAN (*Chisholm*), excavators. 8,665, JOHNSON (*Wellman-Seaver Engineering Co.*), furnace charging apparatus. 8,670, MARKS (*Compagnie Générale de Travaux Sanitaires, Soc. Anon.*), furnace for

incinerating dirt and refuse of towns. 8,672, Cavenaugh, automatic smoke preventers. 8,796, Barr, multiple sawing machine for cross-cutting deals or battens into paving blocks. 8,934, Burns, smoke-preventing apparatus. 9,565, Bachmeyer, jet holes for the gas supply of burners of Bunsen kind. 10,137, Krayn, electric lamps. 10,155, Laird, furnace for heating drills by means of liquid fuel or gas. 10,347, Häckel, windlass for venetian blinds or other loads. 10,371, Hart, bolts, rivets, screws, &c. 10,467, Prunell, means for operating the taps of gas lights. 10,729, Hauenstein and Cleckner, method of producing pictures in relief. 10,730, Harris, fire escapes. 10,788, McCloskey and Kay, devices for use in the construction of wire fencing.

Masters and Men.

The West Bromwich Master Builders' Association paid a visit to Bristol last week, where they inspected St. Mary Redcliff Church, St. Peter's Hospital and the Council House.

A Glassworkers' Strike in Belgium has occurred. Eleven out of 19 factories in the Charleroi district, have closed, 10,000 men being out. The strike will probably deal a fatal blow to the glass industry of Belgium. Many large manufacturers have decided to take this opportunity for definitely closing their works, which suffered much by the increased price of coal.

Cardiff's Lock-out Clause.—The agitation by the Cardiff Master Builders' Association for the inclusion of a lock-out clause in the Corporation contracts has ended in a victory for the organised workmen of the town, who had opposed it on the main ground that it would be prejudicial to their interests, as it would provide the employer with a weapon which might be used against the associated workers, and which formed no part of the code of working rules now governing the building trades in the borough. The question had been much debated, and the Corporation had practically expressed a desire to follow the precedent of the London County Council in the matter. At the last meeting of the joint committees of the Public Works and new Town Hall, to whom the matter had been referred, the Town Clerk stated that he had analysed the contract forms in use by the London County Council, and also those adopted by the Borough Councils of Manchester, Leeds, Nottingham, Huddersfield, and Newcastle. In none of the contracts made by those corporations was there a reference to a lock-out. On the suggestion of Alderman David Jones it was agreed that a lock-out clause should not be inserted in any contract made by the Public Works Committee, as well as in the contract for the new Town Hall.

Workmen's Compensation.—A Parliamentary paper has just been issued containing statistics of proceedings under the Workmen's Compensation Act, 1897, and the Employers' Liability Act, 1880, during the year 1899. In the majority of cases, compensation being settled by agreement or by informal arbitration, and no memorandum being registered, no official information is available. With regard to the Employers' Liability Act, the state of things is similar. The first table given shows the number of cases under the Workmen's Compensation Act dealt with in England and Wales during 1899 by County Court Judges and County Court arbitrators. The total number settled in County Courts during the year was 999, of which 828 were decided by award of the Judge, 98 by award of an arbitrator appointed by the Judge, and 73 by acceptance of money paid into Court. There remain 348 cases which were withdrawn, settled out of Court, or otherwise disposed of in such a way as not to enable the officials of the Court to state definitely the results. Of the 999 cases finally settled within the cognisance of the Courts, the decision in 753 was for the applicant and in 246 for the respondent. The number of cases under the six heads of employment to which the Act of 1897 applies are:—Railway 104, factory 686, mine 233, quarry 51, engineering works 114, building 159—total, 1,347. The Parliamentary paper says it would appear that in mines the Workmen's Compensation Act, 1897, has practically displaced the Employers' Liability Act, and in railway works has taken about half the cases; while in factories, quarries, buildings, and engineering works the reduction in the number of cases is comparatively small. In the English, Scotch, and Irish lists there are 69 cases in which the point at issue is stated, including 11 which are noted as involving two points each. In 26 out of the 69 cases the question that arose was whether the workman's employment was one to which the Act applied. In 18 of these its application to a factory was in dispute; in five cases its application to a building was questioned; while the three remaining cases had reference one to a railway and the two others to engineering works. In 13 cases the critical question was the meaning of the words "arising out of and in the course of his employment"; whilst in five of these 13 cases, and also in two other cases, the meaning of the term "serious and wilful misconduct" was at issue. Six cases turn on the question of who are "dependents." The remaining cases are scattered over various points in the Act—three as to the meaning of "personal injury by accident," two as to "average weekly earnings," two as to "incapacity for work," &c.

Engineering Notes.

The Electric Tramway System in Norwich on the overhead traction has been opened. There are 25 miles of line.

Sawdust Briquettes for Heating.—In Austria a new form of fuel, invented by Joseph Fialla, is reported to have been introduced with promising results. It consists of sawdust briquettes for use for domestic heating purposes. The dust is heated to dryness, and then to the point where the tarry elements begin to exude. These are used as the consolidating matter, the hot sawdust passing on steam-heated tables to a press which forms them into briquettes, 5in. by 3in. by 1½in., weighing about ½lb. It is said that they give 4 per cent. of ash and that their heating power is equivalent to that of lignite. The press used in Mr. Fialla's factory makes nineteen bricks per minute, and with 300 days of work has a capacity of 6,000,000 briquettes per year. Experiments have shown that the cost of manufacture is 8d. per 1,000, while the selling price is 4s. per 1,000.

Tramway Extensions in London.—At last week's meeting of the London County Council the report of the Highways Committee recommending that powers should be sought in the next session of Parliament for a large extension of the tramway system of the Metropolis was adopted. The proposals are for the construction of new tramways of a total length of about 16¼ miles on the north side of the Thames, at an estimated cost for the tramways and necessary paving and other works of about £461,300, and for street widenings of about £544,330; while, as regards the south side of the Thames, the total length of tramways is about 12 miles, the cost of construction and paving works is estimated at about £374,500, and of the street widenings at about £449,000. The total estimated outlay involved, including the cost of extra cars and car-sheds, is £1,941,800. As to the street widenings, it is intended that the Improvements Committee shall contribute out of funds applicable to improvements sums amounting in the aggregate to £355,000, and the road authorities £326,000. The remainder of the cost of the street widenings, £312,067, is to be charged to the tramways account as part of the first cost of the several tramways. It is proposed that the new lines shall, with one exception, be constructed for horse traction, unless in the meantime effect shall have been given to the provisions in the company's lease relating to the conversion of the system from horse to electrical traction. The estimates provide, however, for rails of sufficient weight to permit of their being used for electrical traction when that system shall have been adopted on these tramways.

Electric Tramways for Liverpool.—The reconstruction of the Liverpool tramroads and the change from horse to electric haulage is being carried on at a rate which, it is claimed, has not been equalled anywhere. The City Corporation having decided to adopt the overhead trolley system an experimental line from St. George's Church to the Dingle (about two and a half miles) was opened on November 16, 1898. The experiment proved a great success, and the work of reconstruction commenced. Last year no less than 30 miles of track were relaid. Up to date 80 miles of track have been reconstructed with overhead installation, and the officers hope to complete the electric tram system over the whole city this year. At first it was hoped to lay a mile of track per week, which had never been done before, but during the past few months the rate of progress has been two miles a week. Powers have been obtained to lay 114 miles of track, but Mr. Bellamy, the general manager, doubts whether the whole will be constructed. He says, however, that by the end of this year the Corporation will have cars adequate to carry 100 million passengers a year, while by the early summer of next year they will be able to cope with 150 millions. The Corporation have 116 horse trams, 39 omnibuses, and 160 electric cars, besides 2,600 horses. As to fares, passengers can now travel from two to two and a half miles for 1d. At the end of the year 1d. will take a passenger from the pierhead to the old borough boundary, and 2d. to the extreme bounds of the extended city. It is hoped that in another year a uniform 1d. fare will be established, when passengers will be able to travel nearly eight and a half miles for 1d.

CLAY IN MODERN BUILDING.

THE use of burned clay in nearly all classes of modern building construction is to-day more extensive than at any time in the history of the building trades, and there are many reasons which indicate that its use is destined to increase greatly in the years to come. In all the varied forms in which the substance is thus employed its abundance makes its use a matter of economy, and at the same time it is the most efficient material obtainable and has a wonderful adaptability to the varied building uses. As to its ability to withstand climatic conditions there has never been any question, for no better material for resistance to heat and cold is obtainable. Like all other building materials, in the hands of ingenious craftsmen clay is directed into many different channels of usefulness. Its strength is not to be questioned, and all kinds of burned clay are readily beautified in form and colour.

To meet the modern demands there have been many improvements in brickmaking. Shape, texture and colour have all been greatly improved, and at the same time there has been a decided reduction in the cost of production by the improvements in brickmaking appliances. Perhaps the advances toward adapting this building material to the exact requirements of builders have been greater than in any other building material. To-day brick architecture may well be regarded as the foremost feature of building construction from an æsthetic point of view, as well as from a practical and economic one.

Just what departures along building lines will in the future be opened up to the brick trade would be hard to say, but in view of the varied uses to which this building material is already applied there can be no doubt that our enterprising brick manufacturers will readily, aided by the skill in their employ, adapt their product to all new requirements of the building trade. Pure clay, the leading essential to perfection in this line of production, is one of the useful products of which we never hear anything regarding its depletion. The raw product for the continued advances in brickmaking, therefore, leads us to look forward to many further in this already excellent building product.

New Companies.

Selby Brick Company, Limited.

This company was registered on July 23rd with a capital of £10,000 in £1 shares to carry on the business of brick and tile makers, builders' merchants, &c. The first directors (to number not less than three nor more than five) are G. Keeble, J.P., A. J. Keeble, J. T. Keeble and S. G. Richardson. Registered office: Cowgate, Peterborough.

Ford Limestone and Brick Company, Limited.

This company was registered on July 24th with a capital of £1,500 in £1 shares to acquire part of the business carried on at Claxheugh, near Sunderland, as the Ford Limestone and Brick Company, and to carry on the business of brick, tile and pipe manufacturers and merchants, &c. Registered office: The Works, South Ford, Hylton Road, Sunderland.

T. W. Harvey and Sons, Limited.

This company was registered on July 23rd with a capital of £9,000 in £10 shares to acquire the business carried on at 180 and 181 High Street, Cheltenham, as T. W. Harvey and Sons, and to carry on the business of iron merchants, ironmongers, &c. The first directors (to number not less than three) are T. W. Harvey, T. W. Harvey, jun., and A. J. Connop. T. W. Harvey may retain office and act as managing director so long as he holds 100 shares.

Brockie-Pell Arc Lamp, Limited.

This company was registered on July 12th with a capital of £80,000 in £1 shares to adopt an agreement with the Brockie-Pell Arc Lamp, Limited (registered in 1896), and to carry on the business of manufacturers of and dealers in electric arc lamps, electric incandescent lamps, and electrical appliances; and the business of an electric lighting company in all its branches; as quarry owners, stone merchants, builders and contractors, &c. The number of directors is to be not less than three nor more than seven; the subscribers are to appoint the first.

Desford Coal Company, Limited.

This company was registered on July 16th with a capital of £70,000 in £1 shares generally to carry on the businesses of colliery proprietors, coalmasters, ironmasters, brick, pipe, tile and coke manufacturers, coal and fuel merchants, miners, smelters, ironfounders, engineers, and manufacturing chemists; to get and deal in ironstone, limestone and clay; makers of briquettes, pig and manufactured iron, steel, timber and lime. The first directors (of whom there shall be not less than three nor more than seven) are H. Bramall, R. M. Knowles, W. J. Lamb, E. Pilkington and J. Stone.

Nottingham Patents Company, Limited.

This company was registered on July 21st with a capital of £1,000 in £1 shares to acquire Patent No. 75 of 1897, granted to W. T. Norris for improvements in chimney-pots, with an invention by the said W. T. Norris for improvements in ventilators or air inlet valves for drains and the like, and an inspection pipe for drains, and to take over the business of the Nottingham Patents Company. The first directors (to number not less than three nor more than seven) are A. Ball, A. Hitchin and S. Williams. Registered office: King Street, Nottingham.

Upper Hanley Pottery Company, Limited.

This company was registered on July 18th with a capital of £10,000 in £1 shares to acquire the business carried on by J. Wilcox and Sarah Hollinshead as the Upper Hanley Pottery Company, and to carry on the business of earthenware and china manufacturers and merchants, &c. The first directors (to number not less than three nor more than five) are to be appointed by the subscribers, provided that any one director so appointed shall have the right to nominate J. Hollinshead in his stead. Registered office: Upper Hanley Works, High Street, Hanley, Staffordshire.

Associated Portland Cement Manufacturers (1900), Limited.

This company was registered on July 10th by Ashurst, Morris, Crisp and Co., 17 Throgmorton Avenue, E.C., with a capital of £5,000,000 in £10 shares to adopt and carry into effect an agreement made between the British Incorporators, Limited, and this company, and, generally, to carry on the businesses of manufacturers of and dealers in all kinds of cements, limes, plasters, artificial stone, and as dealers in all materials used in the manufacture of the same; makers of whiting, sacks, bricks, tiles, terra-cotta goods and building materials of all kinds; as quarry owners and stone merchants, builders and contractors, &c. The first directors (of whom there shall be not less than ten nor more than forty) are to be elected by the signatories W. Barrier, D. J. Prosser, G. E. Sanders, W. H. Cuell, E. A. Lloyd, E. T. Church and H. W. Brown.

Hosea Tugby and Company, Limited.

This company was registered on July 13th with a capital of £100,000 in £1 shares to acquire as a going concern the business and undertaking heretofore carried on by H. Tugby at the Briton Potteries, Moira, near Ashby-de-la-Zouch, Leicestershire, and at the Canal Potteries, Old Kent Road, London, under the firm of Hosea Tugby and Co., as manufacturers of sanitary pipes and other earthenware and sanitary appliances; to acquire brickfields, beds of clay, terra-cotta earths and other substances of a like nature; as ironmasters and manufacturers, smelters, steel converters and manufacturers, engineers and ironfounders, timber and builders' merchants, &c. The first directors (of whom there shall be not less than three nor more than five) are H. Tugby, Moira, Ashby-de-la-Zouch; W. J. Kirkley Birkenshaw, Bank Buildings, Derby; and H. R. Tugby, Pepys Road, St. Catherine's.

COMING EVENTS.

Wednesday, August 8.

INSTITUTE OF SANITARY ENGINEERS.—Meetings of Examination and Literary Committee at 2.30 p.m., General Purposes and Finance Committee at 3.30 p.m., Election Committee at 5 p.m., and Council at 7 p.m.

Saturday, August 25.

NORTHERN ARCHITECTURAL ASSOCIATION, NEWCASTLE-UPON-TYNE.—Visit to South Shields.

CURRENT PRICES.

		£	s.	d.	£	s.	d.
FORAGE.							
Hay, best	per load	3	17	6	4	7	6
Sainfoin mixture	do.	3	15	0	4	7	6
Clover, best	do.	4	5	0	5	0	0
Beans	per qr.	1	6	6	1	7	0
Straw	per load	1	4	0	1	16	0
OILS AND PAINTS.							
Castor Oil, French	per cwt.	1	8	0	1	12	8
Colza Oil, English	do.	1	10	0	—		
Copperas	per ton	2	0	0	—		
Lard Oil	per cwt.	1	17	0	—		
Lead, white, ground, carbonate	do.	1	2	10	—		
Do. red	do.	1	0	4½	—		
Linseed Oil	do.	1	13	6	—		
Petroleum, American	per gal.	0	0	6½	—		
Do. Russian	do.	0	0	6¼	—		
Pitch	per barrel	0	8	6	0	9	0
Shellac, orange	per cwt.	3	2	6	—		
Soda crystals	per ton	2	17	6	3	0	0
Tallow, Town	per cwt.	1	5	9	1	8	0
Tar, Stockholm	per barrel	1	6	0	—		
Turpentine	per cwt.	1	10	3	1	10	4½
METALS.							
Copper, sheet, strong	per ton	85	0	0	—		
Iron, Staffs., bar	do.	10	5	0	11	10	0
Do Galvanised Corrugated sheet	do.	13	10	0	14	0	0
Lead, pig, Spanish	do.	17	15	0	17	17	6
Do. do. English common brands	do.	18	2	6	18	5	0
Do. sheet, English, 3lb. per sq. ft. and upwards	do.	20	0	0	21	0	0
Do. pipe	do.	22	0	0	—		
Nails, cut clasp, 3in. to 6in.	do.	12	0	0	13	0	0
Do. floor brads	do.	11	15	0	12	15	0
Steel, Staffs., Girders and Angles	do.	8	10	0	9	0	0
Do. Mild Bars	do.	9	7	6	9	15	0
Tin, Foreign	do.	145	5	0	145	10	0
Do. English ingots	do.	147	0	0	147	10	0
Zinc, sheets, Silesian	do.	23	10	0	—		
Do. do. Vieille Montaigne	do.	24	5	0	—		
Do. Spelter	do.	19	7	6	19	15	0

		£	s.	£.	£	s.	d.
TIMBER.							
SOFT WOODS.							
Fir, Dantzic and Memel	per load	3	0	0	4	0	0
Pine, Quebec Yellow	do.	4	7	6	6	0	0
Do. Pitch	do.	3	6	0	3	11	0
Laths, log, Dantzic	per fath.	4	10	0	5	10	0
Do. Petersburg	per bundle	0	1	1½	—		
Deals, Archangel 2nd & 1st	per P. Std.	12	15	0	18	0	0
Do. do. 4th & 3rd	do.	13	5	0	—		
Do. do. unsorted	do.	11	0	0	12	10	0
Do. Riga	do.	6	15	0	8	10	0
Do. Petersburg 1st Yellow	do.	15	10	0	—		
Do. do. 2nd „	do.	10	15	0	13	15	0
Do. do. Unsorted „	do.	8	15	0	13	0	0
Do. do. White	do.	11	5	0	—		
Do. Swedish	do.	10	0	0	16	15	0
Do. White Sea	do.	15	10	0	20	10	0
Do. Quebec Pine, 1st	do.	13	15	0	23	15	0
Do. do. 2nd	do.	18	15	0	—		
Do. do. 3rd &c.	do.	9	0	0	9	15	0
Do. Canadian Spruce, 1st	do.	10	10	0	11	15	0
Do. do. 3rd & 2nd	do.	7	5	0	9	10	0
Do. New Brunswick	do.	7	5	0	8	0	0
Battens, all kinds	do.	8	10	0	11	0	0
Flooring Boards, 1in. prepared, 1st	per square	0	12	6	0	13	0
Do. 2nd	do.	0	9	9	—		
Do. 3rd &c.	do.	0	9	6	—		
HARD WOODS.							
Ash, Quebec	per load	3	17	6	4	10	0
Birch, Quebec	do.	3	12	6	3	17	6
Box, Turkey	per ton	7	0	0	15	0	0
Cedar, 1in., Cuba	per ft. sup.	0	0	3	0	0	3½
Do. Honduras	do.	0	0	3 3/8	—		
Do. Tobasco	do.	0	0	3½	—		
Elm, Quebec	per load	0	12	6	5	10	0
Mahogany, Average Price for Cargo, Honduras	per ft. sup.	0	0	4 1/16	—		
Do. African	do.	0	0	3 1/16	—		
Do. St. Domingo	do.	0	0	6 7/16	—		
Do. Tobasco	do.	0	0	4 3/16	—		
Do. Cuba	do.	0	0	4 3/16	—		
Oak, Dantzic and Memel	per load	3	15	0	5	7	6
Do. Quebec	do.	4	12	6	5	0	0
Teak, Rangoon, planks	do.	8	10	0	14	10	0
Wainscot, Riga (Baulk)	do.	3	15	0	5	15	0
Do. Odessa Crown	do.	3	15	0	5	15	0
Walnut, American	per cub. ft.	0	1	8	0	3	2

CONTRACTS OPEN.

TAUNTON CORPORATION WATER WORKS.

The Taunton Town Council are prepared to receive TENDERS for the CONSTRUCTION of a STORAGE RESERVOIR and other Works at Luxhay, Pitminster, about six miles from Taunton.

Drawings may be inspected and specification and schedules of quantities and forms of Tender may be obtained at the Offices of the Engineer, Mr. F. W. ROBERTS, Taunton; or of the Water Works Manager, Municipal Offices, Taunton, on and after the 4th instant, upon payment of £2 2s., which will be returned on receipt of a bonâ-fide Tender.

Sealed Tenders, upon the form supplied, addressed to the Town Clerk, Municipal Buildings, Taunton, and endorsed "Tender for Reservoir," must be delivered on or before MONDAY, the 27th day of AUGUST instant.

The lowest or any Tender will not necessarily be accepted.

Dated 1st August 1900.

GEORGE H. KITE.
Town Clerk.

COUNTY BOROUGH of CARDIFF.
NEW TOWN HALL AND LAW COURTS.

The TIME for delivery of TENDERS for the above Works has been EXTENDED to MONDAY, the 17th day of SEPTEMBER, 1900.

By order,
J. L. WHEATLEY,
Town Clerk.

Town Hall, Cardiff,
July 1900.

BOROUGH of SHOREDITCH.

The Shoreditch Vestry invite TENDERS for the ERECTION and COMPLETION of a REFUGE DWELLING in Reeves Place, Hoxton.

The drawings and specification may be seen and bills of quantities, forms of Tender, and other information obtained at the office of Mr. J. RUSH DIXON, A.M.I.C.E., Surveyor, on payment of a deposit of One Guinea, which will be returned on receipt of a bonâ-fide Tender.

An approved surety in the sum of £100 must be provided, and trade union hours and wages observed, and no sub-letting will be allowed.

Sealed Tenders, endorsed "Reeves Place Refuge," to be delivered at my Office not later than NOON on TUESDAY, the 21st day of AUGUST next.

The Vestry do not bind themselves to accept the lowest or any Tender.

By Order,
H. MANSFIELD ROBINSON.
Solicitor and Clerk.

Town Hall,
Old Street, E.C.,
July 1900.

TO MANUFACTURERS of PORTLAND CEMENT.

The London County Council is prepared to receive TENDERS for the SUPPLY of PORTLAND CEMENT for the six months ending March 31st, 1901.

Forms of Tender may be obtained on application to the Manager, London County Council, Works Department, Belvedere Road, Lambeth, S.E. The latest time for the receipt of Tenders is NOON, on August 14th next.

The Council does not bind itself to accept the lowest or any Tender.

C. J. STEWART,
Clerk to the Council.

Spring Gardens, S.W.,
August 1900.

COMPLETE LIST OF CONTRACTS OPEN.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
	BUILDING.		
Aug. 10	Bargoed, Wales—Additions	Corporation	The Manager, Smith's Arms, Bargoed, Wales.
" 10	Bridlington—Fire Brigade Station	Corporation	Borough Surveyor, Town Hall, Bridlington.
" 10	Glasgow—Alterations	Corporation	J. Young, 83 Renfield Street, Glasgow.
" 10	Rosnakill, co. Donegal—Rebuilding	Mr. James Friel	J. P. M'Grath, 28 Carlisle Road, Londonderry.
" 11	London, W.—Additions	St. Marylebone Guardians	A. S. Snell, 22 Southampton Buildings, Chancery Lane, W.C.
" 11	Donemana, Ireland—House	Rev. J. M'Glinchey	E. J. Toye, Strand, Londonderry.
" 11	Gunnislake, Cornwall—Cloak Room	Calstock School Board	A. J. Rowe, Clerk, Calstock.
" 11	Llanbradach, Wales—Chapel		C. T. Evans, 8 Queen Street, Cardiff.
" 11	Sedgefield, Durham—Cottage Blocks	Visiting Committee of Durham County Lunatic Asylum	W. Crozier, Shire Hall, Durham.
" 13	London, E.—Public Library	Vestry of St. Mary, Stratford	S. B. Russell, 11 Gray's Inn Square, W.C.
" 13	Ilsington, South Devon—Cottage		Rendell & Symons, Newton Abbot.
" 13	Ashburton, Devon—Addition	Mr. G. E. Allen	Mr. Barrons, Weir View, Totnes, Devon.
" 13	Dundalk—Workshops Extensions	Great Northern Railway Company (Ireland)	Company's Engineer, Amiens Street Terminus, Dublin.
" 13	Egremont, Cumberland—Alterations	Industrial Co-operative Society, Limited	W. G. Scott and Co., Victoria Buildings, Workington.
" 13	Heaton Norris—Public Offices	Urban District Council	Woodhouse and Willoughby, 100 King Street, Manchester.
" 13	Merthyr Vale, Wales—Chapel		T. Roberts, Belle Vue Cottage, Aberfan, Merthyr Vale.
" 13	Richmond, Yorks—Manholes		C. G. Croft, Town Clerk, Richmond, Yorks.
" 14	Stony Stratford—Walls	Parish Council	Mr. Woollard, Church Street, Stony Stratford.
" 14	Paisley—School	School Board	J. Hutchinson, 127 St. Vincent Road, Glasgow.
" 14	Southall, Middlesex—Fire Engine House	Urban District Council	H. R. Felkin, surveyor, Southall.
" 14	Todmorden—Chimney	Guardians	J. Horsfall, Architect, Todmorden.
" 15	Irvinestown, Ireland—Shooting Lodge		T. Elliott, 37 Darling Street, Enniskillen.
" 15	Rathmullan, co. Donegal—Rebuilding	Mr. P. H. Edwards	J. P. M'Grath, 28 Carlisle Road, Londonderry.
" 18	Halifax—Additions		C. F. L. Horsfall and Son, Lord Street Chambers, Halifax.
" 18	Resolven, Wales—Inn	Mr. E. Evans Bevan	J. C. Rees, St. Thomas's Chambers, Neath.
" 18	Skerries, co. Dublin—Baths	Baths Company, Limited	F. Shaw, 20 Lawrence Street, Drogheda.
" 21	Fenny Stratford—Girls' School	School Board	Clerk, School Board Offices, Fenny Stratford.
" 21	Leeds—Boiler House	Tramways Committee	City Engineer, Municipal Buildings, Leeds.
" 21	London, N.—Refuge	Shoreditch Vestry	J. R. Dixon, Surveyor, Town Hall, Old Street, E.C.
" 25	Armagh—Floor		Macan Asylum, Armagh.
" 27	Bristol—Cottage	Barton Regis Rural District Council	A. P. J. Cotterell, 28 Baldwin Street, Bristol.
" 29	Clown, Derbyshire—Lock Up	Standing Joint Committee	J. S. Story, County Offices, St. Mary's Gate, Derby.
	ENGINEERING.		
Aug. 10	Accrington—Wiring	Corporation	A. H. Aitken, Town Clerk, Accrington.
" 10	New Shoreham, Sussex—Cesspool Emptying Apparatus	Steyning West Rural District Council	E. Cripps, Clerk, Ham Road, New Shoreham.
" 11	Leamington—Refuse Destructor	Corporation	W. de Normanville, Town Hall, Leamington Spa.
" 11	Buxton—Station Governors	Gas Committee	H. Barker, Town Hall, Buxton.
" 11	Cupar Fife—Steel Girder Bridge	Police Commissioners	H. Bruce, County Buildings, Cupar Fife.
" 13	Salford—Cables	Corporation	Lacey, Clirehugh and Sillar, 2 Queen Anne's Gate, Westminster, S.W.
" 13	Derby—Filter Beds	Corporation	Borough Surveyor, Babington Lane, Derby.
" 13	Alnwick—Tank	Rural District Council	H. W. Walton, Clerk, Alnwick.
" 13	Bradford, Yorks—Electric Lighting	Guardians	T. Crowther, 22 Manor Road, Bradford.
" 14	London, E.C.—Cable		Clarke, Fordham and Taylor, 4 Great Winchester Street, E.C.
" 14	Barnes—Plant	Urban District Council	Surveyor, Council Offices, High Street, Mortlake.
" 15	Rotherham—Steam Road Roller	Corporation	G. Jennings, Council Hall, Rotherham.
" 15	Belfast—Feed-water Heater	Electric Committee	V. A. H. M'Cowen, City Electrical Engineer, Belfast.
" 17	Halesowen—Heating Apparatus	Hospital Committee	A. T. Butler, Architect, Cradley Heath.
" 18	Madrid—Electric Tramway Lines	Spanish Government	Commercial Department, Foreign Office, S.W.
" 21	Bury, Lancs.—Filters	Waterworks Committee	J. Cartwright, Peel Chambers, Market Place, Bury
" 21	Bury, Lancs.—Valves	Waterworks Committee	J. Cartwright, Peel Chambers, Market Place, Bury.
" 21	Boxted—Bridges	Lexden and Winstree Rural District Council	J. Ennals, Surveyor, Copford.
" 21	Congleton—Footbridge		Borough Surveyor, Congleton.
" 25	Hanley, Staffs—Boilers	Electric Lighting Committee	J. Lobley, Town Hall, Hanley.
" 27	Taunton—Reservoir	Town Council	F. W. Roberts, Engineer, Taunton.
" 28	Nottingham—Engines	Water Committee	O. Moore, St. Peter's Square, Nottingham.
" 28	Warsaw—Telephone Service	Russian Government	Commercial Department, Foreign Office, S.W.
" 31	Stockport—Tramcars	Tramways Committee	J. Atkinson, Borough Surveyor, Stockport.
Sept. 1	Fenton, Staffs—Railway	Leek and Manifold Valley Light Rlwy. Co.	J. Forsyth, Heron's Cross, Fenton, Staffs.
" 5	Lisbon—Iron Bridge		Public Works Department, Lisbon.
" 8	Bradford—Refuse Destructors	Corporation	Mr. McTaggart, Corporation Depôt, Hammerton Street, Bradford.
" 17	Jassy, Roumania—Waterworks		Technical Department, Communal Council Office, Jassy.
" 30	Wellington, New Zealand—Engines	Corporation	J. Duthie and Co., Limited, 23 Lime Street, London, E.C.
Oct. 2	Barcelona, Spain—Elevators	Harbour Commissioners	Commercial Department, Foreign Office, S.W.
	IRON AND STEEL.		
Aug. 11	Egremont, Cheshire—Railway Metals	Wallasey Urban District Council	W. H. Travers, Public Offices, Egremont, Cheshire.
" 14	Woodbridge—Fencing	Rural District Council	G. Cook, District Surveyor, Woodbridge.
" 21	Bury, Lancs.—Pipes	Waterworks Committee	J. Cartwright, Peel Chambers, Market Place, Bury.
" 21	Leeds—Iron Work	Tramways Committee	City Engineer, Municipal Buildings, Leeds.
Sept. 26	The Hague, Holland—Socket Pipes		M. Nydoff, Nobelstreet 18, The Hague, Holland.
	PAINTING AND PLUMBING.		
Aug. 13	Kingsnorth, near Ashford, Kent—Painting	Kent County Council	F. W. Ruck, 86 Week Street, Maidstone.
" 13	Nottingham—Painting	Estates Committee	W. Smith, Guildhall, Nottingham.
" 14	Farnham—Painting	School Board	A. J. Stedman, South Street Chambers, Farnham.
" 18	Shrewsbury—Painting	Markets Committee	W. C. Eddowes, The Square, Shrewsbury.
	ROADS.		
Aug. 10	Brighton—Wood Paving		F. J. C. May, Town Hall, Brighton.
" 11	Abersychan, Wales—Street Improvements	Urban District Council	E. Cooke, Council Offices, Abersychan.
" 11	Ibstock, Leics.—Paving	Market Bosworth Rural District Council	W. Thorpe, Highway Surveyor, Nailstone, Nuneaton.
" 15	Felixstowe—Granite	Urban District Council	P. P. Horton, Town Hall, Felixstowe.
" 15	Manstone—Roadway	Isle of Thanet Union	W. L. Grant, Architect, Sittingbourne.
" 15	Porth, Wales—Road	Lewis-Merthyr Consolidated Collieries, Ltd.	James and Morgan, Charles Street Chambers, Cardiff.
" 15	Stoke-upon-Trent—Concrete Paving	Corporation	J. B. Ashwell, Town Clerk, Stoke-upon-Trent.
" 22	Aylesbury—Paving	Urban District Council	J. H. Bradford, 2 Rickford's Hill, Aylesbury.
	SANITARY.		
Aug. 10	Pudsey, Yorkshire—Sewers	Urban District Council	J. Jones, Council Offices, Pudsey, Yorks.
" 15	Mickleton, Yorks—Cleaning Manholes	Startforth Rural District Council	R. Graham, Inspector, Barnard Castle.
" 15	Manstone—Drainage Works	Isle of Thanet Union	W. L. Grant, Architect, Sittingbourne.
" 15	Tinsley, near Sheffield	Rotherham Rural District Council	B. Godfrey, 298 High Street, Rotherham.
" 21	Newport Pagnell, Bucks—Sewerage Works	Rural District Council	D. Balfour and Sons, 1 Victoria Street, Westminster, S.W.
	TIMBER.		
Aug. 14	Woodbridge—Fencing	Rural District Council	G. Cook, District Surveyor, Woodbridge.

COMPETITIONS OPEN.

DATE OF DELIVERY.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	BY WHOM ADVERTISED.
Aug. 18	Southport—Bridge	£25 and £10	Borough Surveyor, Town Hall, Southport.
" 18	Machynlleth—Schools	£30	D. D. Williams, School Board Clerk, Machynlleth.
Sept. 15	Cardiff—Asylum	£105	Borough Engineer, Town Hall, Cardiff.
" 30	Devizes—Hospital	£20, £10	O. Sheppard, Clerk to Joint Committee, Devizes.
" 30	Musselburgh—Town Hall	£26 5s. and £15 15s.	Town Clerk, Council Offices, Musselburgh.
No date.	Riviera—Villa for Sir William Ingram	£78 15s., £26 5s., £5 5s.	"Architectural Review."

TENDERS.

Information from accredited sources should be sent to "The Editor." Results of tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the Work.

FARNHAM.—For additions to school buildings, Bradshot Lea, for the School Board. Mr. H. Paxton Watson, architect, 4 Adam Street, Adelphi. Quantities by Messrs. John Leaning & Son :—

Drowley & Co.	£998	G. Kemp, Aldershot *	£820
Bateman	975	* Accepted.	

FRINTON-ON-SEA.—For proposed making-up and sewering parts of Ashlyns Road and Third Avenue, for Mr. R. P. Cooper. Messrs. Homer & Co., surveyors :—

Making-up and Sewering Ashlyns Road.

Pedrette & Co	£1,223	H. J. Lingell	£629
F. W. Anderson	678	Moran & Sons	603
Burgoyne & Sons	665	Mackenzie & Son	564
J. C. Trueman	662	Dupont & Co.	520

Making-up Third Avenue.

Pedrette & Co.	£1,385	Moran & Sons	£1,950
Burgoyne & Sons	2,258	J. C. Trueman	1,930
F. W. Anderson	2,202	Mackenzie & Son	1,897
H. J. Lingell	1,976	Dupont & Co.	1,832

FRINTON-ON-SEA.—For proposed slip-way and approach road for Mr. R. P. Cooper. Messrs. Homer & Co., surveyors, Estate Office, Frinton-on-Sea, Essex :—

Slip-way.

Pedrette & Co.	£2,054	J. C. Trueman	£1,141
H. J. Lingell	1,826	F. W. Anderson	1,095
Mackenzie & Son	1,730	Burgoyne & Sons	1,054
Dupont & Co.	1,629	Moran & Sons	955

Approach Road.

Pedrette & Co.	£825	Burgoyne & Sons	£271
H. J. Lingell	389	J. C. Trueman	250
Mackenzie & Son	350	Moran & Sons	219
Dupont & Co.	330	F. W. Anderson	201

FRINTON-ON-SEA.—For parts of works of sewering and making-up new road from Holland Road, Frinton, to Lower Barn, Great Holland, for Mr. R. P. Cooper. Messrs. Homer & Co., Frinton-on-Sea, and Messrs. Baker & May, Clacton-on-Sea, joint surveyors :—

Pedrette & Co.'... ...	£9,773	Mackenzie & Son	£4,976
H. J. Lingell	5,436	F. W. Anderson	4,894
Dupont & Co.	5,399	Moran & Sons	4,555
J. C. Trueman	5,165	Burgoyne & Sons	4,319

For the whole of the above works for Mr. R. P. Cooper, under the superintendence of the above surveyors :—

J. C. Trueman	£8,900	F. W. Anderson	£8,500
Burgoyne & Sons	8,563	Moran & Sons	8,150

HANLEY.—For additions to "Sentinel" office, Hanley. Messrs. R. Scrivener & Sons, architects, Hanley :—

Grant & Son	£4,500	F. Godwin	£4,199
Cornes & Son	4,498	W. Cooke	4,150
A. Ward	4,480	J. J. Longden,	
G. Ellis	4,480	Burslem*	4,045
J. Gallimore	4,414	* Accepted.	

HANLEY (Staffs.)—For proposed additions, extensions, and alterations, Joint Infectious Diseases Hospital, Bucknall, Staffordshire. Mr. E. Jones, architect, Albion Street, Hanley :—

Previous Contracts for Hospital Extensions, viz.,

Eighteen-bed Pavilion and Additions to	18-Bed Pavilion.	Administrative Block.
Cornes & Sons	£3,500 0 0	£2,025 0 0
John Bagnall	3,363 0 0	2,158 0 0
John Gallimore	3,515 0 0	1,971 0 0
Thos. Godwin	3,586 0 0	1,886 0 0
Chas. Smith	3,360 0 0	2,100 0 0
Yorke & Goodwin ...	3,436 0 0	1,872 0 0
H. P. Embrey, Fenton*	3,502 3 6	1,793 0 0

Electric Light Installation, Steam Boiler, and Engine.

		Including for Contract No. 1 Galloway Boiler and Engine.
Drake & Gorham	£1,955 13 3	£506 1 0
E. J. Clarke & Co., Ltd. ...	1,640 14 0	427 10 0
Rooper & Robins	1,569 14 8	490 5 0
Gardner Bros. & Co., Ltd....	1,467 7 9	479 0 0
J. Worthington & Co.	1,412 1 1	406 0 0
Blackburn & Starling, Ltd. Hanley and Nottingham*	1,401 18 0	396 0 0

Steam Laundry Machinery, Shafting and Apparatus.

Manlove & Alliott	£907 2 6
Tullis & Co., Ltd.	782 10 0
Williamson & Co., Ltd.	704 0 0
Worthington & Co.	690 0 0
Armstrong & Co., Ltd.	688 0 0
The Manchester Laundry and Engineering Co., Ltd.	683 12 9
Bradford & Co.	618 0 0
Summerscales & Sons, Ltd., Keighley*	591 0 0

Washington-Lyons Steam Disinfector.

Manlove & Alliott, Nottingham*	£295 10 0

Nos. 5 and 8.—Erection of a Boiler and Engine-house and Building for Electric Light Installation.
No. 6.—Erection of a Chimney Shaft.
No. 7.—Additions to Laundry Block and Disinfecting Chamber.

	Nos. 5 and 8.	No. 6.	No. 7.
Charles Cope	£242 8 6	£132 18 0	£579 0 0
Bennett Bros.	275 0 0	149 0 0	506 0 0
C. Cornes & Sons	255 0 0	150 0 0	480 0 0
John Bagnall	246 0 0	109 5 0	528 0 0
Thos. Godwin	279 0 0	106 0 0	483 0 0
H. P. Embrey, Fenton* ...	235 12 8	107 8 3	501 12 4

The Furnishing of 18-Bed Pavilion and Administrative Block Additions.

L. Taylor	£487 10 11	E. Malkin, Hanley*	£383 14 5
E. Amies	469 1 8		

Ironmongery.

Holdgate & Small, Stoke*	£107 16 8

No. 13.—Painting Interior of Isolation Block and Central Pavilion and Part of the Administrative Block.
No. 14.—Painting Interior Walls of New Additions.

	No. 13.	No. 14.
Colclough & Waite...	£149 0	£72 10
J. E. Baddeley	125 5	75 15
Birchall & Son	95 0	87 0
Theophilus Hughes	95 10	75 12
Edwin Peake	99 0	57 0
S. B. Smith, Hanley*	97 0	52 10

* Accepted.

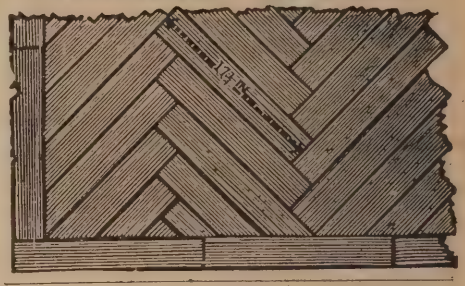
LONDON.—For the erection of public baths and washhouses, Melmoth Place, for the Vestry of the Parish of Fulham. Mr. H. Dighton Pearson, architect, 27 Chancery Lane, W.C. :—

Kirk & Kirk	£55,490	Chessum & Co.	£47,900
F. G. Minter	54,413	B. E. Nightingale ...	46,985
Leslie & Co.	52,357	Patman & Fotheringham	46,871
W. Gibson	50,789	Stimson & Co.	43,750
Foster & Dicksee	49,894	Chas. Wall, Chelsea* ...	42,953
Martin Wells & Co. ...	49,518	* Accepted.	
C. Gray Hill	49,497		

NEWMARKET.—For the following works for the sewerage and surface drainage for Newmarket, for the Newmarket Urban District Council. Contract No. 2: 13,252 yd. run of 18in., 15in., 12in., 10in., 9in., 8in, and 7in. stoneware pipe sewers; and 3,617 yd. run of 18in., 15in., 12in., and 9in. stoneware pipe drains, together with manholes, flushing tanks, ventilators, and the construction of storage culvert, with pump well and filth hoist. Messrs. Beesley, Son & Nichols, engineers, 11 Victoria Street, Westminster :—

Nowell & Sons ...	£39,000 0 0	J. Young	£30,000 0 0
Parry & Co.... ...	35,000 0 0	G. Bell	29,391 0 0
S. Saunders... ...	34,000 0 0	J. Jackson	28,854 13 2
E. Powell	32,900 0 0	Wilkinson Bros.	27,915 0 0
W. Manders... ...	32,231 14 10	Moran & Sons ...	26,808 0 0
J. & E. T. Bloomfield	31,921 6 0	Johnson Bros. ...	26,795 0 0
J. & T. Binns ...	31,750 0 0	J. Smart	26,644 0 0
G. Osenton	31,345 0 0	Burgoyne & Sons	26,150 0 0
G. R. Mann	31,177 0 0	H. J. Linzell, Newmarket* ...	25,950 18 3
Underwood Bros.	30,126 0 0	* Accepted.	

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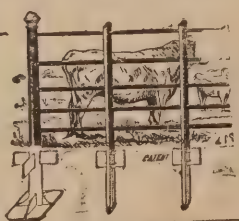


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THE BUILDERS' JOURNAL & ARCHITECTURAL RECORD

August 15, 1900. No. CCLXXXVIII.

Effingham House, Arundel Street, Strand, W.C.

An Architectural Causerie.

A Side-light on the Gothic Revival.

When a great man dies the astonished readers of the daily papers are confronted immediately with an account of the whole career of the deceased. With remorseless candour his chequered past is laid bare for the edification and amusement of a curious public. Or, "touched with human gentleness and pity," a veil is drawn over the shady places in his history and character, and only his intellectual and other endowments form the subject of eulogium or reproach. With the departing breath the telephones are at work, deft compositors are busy with the long catalogue of good deeds or ill, and the tale is promptly forthcoming. This promptitude is to simple folk a wonder and a surprise. But the initiated know well how it is done. The biography was ready—cut and dried, with the necessary blanks for eventualities—and pigeon-holed long ago in case "anything might happen." The century itself is moribund. What voluminous retrospects will follow that dissolution? The most eventful of all the centuries will have copious and perhaps adequate record from all imaginable points of view, religious, social, political, scientific, artistic, and what not. Amongst these, architecture, as having run a somewhat remarkable course, will claim a place, and furnish matter for much philosophical and other speculation and comment. In such a record, the rise, progress, and decay of the Gothic Revival will demand due attention. Much has already been written on this phenomenon, and the merest literary ignoramus will find to his hand material enough, of a sort, to facilitate the usual commonplace compilation. But there is a feature of that revival which has not hitherto been sketched in detail, if, indeed, it has not been altogether overlooked, and as it must be placed to the credit side of the account we venture to call attention to it here. We allude to the ethical value of the singular movement called the "Gothic Revival" and its bearing upon human motives and character.

The foundations of that movement were laid on the rock-bed of Truth. War—unrelenting war—was declared against all shams, hypocrisies, "unveracities, speciosities," and the like. Whatsoever thing was to be done should thenceforth be done honestly, and all things should be in fact what they were in appearance. There should be an end of all trick, finesse, concealment, subterfuge, and all their obscene brood. Thus the student entering upon his daily work had ever before him a clear, consistent, high ideal. Perfect directness and simplicity of plan and contrivance, perfect honesty in construction and perfect candour in the means employed were guiding principles, all-pervading, unrelaxing. Beauty desired of all would, he was taught, follow their faithful observance. The great works of old were thus accomplished, and endeavours as earnest and as pious as those of our forefathers would achieve results no less glorious than theirs. This healthy, brainy moral tone elevated both the work and the workers, and lifted art almost to the rank of religion. There were, we all know, periods of great social depravity, when art attained a high and enduring renown; and there were periods of great moral and religious activity when art may scarcely be said to have existed. But there was a long succession of centuries when the purest morality and greatest religious fervour went hand-in-hand with the highest reach of art. These considerations—however the balance of opinion may lie—do not touch the point which it is now our aim to enforce—to wit, that for a great part (indeed, the greater part) of the present century a band of earnest, resolute men did sincerely believe in the mutual interdependence of art and morals, and upon this belief did base strenuous and unwearying effort. It is fair to assume that so salutary a faith and such a noble ambition to be in all things and before all things true must have re-acted upon character, and that a habit of working daily with such a standard had a wholesome influence over their daily lives. The revival of Gothic Art was, in short, an assertion of moral principle.

The "rigorous teachers" who "seized our youth" have gone or teach no more. Of the band of workers who strove to revive our national art on the ancient lines but few—too few—remain. What the final judgment of posterity may be upon their labours we shall not here attempt to estimate. But this much may at least be said—that their aims were noble, and that what they achieved, or attempted, with all its shortcomings, did in a very special manner "make for righteousness."

E. I. B.

The British Museum.

It is quite clear that as time progresses, and the varied collections of that vast national storehouse of curiosities the British Museum continue to increase, those collections must be shed, one by one, and formed into separate and individual museums, just as the unwieldy accumulations of natural history objects were removed in the early eighties and finely housed in a magnificent series of buildings set apart for them—the Natural History Museum at South Kensington. Space is not elastic, and as in the very nature of things the various departments of the great institution in Bloomsbury are continually adding to their store, congestion becomes the rule, and opportunities for making proper educational displays of the different subjects (which, after all, is the real reason for the very existence of museums) grow fewer. At the British Museum such entirely independent departments as the



ENTRANCE, PAKENHAM MANOR HOUSE. DRAWN BY H. F. WARING.

Library, Greek and Roman Antiquities, Prints and Drawings, Egyptian Antiquities, Manuscripts, and Oriental Antiquities—to leave out of the question the minor collections of China and Pottery, Bronzes, and Coins and Medals—are housed. Of these, the Library and its satellite the Newspaper Department are easily first in the demand for space, and, because of the appalling rate at which books and printed matter are accumulating, the Trustees of the Museum have deposited a Bill in Parliament giving powers to them for the disposal of surplus printed matter in general and files of provincial newspapers in particular. It is a remedy suggested by desperation at the prospect of being hemmed in; but the true method of relief is rather by the way suggested, of finding a home, as occasion arises, for one department after another, even though in the last resort the British Museum should finally become the National Library, and all its other constituent parts become separate and independent institutions, dispersed over London. Such an evolution when it comes will make for the thorough development of every subject which is now cramped for want of floor space, and will be to the advantage of the Library as well. The Printed Books Department, as it is officially known, is the greatest of all the divisions of the Museum, and it and the Reading Room could not fairly be removed from this central situation. The Department of Prints and Drawings, on the other hand, seems slightly out of place in Bloomsbury, and a more fitting home would be at South Kensington, among the Science and Art Collections, or attached to the National Gallery. The various departments of antiquities present a more difficult problem, and suggest a national collection of sculpture and architectural examples, with a home of its own in which the Tufton Street collections, those of the Royal Institute of British Architects, and those of the other scattered and individually fragmentary museums might advantageously be brought together under one roof. The cost, although great, would not eventually be much greater than that of continually enlarging the heavy classical pile of the British Museum itself. There can be no doubt that the style imposed by the existing buildings upon all additions is one absolutely unsuited, under such grey and lowering skies as ours, to the favourable display of exhibits; and besides being the style of architecture which, next to the Egyptian, admits least light, it is also the one which absorbs most space on mere walls and corridors. Of course, we are committed to extensions of the British Museum for a long while to come, for to the end of enlarging the gloomy pile the Trustees, a few years ago, purchased much house property to the rear and at the sides from the Duke of Bedford; but the question of separate establishments for separate subjects seems bound to arise now that the Natural History Museum has developed so finely from the poor show its collections made here. Professor Flinders Petrie, who has lectured recently on a "National Repository for Science and Art," has a somewhat different, and a very much bolder, ideal than any we care to set up. It is magnificent, of course, but scarcely within the range of practical social politics. He would have the authorities find a suitable square mile of ground at the distance of not more than an hour's journey by rail from town, and there he would have them build galleries for the lesser collections. In about fifty years time, the natural growth of London would have brought this offshoot of the British Museum within the future suburban era, and things would thus automatically adjust themselves. But imagine the despair of the students compelled in the meanwhile to undertake this, at the least of it, thirty miles journey for the purposes of study! A. B.

On Reflection.

Clerical Logic. A MEMORIAL signed by a number of well known architects has recently been presented to the Dean of St. Paul's, protesting against the damage to Wren's work by the so-called decorations now being carried out there. We have previously stated our opinion of these decorations, which are not only entirely at variance with Wren's work but do not even agree with the earlier set of mosaics in the spandrels of the dome. The reply of the Dean is instructive. After stating that the memorial will be considered at the next meeting of the Chapter, he goes on to say:—"I regret to notice that so far as I can remember not one of those who sign the address has shown his interest in the decoration of St. Paul's by subscribing to the fund raised for that purpose." Is this the sole argument that the Dean and Chapter can use in their own defence? The same reply has been delivered to every petition presented since these decorations were commenced. But can the Dean and Chapter be so sure of their facts? Collection boxes for the Decoration Fund are placed all over the Cathedral, and if a contribution is to be the sole qualification to the right and ability to criticise then every man who places a penny in one of these boxes is, by the admission of Dean Gregory, in a position to call the scheme into question. Can he be so sure that the latest memorialists have not contributed through the medium of these boxes? It does not seem to have occurred to the Dean that these gentlemen can take a greater interest in the scheme by placing their knowledge and abilities at his disposal than by making a cold cash contribution. Further, any cash contribution must necessarily defeat their own avowed purpose, for it places in the hands of the Dean and Chapter the power to carry out more of the decorative scheme which these architects believe to be entirely inimical to the genius of the builder. Not content with employing a Gothic architect to design the reredos, the Dean and Chapter have handed over the decoration of the Cathedral to a man who is out of sympathy with Wren's work, and now we are reaping the inevitable results. We are condemned already for much of the architecture which appears in our streets; but that men who claim a knowledge of art should permit the destruction of one of the masterpieces of the English Renaissance stamps this generation for all time as a generation of vandals, gifted in ignorance and self-sufficiency. There is only one course to be taken, and that is to stop the supplies, and we appeal to all intending subscribers to withhold their subscriptions, however small, until the Dean and Chapter call together a committee of architects and artists possessing a knowledge and love of the English Renaissance to conduct and take charge of the further progress of the work.

A Foretaste of the Millennium. IT is often said that among the most notable characteristics which the closing years of this wonderful nineteenth century (down! twentieth centuryites) will carry into history the extraordinary development of great industrial combinations will stand out prominently as a distinguishing mark of the age. The present, from the business point of view, is more than anything else an era of "trusts," "combines," and great aggregations of capital. The tendency of the day is toward combination in the industrial and commercial world to a far greater extent than ever before. This fact is obvious, and is not in some of its aspects to be rejoiced over. But another bias has developed which is of a far more gratifying character. The growing recognition which is accorded to the principle of arbitration of matters in dispute, whether between nations, bodies of men or individuals, is pregnant with more of hope and promise for the coming century than, perhaps, any other feature of the times. It is not to be expected that wars and labour conflicts and bitter private strifes will vanish from the earth within the next few years or the next century. That would mean the advent of the millennium. But a tendency toward the peaceable settlement of disputes is becoming more and more marked, and it is not too much to claim that the principle of arbitration has already secured acceptance to an extent that will at least mitigate the bitterness of those labour conflicts which have done, and are even now doing, so much to hurt the best interests of both employer and employed, and which keep alive an unnecessary and useless antagonism between labour and capital. Both parties have to learn that in every dispute there is ground for arbitration. Two knights once fought a long and bloody battle because one said a shield was red and the other maintained it was black. After nearly killing one another, it was discovered that the shield was painted red on one side and black on the other. So there are two sides to every question, and in matters of dispute each party should remember that both he and his opponent may be right, judged from their respective standpoints.

"Restoration" once More. A SHORT time ago Mr. Thackeray Turner, the secretary of the Society for the Protection of Ancient Buildings, drew attention to the fact that the interior of Westminster Abbey was being gradually darkened by the introduction of modern glass in some of the windows. As we pointed out in a recent issue, the popular practice of putting new memorial windows in old buildings is quite wrong if the necessary harmony between the two is not considered, glass being simply ordered "per catalogue." Now Mr. Turner draws our attention to what has been and is still going on at Chichester Cathedral, which, he says, "is fast being lost to us." Of course it is the restoration he complains about. In November, 1897, his Society pointed out the risk of building a new north-west tower, which afterwards proved the source of such anxiety owing to the cracks in the west front. The restorers now ask for funds to allow the modern west window to be "replaced by a treatment more in harmony with the thirteenth century work," but the fact which rather shakes the faith which might be extended to those who are now in charge of operations is that they condemn the work of the previous restorers and are replacing it with their own; and by the time they have done Mr. Turner is convinced that the front of the cathedral, with its new tower, will be nothing more than a modern duplication of the old—which means that all interest in the front will be lost. Sir Gilbert Scott's reputation as a restorer is not one to set up as a model for others to copy; but it was Scott who undertook the rebuilding caused by the collapse of the spire of the cathedral thirty-nine years ago. It is certain that the present restorers have little respect for their predecessor, and this case clearly shows that restoration to be worthy of approval must not consist in wholesale rebuilding, and that the greatest consideration should always be given to the selection of the architect in whose hands the work is placed. We all know what happens when the doctors disagree. Scott wiped out parts of Chichester Cathedral and now *his* work is being wiped out—facts little likely to inspire confidence. A writer once said: "The history of the Cathedral of Chichester is to be learnt chiefly from the study of its architectural details." Taking the excellent principle enunciated in this sentence, it would seem that the historian's words would now be "Chichester Cathedral was begun in 1896"! *Verb. sap.*

THE ARCHITECTURAL ASSOCIATION TOUR, 1900.

THE headquarters of the Association were this year made at Bury St. Edmunds, which in itself is a most interesting town, boasting many historical events, whilst the buildings and villages in the neighbourhood, both from an architectural and a picturesque point of view, call for admiration.

In Bury itself perhaps the chief feature of interest is the Abbey Gate, which was the main entrance to the monastery. This is good Decorated work and was finished about 1377. Through this arch the abbey ruins remain to show what a vast place this building was at one time, though they no longer have much interest to the visitor, owing to their present decayed state. The Norman Tower, close to St. James's Church, was built in 1090, and is an excellent specimen of work of this period, while the



Perpendicular church of St. James and the church of St. Mary are equally interesting. Some good wrought-iron work is also to be seen here.

The first day's programme included visits to Pakenham Manor House, Ixworth, Bardwell, and Norton House. At Pakenham the Association was most hospitably received by the owner. This is a typical manor house of red brick and stone dressings, and bears the date of 1622 upon the porch. The three equal gables in the front of the house are most pleasing, and show how effective these features may be made when used with discrimination. The porch projects about 7ft. or 8ft., and is in the form of a semi-octagon. An interesting ceiling in the drawing-room was noticed.

The church at Ixworth, a few miles further on, belonged to the Abbey of Bury, and is almost entirely Perpendicular. The tower is noticeable chiefly for its flint work and the panels in the buttresses. The porch was commenced in 1470 by the Abbot. In the village, which once boasted an Augustinian priory, are one or two typical plaster houses, the ornament on these in plaster being often of the most primitive description.

Bardwell Manor House was mainly admired for its simplicity, the ornament being confined for the most part to the chimney stacks. Stowlangtoft is interesting for some good monuments in the churchyard, whilst two or three cottages appealed to the artistic tastes of many.

Norton Hall, a stucco building, whilst not possessing a remarkable exterior, has inside many features of interest to architects and antiquaries. The house was considerably restored 100 years ago. The ceiling painting by Tillemans in 1720 is excellent, whilst the carving of the overdoors and friezes excited universal admiration, as did also the staircase.



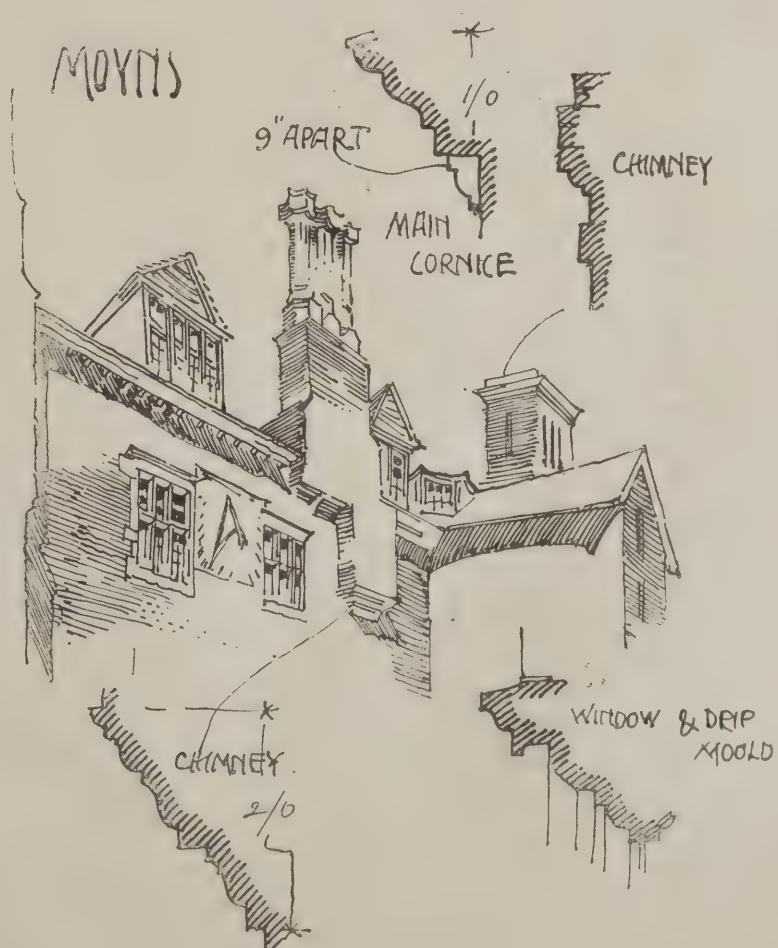
HOUSE IN IXWORTH VILLAGE. DRAWN BY H. F. WARING.

Pictures and rare *objets d'art* fill the rooms, and regret was felt when the carriages arrived to take the party away.

The famous Moyns Park was the scene of the first visit on the next day, and here was seen to the best advantage an ideal country house. This is a fine old Tudor mansion, built partly in 1580 by T. Gent. The huge stacks of chimneys, with their wonderful ornament, the well-proportioned windows and the simple little gables, the whole weathered to delightful colours, made a picture calculated to arouse enthusiasm in the most *blasé*.

The most interesting feature in Clare village is the old plaster house, which, however, is more curious than beautiful. Driving on, Cavendish presently appears. The church, standing behind old thatched cottages and backed by trees, makes a charming picture, which induced many to put their impressions upon paper. Risby, a halting place on the following day, has a church with a curious tower and an old house, which is perhaps the more interesting of the two buildings, and here is seen a good specimen of the heavy cornice, with its deeply-recessed plaster cove.

Mildenhall reached, the church is first visited. This is dedicated to the Blessed Virgin and is decidedly interesting. The chancel is principally Early English, the nave Perpendicular. The window of seven lights, with good tracery, has Early English banded shafts of Purbeck marble. The chancel arch is very fine and has good mouldings and tooth ornament. A small chapel is seen on the north side of the chancel, of Early English date. The splendid carved-wood roofs of the nave and aisles were especially noticed: the subjects are taken from the Scriptures, whilst angels with outspread wings form the hammer-beams. The font is Perpendicular. The north porch is large and interesting, with a groined



DRAWN BY H. F. WARING.



DRAWN BY H. F. WARING.

roof of stone and a room over it, the doorway of which has the Annunciation carved in the spandrels; the exterior of this, and of the north aisle, is good and highly enriched Perpendicular, with flint and stone panelling and niches in the buttresses. The Market Cross of oak is an interesting little structure of Perpendicular date. Close to the church is the Manor House, built in the beginning of the seventeenth century. This building has, however, been somewhat marred by restorations and additions. It is now used as a training school for priests.

After a short drive, Icklingham is reached. The church of All Saints is of interest, especially a pavement of Roman tiles found in the parish about thirty years ago. This church is almost all Decorated work.

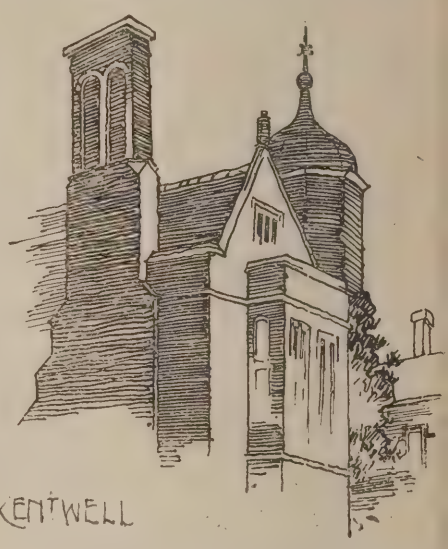
West Stow Hall, next seen, is an old brick mansion, and belonged to the Abbots of Bury until the Dissolution, when it was granted to Sir John Croftes, who had belonged to the household of Mary Tudor, Queen Dowager of France and Duchess of Suffolk. Sir John built the hall and gate-house. In the upper part of the house are some interesting distemper paintings of the time of Elizabeth. This gate-house, which has flanking towers finished with cupolas, is perhaps the most interesting part of the building. Most of the quadrangle of the house is pulled down, and the remainder is used as a farmhouse; but many details are left which are well worth studying—notably, the chimneys, arcading, and two gate piers.

Hengrave Hall is indeed worth a visit, and is said to be one of the most interesting examples of a Tudor mansion remaining in England, although by the removal of the outer court and of other portions of the building the house has been very greatly reduced in size. It was begun by Sir Thomas Kytson about 1525, and completed in 1538, and was one of the first of those grand English homes which wealthy merchants were beginning to construct at this time. The house, which is built round an inner court, is of white brick with stone dressings. The gate-house and the whole of the main front are the most enriched portions and are well preserved. Gothic and Renaissance details are used together with a somewhat curious result in the gate-house. The Kytson crest, a unicorn's head erased, appears in the spandrels of the archway. The large central shield in the lower part of the oriel has the arms of France and England quarterly. The best view of the house is at the south-west angle. The interior of Hengrave has been greatly altered since the reduction of the building in 1775. The inner court, however, is still surrounded by a cloister, in the windows of which are many shields of arms in stained glass; and in the chapel is a good window of Flemish glass, with twenty-one subjects, ranging from the Creation to the Final Judgment.

Hengrave Church, which is close to the Hall, was rebuilt in the first years of the fifteenth century, but has been altered considerably. The round tower at the west end is considerably earlier than the church itself, and it is probably of Norman construction. Several tombs are interesting.

The next day (Thursday) train was taken to Long Melford, which is a pleasing little village. In the fifteenth century it was the seat of a flourishing clothing trade, but this has now vanished. Melford Hall, on the east side of the green, formerly belonged to the Savages, but is now inhabited by the Parkers. It is an Elizabethan house and was at one time surrounded by a moat; it is built of brick with stone dressings. The Abbot of Bury, in whose gift was the living of Melford, had a summer residence on this spot, which, after the Dissolution, was granted to Sir W. Cordell. In 1578 he entertained Elizabeth here, and by his "sumptuous feasting and bankets" "did light such a candle to the rest of the shire" that Her Majesty with her "traine" returned greatly "content."

The beautiful church of the Holy Trinity is certainly worthy of a visit. It is chiefly Perpendicular, and is entirely composed outside of striped flint and white stone. The tower is now being restored in similar material under the direction of Mr. Bodley. Around the building, under the battlements and over the windows, run a series of curious inscriptions, formed chiefly of inserted flints, but much defaced, recording the names of the various benefactors. The interior of the building possesses a great deal of dignity: a lofty clerestory runs round it, supported by small piers, the spandrels filled in with enrichments. The north and south aisles have each a low chapel annexed to the east



end and ranging with the east end of the choir. The sedilia and the flat oak roof should be noticed in this small chapel.

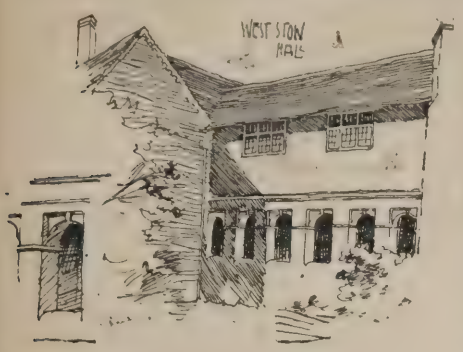
Kentwell Hall, lying close by, is a very good specimen of an Elizabethan house, and it has the great advantage of being almost free from the hands of the restorer. On plan it is in the form of an E, and is surrounded by a moat. The house was built by the last but one of the Cloptons and is approached by a splendid avenue of lime trees.

Lavenham, once a flourishing little town, still shows traces of its former prosperity in its rich old houses, but these for the most part present a tumble-down and uncared-for appearance. The "Moot House," an excellent specimen of half-timber work with its carved cornices and brackets, is notable. A quaint stone cross stands in the market p'ace, which possesses a certain dignity. The hand looms form an interesting feature of the town; they are to be seen in every cottager's room.

Standing upon an elevated site is the church of St. Peter and St. Paul, which is an exceptionally imposing building. It has a lofty clerestory and a massive tower, one of the finest in the county. It is Perpendicular throughout and is much enriched, especially the battlements. On the south porch are carved the boar and mullet, the bearings of the De Veres, lords of the manor from the Conquest, and placed here in honour of John, fourteenth Earl of Oxford, who is supposed to have erected the church in conjunction with members of the family of Spring between 1480 and



KENTWELL HALL. DRAWN BY H. F. WARING.



DRAWN BY H. F. WARING.

1530. The oak roof should be observed, with the arms of the De Veres; and the elaborately-carved pew of the Spring family, the curious and grotesque carvings of the stalls, the rood screen and the screens which divide the chancel from the side chapels—all are interesting. In the chancel, which has a Decorated English window, is an alabaster wall-tomb with kneeling effigies of Henry Copinger, rector (who died in 1622), and his wife. There is also a simple but curious small "brass" in the vestry to Thomas Spring (1480), one of the clothiers who are supposed to have begun the rebuilding of the church, which his son completed. The tower has been left without its pinnacles. Round the top are shields with the arms of Spring. A house in Prentice Street has some good Elizabethan ceilings, and one in Water Street of Perpendicular date has a winding staircase formed out of solid brickwork. Hawstead Church, visited the following day (Friday), is of flint with the usual stone dressings, and inside are seen Norman doors and arches. A good rood screen, upon the south side of which still hangs the sanctus bell, attracts attention. On the chancel floor are brasses for Roger Drury, 1500. Mention must be made of several excellent little memorial tablets which have recently been placed in the church from the designs of Mr. Warren.

A drive from here of three or four miles brings into view Coldham Hall, which was an ancient residence of the Rokewodes. The present house was built in 1574 by Robert Rokewode, and, notwithstanding the stucco which is used somewhat freely, is decidedly picturesque. Inside is some good woodwork, notably a gallery. Rushbrooke Hall, close by, (the seat of the Rushbrooke family) is a large red-brick moated Elizabethan mansion. Externally the dormer windows and chimneys perhaps are most noticeable, whilst inside a splendid oak staircase well repays a careful study. The Hall has many pictures of merit: the most important are a full-length portrait by Vandyck of Henry Jermyn, Earl of St. Albans, and a full-length portrait of Lord St. Albans by Lely.

The excursion was a most satisfactory one, and all enjoyed the week so profitably and instructively spent.

New Chapel at Upton Asylum.—The Cheshire County Council are obtaining plans for a new chapel it is proposed to erect in consequence of the large number of Protestant patients. The building is estimated to cost £6,000.

St. Andrew's Mission, Beaufort, under the charge of the Rev. Hugh Phillips, has been so successful that it has been found necessary to enlarge the church by the addition of a chancel and to provide a parish room for social and other gatherings. In order that there might be no delay, the curate in charge invited the male portion of his flock, chiefly colliers, to prepare the way by digging out the soil for the foundations. The appeal met with a ready response, and for some weeks they have devoted four hours every evening to the work after their return from the pits, the curate sharing their labours. The average attendance each evening was thirty, and eventually about two hundred tons of rocky soil were removed, a portion being utilised in levelling the churchyard. Building operations will be commenced as soon as funds are provided.

ROYAL INSTITUTE OF PUBLIC HEALTH.

ANNUAL CONGRESS AT ABERDEEN.

THE annual congress of the Royal Institute of Public Health opened at Aberdeen on August 2nd and closed on August 7th. The meetings were held in Marischal College, and about 800 members from various parts of the United Kingdom attended.

Lord Aberdeen, in the course of his presidential address, reviewed the progress of sanitation, especially as represented by legislation upon the subject. He remarked that it was exactly 100 years ago since the first enactments were passed which could be described as the direct ancestry of modern sanitary legislation. The earlier Factory Acts, designed especially for the protection of the children, might come under this category. Another kind of legislation which advanced concurrently took its origin in the necessity which had to be faced in crowded communities for an organised supply of water, as distinguished from independent and casual pumps and wells. So, too, with sewerage. The measures dealing with these elementary needs were the parents of our local sanitary Acts as distinguished from the factory class of legislation, which had throughout been administered under the authority of the Home Office. It would be difficult to over-estimate the importance of the new kind of administration as a whole, not merely in regard to its direct remedial operations, but as to its indirect and suggestive influence in education and enlightenment as to health arrangements. There had been a great and growing advance in sanitation, but, reviewing the whole position, there was no cause for complacency. Contemplation of what had been accomplished, however, often in spite of prejudice and many obstacles, might assuredly give ground for encouragement and confidence as to future progress and attainment resulting from careful and persevering effort in dealing with the problems which still confronted sanitarians. Amongst these was overcrowding, and from every point of view—religious, moral and humanitarian—there was crying need for the alleviation of that evil. Happily, public attention was being increasingly drawn to the subject, and a certain amount of reform had been attempted, but they must feel that the subject had yet to be grappled with in all its complexity and magnitude.



Principal Marshall Lang (Aberdeen University) moved a vote of thanks to Lord Aberdeen for his address, and Dr. Kingsbury (Mayor of Blackpool), Dr. Farquharson, M.P., and Sir C. Cameron, M.P., spoke in support of the motion.

In the afternoon the different sectional meetings were held.

Dr. Farquharson, M.P., as president of the section of municipal and parliamentary hygiene, urged that the powers of County Councils should be so enlarged as to include a large measure of home rule and avert costly parliamentary contests, and that the members should have their expenses paid. A discussion on the registration of plumbers followed, and a resolution was unanimously passed in favour of compulsory registration.

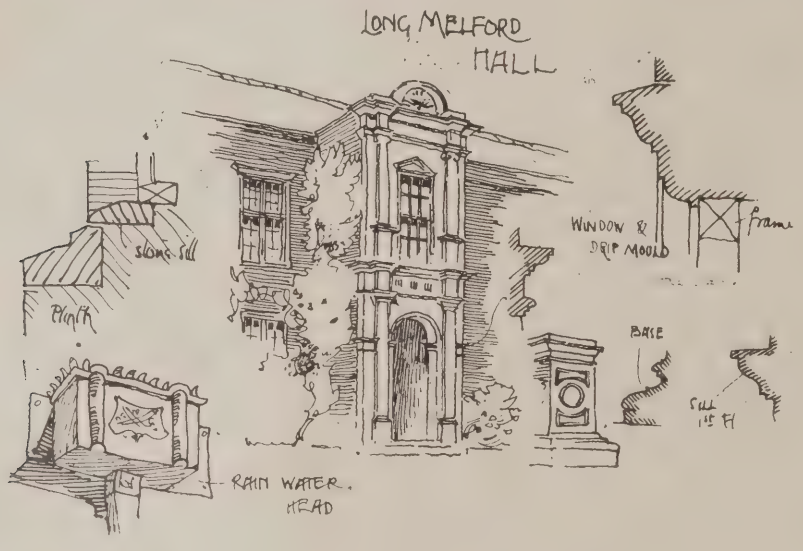
The Architecture and Engineering Section

opened its sittings under the presidency of Mr. John Honeyman, R.S.A., architect, of Glasgow. Mr. Honeyman, in his opening address, spoke of the science of construction as the oldest of our sciences, and they could frankly say it



showed no signs of decrepitude, but kept well abreast of the sister sciences in works of beneficence. Comparing the rude times of the aborigines with such works as the houses now being built in our great cities, or with the stupendous works now being carried out in the valley of the Nile, they were impressed with the enormous strides which construction had been making in recent years. On the engineering side the chief works connected with health were water-supply, drainage, sewage disposal and the disposal of the refuse of the towns; Mr. Honeyman dealt at length with the disposal of the sewage which found its way into the Clyde. The question of the proper ventilation of the dwelling-houses of both rich and poor was also being forced upon them more and more, and the most was being made of fresh air and other hygienic agents. A cesspool might be one of the best of Nature's cleansing departments, and they were losing sight of proper ventilation in the erection of the later class of houses, which had not the airiness of ancient structures. In the houses which were built to hold together only to sell they found the unintentional method of ventilation, but of the very worst description, because the ventilation was chiefly low down, from the floor. He had often been in a crofter's cottage where the walls were low and the windows small and not meant to open, and he never had the consciousness of any bad odour there. In many of the two-room houses which they entered the offensive smells made them beat a hasty retreat. He attributed the good health of the crofter and his wife, to whose cottage he referred, and who had reared there a family of ten, to the unintentional system of ventilation, the walls of the cottage being built dry and the air getting access to the different rooms in all directions. The only other house he remembered to have been in that was as well ventilated was a house of a very different kind—the house of Lord Kelvin. The ventilation there was intentional, and worth referring to as providing suggestions. Mr. Honeyman

described how the air in the house was heated by a powerful stove, the air then finding its way into the different rooms through arrangements at the top of the doors, and in such a way as not to cause the slightest discomfort. A most important subject they had to deal with was the health of their large cities, the death rate in some of which was abnormally high. The want of houses cheap enough for the poorest class was really at the bottom of it, because if the poor could not get houses they shared them with others to pay the rent, and swelled the system of taking in lodgers. But even though they had enough of these houses, they had a great deal to do to instruct the occupants how to act. Their habits were also at the root of the immense amount of mortality. Of course there was no difficulty about the housing of the artisans: it was with the very poor. Drunkenness was the greatest obstacle they had to sanitary reform, and the death rate was more increased by this and its consequent misery in the course of one year than in the course of ten by all the defective drains and defective plumber work. Mr. Honeyman concluded by referring to the architecture of Aberdeen, and said that, looking at the building in which they were assembled, they could congratulate the citizens of the Granite City that



A. A. TOUR, 1900. DRAWN BY H. F. WARING.

the power of her traditions seemed still to survive, and that they had still among them the Gibbs, Simpsons, and the Smiths of bygone years.

Mr. James Souttar, F.R.I.B.A., Aberdeen, read the first paper, which was upon "Architecture and Hygiene," and indicated some of the many ways in which architects might affect the health of our cities. He divided his subject into two parts—architecture applied to the hygiene of the house and architecture applied to the hygiene of the city—and held it was possible to build a healthy house almost anywhere.

The next and final paper for the day was on "The Architecture of the Twentieth Century," by Mr. Banister F. Fletcher, A.R.I.B.A., London, which was entirely an ideal paper, and was more or less an attempt, as he said, to look into the future.

The discussion of this paper was resumed on the next day.

Mr. Cecil, London, said there was one point on which Mr. Fletcher invited discussion: that was the use of gas stoves. He was perfectly sure it was possible to use gas stoves for heating and cooking without any injury to health, and he was also perfectly sure that there were immense numbers of gas stoves in use which were hostile to healthy conditions. Unless perfect combustion was ensured, the general promiscuous use of gas stoves would be dangerous to health, not in the way of fatal illness, but in the lowering of vitality, which rendered the body more susceptible to attacks.

Mr. Riddell, Suffolk, thought that something might be done in the way of improving the roofing of houses.

Councillor Cooper, Aberdeen, stated that recently there had been introduced into Aberdeen the Mansard roof, but the common complaint was that it was extremely cold in winter and very warm in summer. He was sure if they were to improve upon anything in the twentieth century it would be the adoption of some arrangement to take the place of these Mansard roofs.

Mr. Fletcher explained that the adoption of Mansard roofs was for the purpose of giving practically square rooms without the expense of walls; but he agreed with Councillor Cooper that such objections were urged against them.

Mr. R. Morham, city architect of Edinburgh, contributed a paper on "Suggestions on Fever Hospital Construction." In the first place, he alluded to the generally conceded need for fever as distinct from general hospitals, and he went on to point out the need for employing competent architects; the desirability of supporting the architect with ample but not extravagant instructions; of the distinction between ordinary and fever patients. After dealing with the staff quarters, kitchen, dining-room, store, dispensary, and laundry blocks, he concluded by pointing out that the object in view in all such institutions was to do the best possible for the patients durnig the period of their illness and for their comfort and recreation during convalescence.

Dr. Skinner, Willesden, said it was important that each ward should be large enough to accommodate a sufficient number of patients for a nurse to take charge of. He thought this was a better arrangement than having two smaller wards.

Mr. Morham said he agreed with Dr. Skinner. In a large hospital it was always desirable that the wards should be large enough to give employment for one nurse; but in small hospitals this could not always be done.

An Ideal Workman's Cottage.

Councillor Cooper, Aberdeen, read a paper on "An Ideal Workman's Cottage." His proposal, he said, was of a practical character, relative to the housing problem as it affected local authorities at the present time, and which, if it were carried out, would enable them to remove the necessity for a large section of the workers living in tenement houses, and would also in some measure prevent the overcrowding which manifested itself in every growing centre of population. The Legislature having affirmed the principle that public funds may be employed and the public credit utilised to provide properly equipped sanitary houses for working people, the question confronting them was what particular kind of house or houses might be erected to meet the needs of the case. He thought that real progress was more likely to be attained in dealing with the housing problem by keeping in view the ultimate objects for which sanitary science existed, rather than by seeking to satisfy the clamant and immediate wants of any single section in the mere matter of low rents. Neither the block buildings nor the tenement or flat system had been found to answer all that was desired in the interest of the whole community. In Aberdeen, where the popular working-class house took the form of a tenement for six or eight tenants, there were indications that in districts of the city where streets of such houses had been built these houses within a short space of time began to reveal most of the features of the slum. Passages became dilapidated, staircases were neglected, and in back-yards filth was allowed to accumulate. The fact was that too many people were crowded together under one roof, and although it might be set down as everybody's business to keep the place in order it was really nobody's business in particular, and very soon the place wore a broken down aspect, and would very likely be shortly occupied by a class of tenants more careless than the present ones, and would by and by become a district to be dealt with under a clearance scheme. The Aberdeen Town Council had erected workmen's houses on a piece of unoccupied ground near the centre of the city, the rents of which varied from £5 5s. to £9, while additional buildings of a different type were being erected on the remainder of the ground. There could be no hesitation in coming to the conclusion that the ideal scheme was that of cottages on the outskirts of the cities; and in what he had to say he wished it to be kept in mind he was confining himself to local circumstances. It was a point of the greatest importance that the city had now got possession and control of the tramways, and it would not be surprising if the Town Council were to join other cities in coming to the conclusion that to provide cheap means of transit and to use the tramway for the development of the outlying districts of the city, and also to provide cottages with small gardens attached, was the best solution of the housing problem. It would not suit the purpose in view if space was not afforded for a garden, which not only prevented the congestion of air space, but afforded a profitable and healthy recreation to the occupants and was the best way of stimulating an interest in life and home. They had almost every kind of cottage in the city of Aberdeen, but the cost of building was so great that they were beyond the reach of the working class, renting as they did from £18 to £40 and £50.

A Proposed Plan.

The plan he had prepared consisted of a single cottage with ground floor and attics, comprising a living room, parlour, and four bedrooms, with scullery, bath-room, and a back wing. It was a Scotch custom to prepare and eat food and to sleep all in one apartment, but in his plan the bed in the kitchen was done away with, and a number of small bedrooms provided, after the English type of workmen's houses. After describing various plans in the internal arrangement of the houses, he said he thought that municipalities might with advantage purchase suitable ground and build their cottages in detached blocks of, say, two, three, and four cottages, some of them with and others without a back wing. If this were done, some artistic taste could be shown in the laying-out of the ground, and a considerable saving effected by reducing the number of exposed gables. As to the cost of these cottages, the figures he could give would be of little value, the cost of building differing so much in different towns and at different times in the same town. Architects of experience had informed him that the cost in Aberdeen, confined to plain rubble masonry, in workmen's houses, ranged from 4½*d.* to 5*d.* per cubic foot. With the lowest of these figures the cost would approximate to £200 without the scullery, and £300 with it. These figures were high, and the Act of 1890 would be of little service to them unless the period for repayment were extended to at least 100 years for both the ground and the building. Of course, the cottages referred to would not serve the purpose they had in view if they could not be let for a rent of, say, £10 and £12 respectively. It was not part of their present purpose to discuss the various means by which such an object should be accomplished. He was convinced that in cities which are not overcrowded the authori-

ties would not be doing their duty if they did not take measures to prevent the growth of an evil which had been fraught with such dire results to the physical and moral welfare of humanity.

Mr. Fletcher, London, said he was afraid the problem was one that could not be solved. It was a question of pounds, shillings, and pence, and philanthropy could not enter into it. A poor man was not a pauper, and unless a cottage could be provided at a price that a working man could pay for it was perfectly impossible to erect an ideal workman's cottage. The whole thing, so far as he could see, seemed to be bound up in the question of easy and cheap transit.

Alderman Price Lewis, Wolverhampton, said he thought the ideal workman's cottage was such as had been stated by Mr. Cooper. The difficulties were largely financial, and the solution lay more in cheap transit that in anything else.

On August 3rd a paper by Lady Aberdeen on

Women as Members of Sanitary Authorities

was considered. As Lady Aberdeen was unable to be present the paper was read by Lord Aberdeen, who explained that it was rather as president of the Women's Local Government Society, which was responsible for the paper, that her name was attached to it. The paper contained some interesting facts regarding the useful administrative work done by women as members of local sanitary authorities, and mentioned that nearly 150 women were serving as rural district councillors in England, while women representatives were to be found on 35 rural district councils in Ireland. Hitherto women had done good work on the London vestries, but the new Act which was to come into force in November would exclude them from such work until freedom of choice was restored by an amending Bill. There were three good reasons why women of eligibility should serve on local sanitary boards:—(1) Women had special qualifications for some work which men could not do as well as women nor as fitly, and the very need for some of this work would not be seen until women had an opportunity of pointing it out; (2) even if women were not admitted to have special qualifications, the community was entitled to choose its servants; and (3) to secure the conditions necessary to the public health it was essential to exclude the co-operation of none.

On the suggestion of the president, it was moved by Mr. James Hay, of Aberdeenshire, and seconded by Mrs. Maurice Dockrell, Monkstown, County Dublin, that Lord Aberdeen be asked to introduce in the House of Lords an amending Bill legalising the election of women under the new London Government Act, and Lord Aberdeen agreed to give effect to the wishes of the Congress.

The Housing Question.

In connection with the question of legal stumbling-blocks in the housing question, Mr. Mansfield Robinson (Vestry Clerk, St. Leonard's, Shoreditch) proposed, and the motion was carried, that the Congress should urge the president of the Local Government Board to introduce legislation forthwith to enable local authorities executing schemes under Part 2 of the Housing of the Working Classes Act, 1890, to borrow the necessary money for reconstructing artisans' dwellings for all the persons displaced by such schemes, seeing that the charge of raising such capital money out of current rates is prohibitive and discourages local authorities from dealing with insanitary areas.

It was also agreed by 37 votes to 30 that the Local Government Board be requested to obtain the opinion of the law officers of the Crown whether it is legal for municipal authorities to erect artisans' dwellings under the Housing of the Working Classes Act, 1890, and charge on the rents the sums necessary for repaying by instalments the capital cost of erecting the dwellings.

In a paper on "Sanitation and Economics" Dr. Beveridge, of Aberdeen, expressed the opinion that the proposal to make workmen proprietors of their own houses would not yield beneficial results, because, owing to want of capital such owners would not be in a position to keep the houses in a thoroughly sanitary condition.

A paper was read by Councillor Dunlop, Glasgow, entitled "A Plea for More Air Space in and around Town Dwellings," and the following motion was passed: "That this Conference approves of the standard of air space for dwellers in cities and large towns being raised to 500 cubic feet for every adult and 200 cubic feet for each child under ten years of age."

Saturday, August 4th, was devoted to excursions.

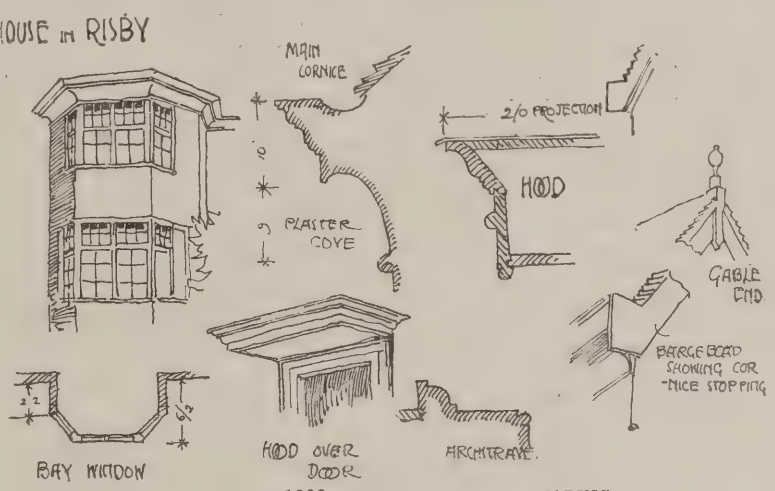
Professor Frankland on Sewage Purification.

The sittings on Monday were restricted to business connected with the conference of medical officers of health, sanitary inspectors, and veterinary surgeons. The principal address of the day was delivered to all the members of the Congress by Professor Percy F. Frankland (Birmingham), on recent developments in the purification of sewage. Lord Aberdeen occupied the chair.

Professor Frankland described the methods of purification employed at Birmingham and gave a detailed account of his experiments in connection with the disposal of Manchester sewage. These latter, he said, had altogether exceeded their expectations as to the possibility of purifying manufacturers' sewage, particularly by the use of a system of multiple contact. He deplored the apathy of corporations who built libraries and undertook public works but refused to consider the advisability of clearing away pollution because science could not make the sewage profitable. To expect science to show how money could at all times of the year be made out of town sewage was, in our climate, as unreasonable as to ask her to devise a means of lighting a town with electricity by utilising the waste heat which escaped from the bodies of the inhabitants. All the great developments in the purification of sewage, chemical precipitation, irrigation, intermittent filtration, and the bacterial treatment, including septic solution, were essentially British, although we were deeply indebted to America for the extraordinary diligence with which some of its men of science had conducted a truly monumental series of experiments demonstrating the great possibilities of intermittent filtration. Whilst, therefore, we might be justly proud of the great fertility of resource which had been exhibited in this country in dealing with the sewage problem, it was a matter for humiliation that there was in the whole British Empire no organisation whose duty it was to carry out extended experimental enquiries on sanitary subjects on the scale and with the thoroughness adopted by the Massachusetts Board of Health. All scientific investigation in this country was carried on under extraordinary difficulties, and with little or no encouragement of any kind; frequently at the private expense and even on the private premises of the investigators, in hours or even odd moments snatched from a life of arduous duties of a routine character by means of which the daily bread was earned. They all knew how much was gained in efficiency through combination, which was the watchword of the hour in the commercial world, and there could be no doubt that a similar increase in efficiency and in unexampled advance would result from combination in scientific enquiry. We were beginning to realise in a number of directions by bitter experience that our methods were too casual and that we were losing ground through the tenacity with which we adhered to insular traditions and prejudices, which placed us at a disadvantage in the competition with the concentrated and organised efforts of neighbours who displayed greater elasticity and power of adaptation to the kaleidoscope of circumstances. In no department of life was this more true than with regard to our position in the world of science, for, high as was undoubtedly the quality of some of the scientific discoveries which were made amongst us, in point of quantity of output we were lamentably deficient through the absence of organisation, the lack of adequate encouragement and of the provision of opportunity. He considered that the Government ought to give to science in this country the position of influence and authority which it already occupied in almost every other civilised land, and that the objects of that section of science which that Congress represented should be furthered by the creation of a great Imperial Board of Health, under the auspices of which scientific enquiries of the highest value should be systematically prosecuted in all directions.

Dr. Farquharson, in moving a vote of thanks to Professor Frankland, supported the idea of the establishment of a Government Board of Health.

In the afternoon the delegates enjoyed a garden party, and the usual Congress dinner took place in the evening under the presidency of Lord Aberdeen.



A. A. TOUR, 1900. DRAWN BY H. F. WARING.

The Fifth International Congress of Architects was begun at Paris on July 30th, when a resolution favouring copyright in architectural designs was passed. On July 31st an excursion was made to Chantilly. On August 1st, papers having been read on the subject of architectural education, a resolution was passed that in every country the higher study of architecture should receive the greatest possible development. A visit was afterwards paid to Sorbonne. On the 2nd inst. a resolution expressing the desirability of a complete inventory of existing monumental remains and a uniform law for their preservation was passed. Afterwards a resolution was carried to the effect that all Governments should take measures to protect and render respected the title of architect, by reserving it in future for qualified persons. Mr. Locke, secretary R.I.B.A., contributed a summary of the work of the recent congress in London, and papers were read on "Habitations à bon marché." On August 3rd papers were read on American skeleton steel construction, and on foundations in hard soil. The Congress ended on Saturday, August 4th, when it was decided to hold the sixth International Congress at Madrid, Seville or Grenada in the Spring of 1903.

Law Cases.

The Sequel to a Fire.—An action remitted from the High Court was recently heard at the Merthyr County Court in which the plaintiffs were Messrs. Thomas and David John Rees, architects, and the defendants, Morgan and Cecilia Griffiths, of the Navigation Hotel, Merthyr. Mr. F. Sydney Simons, for the plaintiffs, explained that the original action was to recover a sum of £28 16s., being the balance of an account of £275, after giving credit for £246 4s. paid, for work done and fees earned in connection with the valuation of the dilapidations caused by a fire at the hotel and with the preparation of the plans and specifications and the getting-out of quantities for the rebuilding of the premises. He now, however, proposed to alter his claim to £104 16s., which, plus the £246 4s. already received, represented £351, being 10 per cent. which the defendants had agreed to pay on the amount obtained from the company in whose office the building had been insured. Mr. G. F. Forsdyke, on behalf of the defendants, raised the contention that the plaintiffs were bound by the particulars furnished in the original action, and that His Honour could deal only with the claim for £28 16s. His Honour agreed, and in the end judgment was given in favour of the defendants, with costs.

Claim for Damage through Extraordinary Traffic.—In the Queen's Bench Division on Saturday last Mr. Justice Bigham delivered judgment in the case of the *Epsom Urban District Council* v. *London County Council*. It was an action brought by the plaintiffs to recover from the defendants the cost of repairing certain roads at Epsom, repair having been rendered necessary through the heavy traffic of the defendants' contractors. In the year 1898 the defendants entered into contracts with two firms of contractors for the erection of a temporary hospital and the alteration of certain existing buildings at Epsom so as to convert them into a permanent hospital. The sites of both buildings were in the plaintiffs' district, and the contracts involved the carriage of exceptionally heavy traffic along certain roads in the district. The question was whether the defendants were the persons "by or in consequence of whose order" the traffic was conducted. Mr. Justice Bigham was of opinion that the plaintiffs were entitled to succeed on the main question. Another point taken was that in respect of the damage done under one of the contracts—that of Messrs. Kirk and Randall—the plaintiffs could not recover, as the proceedings were commenced too late. The statute provided that the proceedings should be commenced within six months, and therefore on this point the defendants succeeded. The amount to which the plaintiffs were entitled would have to be ascertained. The judge hoped that neither of the parties would spend any more of the ratepayers' money in litigating such a matter. The case ought to be settled. There would be no costs.

Building Without Having Deposited Plans.—Dathan Dickerson was recently summoned at the instance of the Guildford Rural District Council for erecting a building in Manor Road, Stoughton, without first delivering proper plans to the clerk of the Sanitary Authority, in accordance with the Public Health Act. Mr. Cullerne (for the Council) stated that in March the defendant called upon the surveyor and said he proposed to erect a pair of cottages in Manor Road. He showed a pencil sketch, and was then told the forms he would have to go through, and the necessary forms were given him. No plans were deposited up to May 17th, when the surveyor visited Manor Road and found that considerable progress had been made with the erection of the buildings. The surveyor on that day gave defendant notice requiring him to deposit plans within three days, and about eleven or twelve days afterwards plans were deposited. They were submitted for approval to the Council on May 29th, but were not approved, and defendant asked the surveyor for the return of the plans, so that he could make them comply with the by-laws. On June 6th the surveyor found that the works were still in progress and he ordered work to be stopped, which was done on the next day. The amended plans were afterwards sent in, but before they were placed before the Council he found the work again in progress on July 15th. Mr. Anstee, the surveyor, in answer to defendant's counsel (Mr. White), said he believed the plans came from Messrs. Peak and Lunn. Mr. White admitted that the plans were not submitted before the buildings were commenced, but said his client was not aware that the plans were not submitted by the architects. He sent the usual notices and he (Mr. White) put it to the Bench that it was a technical breach. The Chairman said the Bench could not consider it a technical breach by any means: it seemed to be an open defiance of the by-laws. The full penalty of £5 was inflicted, this including costs.

The Approval of Plans by Local Authorities.—The recent appeal case of *Regina* v. *Mayor, &c., of Eastbourne* raised an interesting point. A rule *nisi* was obtained by John Arthur Wright calling upon the Corporation of Eastbourne, as the urban sanitary authority, to show cause why a writ of *mandamus* should not issue, directed to them, commanding them to approve and signify in writing their approval of the building line as shown on the plans sent by John Arthur Wright to the Corporation for the construction by him of a block of buildings for the purpose of residential flats upon certain land adjoining the house called Mixbury House, situated at Hartington Place, in the borough. The Corporation passed a resolution that the plans for the erection of the flats should be approved as complying with the by-laws, but disapproved as regards the building line shown on the plans, on the ground that the flats were shown on the plans as intended to be erected or brought forward beyond the front main wall of Mixbury House, being a house on one side of and in the same street as the proposed flats. This was, in fact, a disapproval of the plans on the ground that the proposed buildings would contravene section 3 of the Public Health (Buildings in Streets) Act, 1888 (51 and 52 Vict., c. 52), which provides that "it shall not be lawful in any urban district, without the written consent of the urban authority, to erect or bring forward any house or building in any street, or any part of such house or building, beyond the front main wall of the house or building on either side thereof in the same street. . . ." The section provides a penalty for every day during which the offence is continued. The Divisional Court discharged the rule for a *mandamus*, holding that, according to the decision in *Smith* v. *Chorley Rural Council* (1897, 1 Q.B., 678), the matter was within the discretion of the Corporation, and the Court could not interfere by *mandamus* with the exercise of that discretion. The applicant for the *mandamus* appealed. Mr. Macmorran, Q.C., and Mr. B. A. Hall, for the appellant, said that by a by-law made under section 157 of the Public Health Act, 1875, plans of new buildings were required to be deposited with the local authority, and section 158 gave power to the local authority to approve or disapprove the plans. The local authority could only disapprove deposited plans upon the ground that they infringed a by-law. The remedy for an infringement of the statute was by proceedings for penalties under the statute before a magistrate. They referred upon this point to *Robinson* v. *Barton-Eccles Local Board* (8 App. Cas., 798, at p. 802); *Regina* v. *Tynemouth Rural Council* (1896, 2 Q.B, 451). The Court dismissed the appeal. Lord Justice A. L. Smith said that it was admitted that no by-law of the Corporation had been infringed. When the plans were deposited, the Corporation, in good faith, came to the conclusion that the proposed buildings would contravene section 3 of the Public Health (Buildings in Streets) Act, 1888. In his lordship's opinion, a *mandamus* ought not to issue to command the local authority to approve plans which the latter honestly considered were in contravention of the statute. How could the Court call upon a local authority to approve plans which, at all events in the opinion of the local authority, were in the teeth of the Act of Parliament? The case came within what Lord Justice Chitty said in *Smith* v. *Chorley Rural Council*: "They (the District Council) had jurisdiction in the matter, which they honestly exercised, and it was part of the question before them whether the building of the new houses amounted to laying out a new street. It is apparent that the object of the action is that the High Court may review the decision arrived at by the District Council and overrule it. In my opinion, such an action will not lie." For these reasons the appeal must be dismissed. Lord Justice Vaughan Williams delivered judgment to the same effect.

Important Ancient Lights Action.—The case of *Warran and Others* v. *Brown* came before the Queen's Bench of the High Court of Justice on August 4th. An injunction was sought to restrain the defendant from darkening, injuring, or obstructing the lights of premises owned by the plaintiffs in Bakehouse Lane, Leicester, and for an order that the defendant should pull down a wall in course of erection. The case was tried at Leicester Assizes, when judgment was reserved. In delivering judgment Mr. Justice Wright said: This case raises a question of general importance in relation to ancient lights—namely, whether the right which is acquired by statutory prescription is a right to the continuance of substantially the whole quantity of light which has come to the windows during the 20 years, or is ordinarily limited to a sufficient quantity of light for all ordinary purposes of inhabitancy or business. It seems strange that such a question should be still open for discussion, but there is a considerable body of authority in favour of either proposition. The facts are these. The plaintiffs, as the owners and the tenant of a building in the town of Leicester, claim damages and an injunction in respect of the obstruction of the access of light to windows more than 20 years old. At the trial the claim was limited to two rooms, one on the ground floor and the other above the former, both facing to the south. For a length of about 17ft. in front of these rooms the defendant has raised his own building from a height of about 20½ft. to about 26ft., but has set it back about 2ft. or 3ft., so that the width of the street between the two buildings, which was about 17ft., is now about 19ft. Four out of five windows in each of the two rooms are opposite to that part of the defendant's building which I have mentioned. These windows are large and high. Light is not in any direction cut off by very high buildings. I find that the defendant has not obstructed or diminished to any material extent, if at all, the light coming to the upper of the two rooms in question. As regards the four windows on the ground floor, I find that the defendant has materially diminished the light which the plaintiffs enjoyed for those windows for twenty years past, but that abundant light remains for all ordinary purposes of inhabitancy or business. I find that the defendant has by the acts complained of diminished the light so that it is now materially insufficient during some part of the day for the special requirements of the plaintiff Baum's (the lessee) industry (manufacture of hosiery). I find that the plaintiffs' premises have throughout the 20 years before action been suitable for such a manufacture as that now carried on by Baum, and that the kind of manufacture is and has long been common in the district, and has for 20 years past required more light than most other industries, but not until the last few years in so high a degree as at present, the older machines having been less delicate and complicated. I think that the light as it now exists would have been sufficient for any but the most recent kinds of machines. In my judgment no sufficient case for a mandatory injunction is made out in any view of the plaintiff's rights. The inconvenience to which Baum was subjected can be, and to a great extent it has been, obviated by the removal of machines to the upper room, and in any case it can be remedied by some increased expenditure for gas. The question is whether the plaintiffs are entitled to damages. If they are, I assess the amount at £100 for the tenant and £200 for the reversioners. A number of cases were cited, after which the Lords Justices James and Mellish and the Lord Chancellor (Lord Selborne) gave their opinions. Judgment was entered for the defendant, with costs.

Current Periodicals.

The Canadian Architect and Builder.—The chief feature of the July number is an able paper on "The Ventilation and Heating of Public Buildings," read by Mr. P. H. Bryce before the Engineering Society of the School of Practical Science, Toronto. If the plates are representative of what is considered Architecture in Canada, our colony must be in a worse state than England is. The houses at Toronto have too many roofs running into each other—in an attempt at the picturesque, we suppose. The National Trust Company's building in Main Street, Winnipeg, is a patchwork of architectural ornament of the "Styles," without even the redeeming feature of having been used with regard to proportion, mass, or solid and void—to say nothing of other essentials of good architecture. The Jubilee Nurses' Home at Montreal General Hospital is no better.

The Brickbuilder (Boston, U.S.A.) for July is an interesting number. Mr. H. B. Pennell contributes an article on the need of travel for the architect, the best system to employ, and the best places to visit. He points out the necessity for the student to possess considerable knowledge of architecture before judging and taking hints from old works. He says:—"Much has been written of the educational benefit to the architectural student of measuring and drawing the buildings of Europe and studying them in plan and elevation, section and detail. In England, especially, is this method paramount; in France, it is happily preceded by thorough academic training; and wherever or whenever it is used it should be combined with a wide knowledge of the history and science of architecture. Otherwise, the theoretical education is only partial and will result in practical archæology, mediævalism or classicism, incongruous and inappropriate." There is a useful illustrated article by Mr. Alfred Hoyt Granger on "The Designing and Planning of Small Railroad Stations." It has happily become the custom in the States to employ an architect upon the design of stations, and not, as in this country, to hand over everything—except perhaps the terminus—to the engineer. Mr. J. K. Freitag writes on "Some Inconsistencies in Modern Fireproof Design." Of the plates, the best is the "Bath House for the City of Philadelphia," Hazelhurst and Huckel, architects: this is a low brick building expressive of its purpose and altogether pleasing. "The Reptile House in Bronx Park, New York," is simple and suitable, but is marred by the detail.

The American Architect for July 21st gives the second part of an article by Mr. W. Paul Gerhard on rain baths in public schools. In the plates, the Memorial Hall, West Point, N.Y., is good on the exterior, but is uninteresting inside. The Battle Monument at West Point is worthy of a better figure on the top, the present one being quite unarchitectonic.—The issue for July 28th contains an article by Mr. E. C. Gardner on "Some Phases of Public Sanitation," and another by Mr. S. Beale on "The Rolls House and Chapel, London." In the plates illustrations are given of the London County Council Weights and Measures Office in Calvert Avenue, Shoreditch; the Shoreditch Free Library, Hoxton; and "Shillingford Hill," Berkshire (Mr. George Hornblower, F.R.I.B.A., architect). The Huguenot Lodge Chambers, New Rochelle, N.Y., is a neat Grecian building, for which we must be thankful.

The Architectural Review (Boston, U.S.A.) for July chiefly consists of an article by Mr. J. R. Coolidge, jun., on "The Characteristic Architecture of the Nineteenth Century." The author says: "If architecture be correctly defined as 'Building with Feeling,' then the characteristic architecture of this century is not architecture at all, or at most it is architecture in a very qualified sense. We build with calculation, economy and skill, not with feeling; with science, with knowledge, with resourcefulness, but still not with feeling. Our so-called architecture is intentional and elaborate and complex, intellectual rather than spontaneous—in a word, not architecture at all, or else the definition is incorrect and itself is in need of defining." Having made this very true statement the author proceeds to class the styles the century has witnessed as: (1) The Classic Revival; (2) The Romanesque Revival; (3) The Gothic Revival; (4) The Modern Renaissance; (5) The Néo-Grec; and (6) "The style of steel and glass and clay products, originating in France and England, developed principally in France and Germany, adopted throughout the civilised world, and just beginning to assume characteristic expression—the only true style of the century." We would wish Mr. Coolidge had chosen his words better; he and many others use the word "style" in such a loose manner. We do not consider as many do that steel should not be used in architecture, for architecture is refined building, and any and every material can be built. The plates illustrate a house in Locust Street, Philadelphia. The architects would do well to consider again the brick spiky ornaments on the dormers and gablet, and the decoration inside and over the doorway.

The Architectural Record (New York).—The July number of this magazine begins a series of articles on "Architectural Schools in the United States" with Columbia University. There are now several schools in the States modelled on the École des Beaux Arts, much more complete for the education of an architect than any we have in England. At Columbia University there is a most thorough system of training to be gone through. There is no doubt that a man of great artistic talent and originality will come out of it much strengthened, but the harm is almost as great as the good in stifling originality in one not so gifted by the great study made of Classic styles. We think that there, as here, as deep a study should be made of Gothic, Hindu, Egyptian, Japanese, Persian, Inca, and other styles, to avoid copyism by showing more of the true principles of architecture. There are other illustrated articles on "The Natural History Museum at Paris" and "The Art Gallery of the New York Streets." There is also a series of illustrations of mausoleums and tombs; Cleave Prior Manor, in Worcestershire; and of the staff and offices of Mr. George B. Post—director of a gigantic "plan factory."

La Revue de l'Art Ancien et Moderne this month is again entirely filled with articles on art subjects at the Paris Exhibition. The articles dealing with crafts, which make up the greater part of the number, will be the most interesting to architects: silver work, tin work, ceramic and glass ware, sculpture, bronzes and jewellery, copper work, iron work, clock work, armour, leather work, and tapestry are dealt with. There seems to be something in the French temperament that admires floridness, and throughout this magazine there are numerous examples of somewhat rococo works commended and illustrated. This is particularly noticeable in the silver work. The sculpture illustrated is, however, very admirable. Three special plates are included in the number—photogravures of a painting by Henner, a reserved piece of sculpture, "Le Mariage Romain," by E. Guillaume, and a piece of sculpture titled "Les Premiers Pas," by Marqueste; and a remarkably fine engraving in two colours by M. Chiquet of a silver and ivory statuette.

Die Kunst for August devotes much space to reproductions of pictures at the exhibition of the band of artists known as the Munich Secessionists. Dr. Karl Voll contributes a short critique on the exhibition. An article on "The Teaching of Drawing" is interesting as affording a German view of art teaching in English schools. The author, Herr Hermann Muthesius, is a resident in London, and is evidently familiar with our English methods. Of these he speaks very highly, and it is gratifying to our national pride to know that, whatever may be our shortcomings in the matter of the artistic training of the young, we are, in the opinion of this competent critic, far in advance of our German neighbours. "Art in the school" he declares to be what Germans specially need to-day: the average German schoolmaster is too busy imparting scientific knowledge to have any time to devote to the teaching of drawing, and this has led to a general indifference to and ignorance of artistic matters. In regard to architecture, the only question the public ever ask when a new building is erected is: "What style is it in?" "The man who can recognise whether an example of architecture belongs to the Gothic or Renaissance style considers that his artistic education is complete, while he who can find out that the architect of a new house has produced a mixture of Gothic and early Renaissance is regarded as quite an expert." This passage would with equal accuracy describe the general ignorance on architectural matters prevailing in England. Herr Muthesius thinks that in a well-organised system of artistic education lies the remedy for this sort of thing; and no doubt he is right, though we should certainly not recommend our German friends to adopt the South Kensington system in its entirety. An article on French jewellery is extremely well illustrated, and the same remark applies to the article on "Denmark at the Paris Exhibition."

The Berliner Architekturwelt is largely taken up with exhibition matter, though the Paris Exhibition this month obtains only a comparatively small amount of space. The other exhibitions noticed are the Building Exhibition at Dresden and the Exhibition of the Berlin Secessionists. The illustrations include several examples of modern German architecture, the most commendable of which is one of the villa known as Heilbron, a building in the German Renaissance style, in which the architect has relied for the decoration of the façade upon the juxtaposition of differently coloured building materials.

The Antiquary this month contains articles on "St. Katherine in Art, Legend and Ritual," by Mr. J. Lewis André; "Prisoners of War in England a Century Ago," by the Rev. G. N. Godwin; "John Hazlitt the Miniaturist;" and an illustrated note on a French type of bronze axe found at Hull.

The Church Builder for July has illustrations of the new tower to St. Michael's Church, Bournemouth, and of Dundran Mission Church, Bromfield. Mr. J. T. Micklethwaite contributes an interesting article on "Motive in Church Design." Various information about the Church Building Society is also given.

The Quarry this month has articles on the stones and quarries of Yorkshire, the proposed upward boring for water at Reigate and Redhill, and the chemistry of building stones. The upward boring for water is necessitated by Reigate being situated at the foot of the chalk escarpment which rises above the town to heights of more than 600ft. above sea-level. Below the chalk, which is here about 600ft. thick, there is a bed of upper greensand 60ft. thick, separated by a thick stratum of the impermeable gault clay from the Cromer greensand formation. All these strata are water bearing, but the water system of each of these formations is kept distinct by intervening impermeable layers. The joint towns of Reigate and Redhill are situated most favourably for an economical water-supply, placed as they are in the midst of three distinct natural reservoirs. The scheme proposed is to bore upwards into the chalk from some tunnels already made in a disused quarry on Colley Hill, thus tapping the great basin.

The Artist.—The leading article in the August number of this magazine is upon the work of Mr. Conrad Dressler—the very able sculptor-potter. The work of this artist is now well known, and we are glad to hear that he is managing to compete in price with other manufacturers of faience. Many potters have achieved artistic success before Mr. Dressler, but have failed commercially. A good deal is heard now of nothing being so cheap that it cannot be artistic, and we would wish more results were forthcoming and less talk. We object to the writer of this article saying that no form of decoration for building can surpass glazed decorative pottery. The high glaze is generally admitted by all those entitled to criticise architecture to place the material far behind many natural stones,

mosaic, gesso, sgraffito, &c., even in smoky towns. All the idle stone-throwing at the Arts and Crafts Exhibition Society is also out of place in the article. It is stated that Mr. Dressler "is a thorough believer in up-to-dateness—level with the time, out of joint, alas, though it so often is to the artist." A special plate is made of one of M. Odilon Redon's lithographs. If this and the other illustration by him show, as we are told, the intensely personal touch which he possesses when he handles chalks and pencil, we cannot say we admire his personality. Mr. George R. Rigby's illustrated article on "Design for Stencil Work" is concluded in the issue under review.

Feilden's Magazine for August (a birthday number) makes it appearance with a better style of cover design, and is full of readable papers, probably the most important being that on "Railway Rolling Stock of High Capacity," by Mr. J. D. Twinberrow. There seems to be no valid reason why we should not replace our present small waggons, having a capacity of from 4 to 10 tons, with vehicles capable of carrying 35 to 50 tons, as in America. Quite apart from economic questions, the advantage gained by diminished labour and danger in the shunting operations is a factor not to be lightly disregarded. And there is also every reason to believe that much of the congestion that disorganises the goods traffic round our industrial centres might be obviated by such an introduction. There is also an interesting article, copiously illustrated, on the work of the Simplon tunnel; we trust that the tunnel, when completed, will be better ventilated than the inferno of St. Gothard. A paper on notable exhibits at the Paris Exhibition and an account of the exhibits at the Tramways and Light Railways Exhibition will attract attention in a number preserving the reputation for artistic "get-up" which this magazine has always enjoyed.

Views and Reviews.

Footways.

The object of this little book is to place before the student public in a concise and handy form, the modern practice in regard to the construction of public footways. We think the author can fairly claim to have succeeded in his attempt to collect information which is too often imperfectly known and is so usually lost in the manuals on roadmaking that the confirmation of any required fact is a matter of difficulty. Very rightly, the necessity of "a firm, solid and dry" foundation is insisted upon, and we trust that surveyors reading this will appreciate the author's dictum that "this being once properly constructed will last, merely (in most cases) the covering or paving requiring to be renewed." We prefer the word "footway" to "footpath," not only because it is a more natural concomitant to "roadway," but also because it serves as a distinction to the "footpath" of the country district. It would be idle to cavil at the work for this however. The book is marred by a few literal and grammatical errors, as, for instance, that on p. 13, line 16, and again that on p. 20, line 1, which the author will do well to correct in the reprint that will doubtless be required.

"Footpaths: their Maintenance, Construction and Cost," by A. Taylor Allen, C.E. Sanitary Publishing Company, Limited, 5, Fetter Lane, E.C. Price, 6d. net.

Art Exhibition at Munich.—The eighth of a series of International Art Exhibitions will be held at Munich next year, and will be promoted by the Munich Artists' Club and the Plastic Art Union of Munich. It will be conducted for the most part on the same principles as the last exhibition, held in 1897, which comprised painting, sculpture, etching and engraving and design, both as illustrated by drawings and as carried out in materials. Further information can be obtained on application to the secretary of the Artists' Club, Künstler Genossenschaft, Munich.

THE PARIS EXHIBITION.

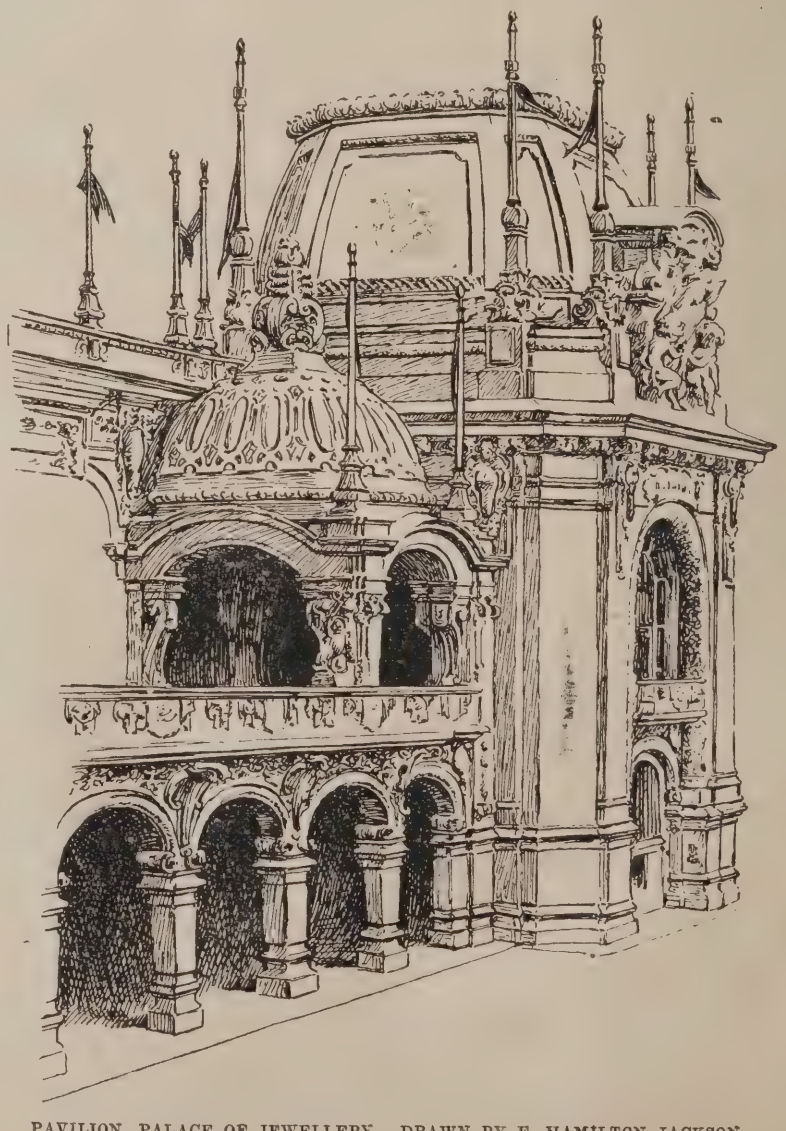
By F. HAMILTON JACKSON.

I.—THE BUILDINGS.

(*Continued from page* 477, No. CCLXXXVI.)

THE Avenue Nicholas II. conducts to the Pont Alexandre III., beyond which the palaces in the Esplanade des Invalides form a brilliant vista, terminated by the grey façade of the Hôtel des Invalides and the gilded dome beneath which repose the remains of Napoleon the First. The bridge springs with a fine curve from bank to bank of the Seine, a leap of 109 metres. The spandrels are filled in with a rather *banale* decoration of pilasters gradually shortening, between which hang garlands. At the crown of the arch come the inevitable Amorini supporting a shield. That to the right symbolises the nymphs of the Neva; that to the left, not yet in position, is to symbolise the nymphs of the Seine. At each end are two pylons, as they call them, supporting gilded groups, which consist of a rearing winged horse and an attitudinising figure of a man attempting to rein him in. They are the work of good French sculptors, and are supposed to symbolise "the renown of the Arts, of Science, and of Commerce." The pedestals are very good, being reminiscent of the Colleoni pedestal at Venice, though there are but four engaged columns at the angles, which are more lofty. Beaks of galleys protrude from three sides, and on the fourth is a group, symbolising respectively the France of Charlemagne, Contemporary France, France at the time of the Renaissance, and the France of Louis XIV. These figures are not without dignity. The candelabra are rather dumpy and squat in proportion, but the groups of children sporting round them are pretty. The thrust of this bridge upon the abutments is calculated to be 50 kilos on each square centimetre, and it is said that it would have been impossible to construct it a few years ago with the materials which engineers then had at their command.

The Porte Monumentale, by which one enters from the Place de la Concorde, and about which so much fuss was made, is, like a great deal of the design of the palaces, distinctly reminiscent of the bride cake. The main fillings of the spaces left by the iron construction are made of wood and cement, coloured in pale colours and ornamented with badly-designed patterns in very effective iridescent blues, greens and gold. A frieze of rather over-sketchy pottery panels of animals runs round the base at about the level of the eye, good as far as the animals go, but with the field sunk round each as if it were being prepared for casting. These are the work of M. A. B. Got. Above them is on each side a relief, also in pottery, glorifying the *ouvrier*, and not very good. It is crowned by a preposterous figure symbolising La Parisienne, by Moreau Vauthier, which wears a sort of long robe and from any point of view but the front is shapeless. In front rise two slender obelisks which, together with the great arches of the gate, are pierced by holes filled with projecting glasses of different colours, lighted at night by electric light. It is evidently planned for illumination. The blues and greens and violets then give a spectral appearance from a little distance which is rather striking. The "tinselly" patches and the colour of the large figures in niches beneath the dome, with their painted backgrounds, fall then into place much more pleasantly; but the whole thing, and much of the other decorations about the Exhibition, suggests the pierced patterns stamped in brown



PAVILION, PALACE OF JEWELLERY. DRAWN BY F. HAMILTON JACKSON.

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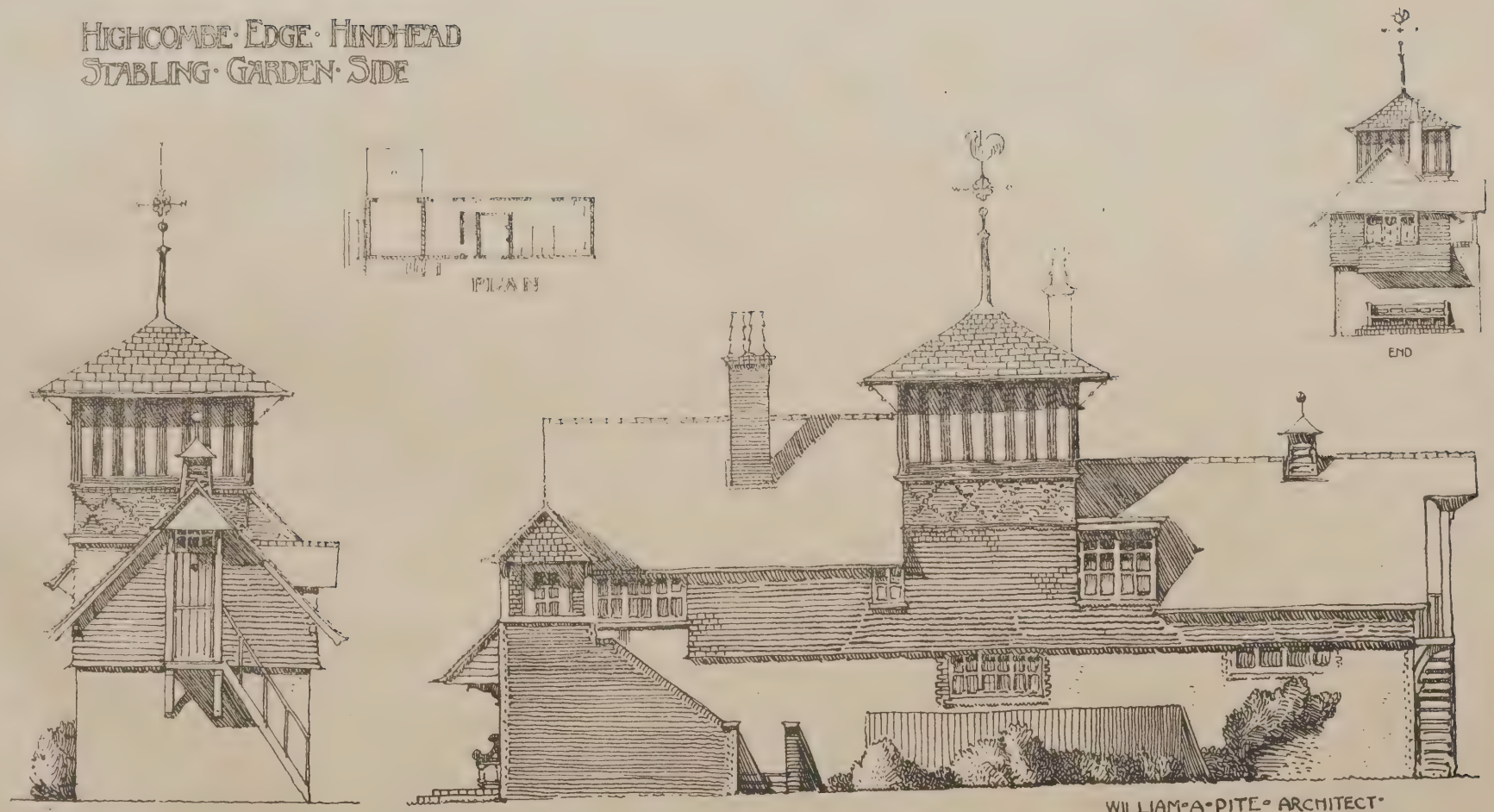


HOUSE AT CHURCH STRETTON. IVOR PRICE, Architect.

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Supplement to
THE BUILDERS' JOURNAL AND ARCHITECTURAL RECORD.
Wednesday, August 15th, 1900.

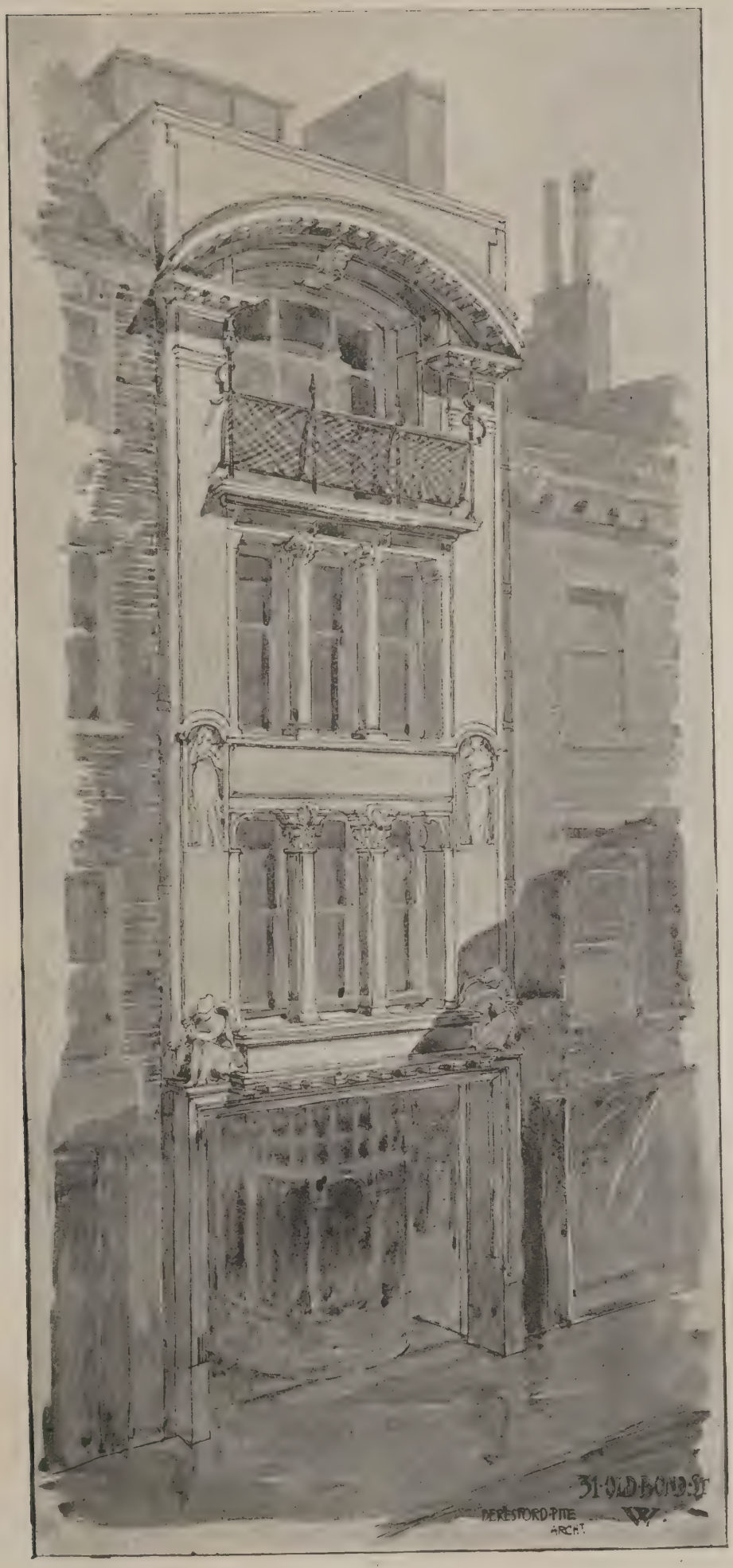
HIGHCOMBE · EDGE · HINDHEAD
STABLING · GARDEN · SIDE



WILLIAM · A · PITE · ARCHITECT ·
3 UPPER · MONTAGUE · STREET · W.C.


THOMAS GLOVER & Co. METERS
W.m COOK & Co.ts ENGINEERS
R. R. MAIN & Co.ts
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No. 31 OLD BOND STREET, W. BERESFORD PITE, Architect.

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cardboard for kindergarten work, to be made up into various objects.

The façade of entrance towards the Invalides consists of a circular portico through which one passes, open on two sides, the entrance being flanked by two pinnacled pavilions answering to two similar ones on the other side of the portico. At the external angles are two lower pavilions, and between, on the ground floor, twelve round-headed windows in groups of three, the first floor being filled with a long composition in relief in a frame, from which hang heavy garlands caught up above each centre window of the groups by three shields, which are supported by female figures. The shields have inscribed on them the words —"Pax," "Labor," "Ars." Two winged figures on each side above Pax and Ars divide each composition into three, between which are crowds of labourers in various processes. These reliefs, in coloured plaster, are the work of MM. Frère and Damé and are more successful than those at the Porte Monumentale, perhaps partly owing to the fact that while exalting labour they have not felt themselves obliged to dress the labourer in the costume which he wears to-day. The colour is generally cream and pale green, and though the detail is Louis XIV. for the most part the whole has a distinctly Eastern suggestion, specially evident in the pavilions and balconies a little nearer the Pont Alexandre III. In many cases, both in this esplanade and in other places, the painter and decorator in relief have destroyed whatever feeling for architecture may have been in the original design. There is generally too great projection in the modelling of ornament, and one often has the feeling that the design was made to a small scale and the effect of the full size imperfectly realised, though one must acknowledge that when seen by artificial light a good deal of the extravagant relief disappears, and the figures, which rather worry one by day, are not so obtrusive. There is no grand entrance at the Champs de Mars, and the architectural effect is reserved for the interior garden towards which all the palaces face. These include the Palaces of Mines and Metallurgy, of Weaving and of Machinery on one side, and on the other of Education, Transport and Chemical Industries; while at the bottom, facing the Eiffel Tower, is the great Palace of Electricity and the Chateau d'Eau, the great fountains of which are illuminated on the evenings of fête days. This façade is a gigantic effort which has not attained full success, the attempt to combine architecture, water, and a skeleton for effective illumination being perhaps foredoomed to failure. Added to this a certain straining after grandiloquence not infrequently met with in French art is visible, which may be illustrated by the official description of the group in the centre of the lower basin—"Humanity, which advances towards the future, conducted by Progress upsetting Routine and Hatred." Around the edge of the water dragons, crocodiles, frogs and other creatures spout water towards the centre, in quaint silhouette against the spray of the groups of jets which form the lower fountains. The Palace of Transport has a fine frieze, giving the history of locomotion from the earliest times till our own day. Commencing with barbarians and Egyptians, it comes down to air ships and military balloons, the motor tram and bicycle. Pillars which are corbelled out at intervals give richness to the frieze and support an overhanging roof which protects it. In the centre is a well-proportioned arch of entry with balconies above and pavilions at each angle. It is from the designs of M. J. Hermant and is one of the more successful buildings. In this part of the Exhibition, too, the influence of Oriental art seems strong—not in details, which are French and flowery, but in the arrangement and grouping of arches and pavilions, in curved architraves and retiring roofs curved over windows and doorways, in the character of the outlines of towers and domes. Around the Eiffel Tower and below the Trocadero are grouped a wonderful number of buildings of different sorts—some quite valueless from the point of view of art and architecture, and others of the greatest interest. It will be our hope to say something about the best of these shortly.



SUMMIT OF DOME, LITTLE PALACE OF ART.

(*To be continued.*)

ACETYLENE.

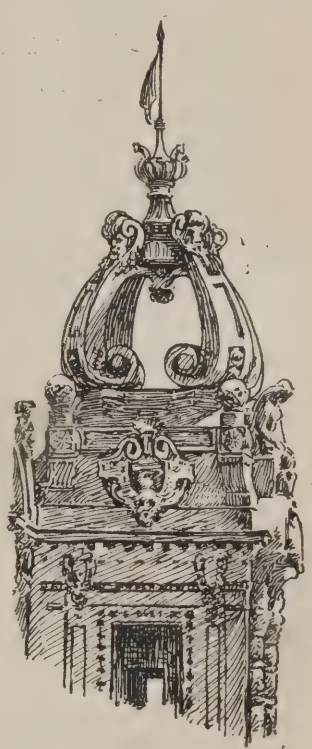
By J. H. ELDER-DUNCAN.

ACETYLENE was discovered as far back as 1836, but the difficulty and cost of producing it stifled any interest in the gas outside laboratory walls. Commercially its birth dates from the year 1892. In that year Mr. T. L. Willson, a Canadian chemist, experimenting at Spray, North Carolina, with the great heats obtainable in an electric furnace, fused together powdered lime and coal and produced crystalline carbide of calcium, which, brought into contact with water, gives off acetylene and leaves a lime residue. It should be mentioned here that M. Henri Moisson, a Frenchman, working contemporaneously with, and independently of, Mr. Willson, also discovered the principle of the lime and carbon acting directly upon each other; but his discovery was not announced until after Mr. Willson had privately sent specimen crystals to Lord Kelvin for identification. This discovery made acetylene a commercial possibility, and it has steadily progressed, even in this kingdom, though far less here than in Germany and the United States. Its slow progress in this country is due, first, to the characteristic disfavour with which the British view new chemical discoveries, and, second, the public timidity caused by an imaginary danger attached to its use.

The apprehension of danger may be traced to two regrettable mistakes, the attempts to liquefy the gas and the use of improper apparatus. The first mistake resulted in several terrible explosions and the loss of many lives, and the practical impossibility of compressing the gas having been demonstrated, the Home Government, by amendments to the existing laws, prohibited the production or introduction of dangerously compressed or liquid acetylene in this country. The general public, not being able to distinguish between compressed or liquid acetylene and the ordinary form, have in consequence regarded all forms of the gas as horribly dangerous. Let it be clearly understood that acetylene is not more dangerous than coal gas, and from a medical point of view is far less to be feared than the water gas which is daily introduced in immense quantities into the coal gas supply of the kingdom. Concerning water gas the reader might refer to the paragraph on p. 454 in last week's issue of the Builders' Journal. But when I say it is not more dangerous than coal gas I would insist on it being equally carefully treated. Acetylene is not a toy: it is not a gas that can be manufactured in the kitchen cupboard, nor is it very suitable for table lamps or bicycle lanterns. No one would attempt these purposes with coal gas and no one should attempt them with acetylene. It is precisely because acetylene has been exploited in a wrong manner and for purposes for which it is unsuited that so many customers have become disgusted with it and the industry has correspondingly suffered. And this consideration brings us to the second mistake, the use of improper apparatus, because it is mainly owing to this attempt to foster wrong methods that much of the improper apparatus has been designed. I shall have occasion to say more about this under the heading of "Generators."

Carbide of Calcium.

Carbide of calcium, or calcic carbide, is a dark brown-gray purple-streaked crystalline substance, containing 40 parts by weight of calcium combined with 24 parts by weight of carbon. It is manufactured by the fusion of calcium and carbon (usually in the forms of quicklime and coke or coal) in a specially constructed electrical furnace. The formula is CaC_2. Its specific gravity is 2·262, and when pure a pound of it will yield on decomposition 5·58 cubic feet of acetylene. In practice the yield from best carbide should be about 5 cubic feet per pound in a good generator.



TOWER FROM FURNITURE PALACE.

The price of the carbide runs from £14 to £23 a ton, wholesale and retail. The chief difficulty in its production is the want of a suitable cheap and pure form of carbon. It has not yet been manufactured in an absolutely pure state, but the high percentage of 99·9 has been reached. The carbide will rapidly deteriorate if exposed to damp or atmospheric moisture, and must be kept in air-tight drums or cases, according to the Board of Trade regulations. It is not, however, affected by ordinary heat.

Production and Properties.

On the addition of water to the carbide a double decomposition takes place, the oxygen of the water, combining with the calcium, forming lime, whilst the hydrogen unites with the carbon of the carbide to form acetylene. The lime afterwards takes another molecule of water and forms calcic hydrate, or slack lime, which is left as a residuum and slightly exceeds in bulk the original amount of carbide. This slacked lime is useful for manuring purposes.

The chemical equation in the generation of acetylene is as follows:—

$$CaC_2 + H_2O = CaO + C_2H_2$$

(Carbide + water = lime + acetylene)

The lime afterwards slacks:—

$$CaO + H_2O = Ca(HO)_2$$

(Lime + water = calcic hydrate or slacked lime).

The above-mentioned chemical action gives rise to heat, and if this heat is not kept under the gas will be damaged. At a temperature of 140° F. the gas begins to split up into benzine constituents; at 400° F. it is destroyed for lighting purposes. It follows, therefore, that the generators require very careful designing to prevent this.

Acetylene is a colourless gas of penetrating and characteristic odour. It consists by weight of 24 parts carbon and two parts hydrogen, and is represented by the formula C_2H_2. Its density is 0·92 (air = 1) and it is therefore only slightly lighter than the atmosphere.

The hygienic advantages of acetylene may be stated as follows:—

First: The gas consumes *less oxygen* per candle power than any other.

Second: It adds less carbonic acid to the atmosphere. A 5ft. burner of ordinary gas produces carbonic acid equal to that in the exhalations of eighteen adults, while acetylene gives off but one-sixth that amount.

Third: It heats the air less, the temperature of an ordinary burner being 1400 degrees, that of acetylene only 900 degrees.

Fourth: It has not the poisonous characteristics of coal gas and is not so inimical to plant life.

The other advantages of acetylene are as follows:—

1. It emits a brilliant light when consumed on a proper burner, the spectrum being nearly equal to that of solar light. As an illuminant it is fifteen times more powerful than gas light.
2. The light is exceedingly valuable for photography.
3. The light does not affect colours.
4. It has a steady flame, possessing greater diffusive power than any other light.

The truth of the saying that figures can be made to prove anything is well exemplified in regard to the cost of acetylene, and the figure juggling which *some* manufacturers resort to to prove that acetylene is cheaper than any other form of illuminant is amusing if not instructive. It may be stated at once that acetylene is not cheaper or dearer than other illuminants. It is difficult to calculate cost, but the usual method is to take coal gas of a certain price and lighting power as a standard, and compare the others, reducing their higher or lower lighting powers to the same equivalent. In this connection it may be stated that acetylene burners usually consume ½ cubic foot of gas per hour, giving a light of twenty to twenty-two candles; and an ordinary coal gas burner consumes 5 cubic feet per hour, with a light equal to sixteen candles.

The following tables, issued by an acetylene generator firm, give a fair idea of the comparative costs of acetylene lighting compared with other artificial light:

Coal gas (ordinary burner) at 2s. 9d. per 1,000 c.f.	1 00
Coal gas (Welsbach incandescent burner, not including cost of mantles) ...	·47
Petroleum	·62
Acetylene (carbide at £20 per ton) ...	·85
Electricity at 4½d. per B.T.U.	1 68

The above figures give the cost of material only, and coal gas is put at the lowest possible price.

If coal gas be taken at 4s. per 1,000 (an average price), the comparison changes as regards gas lighting and comes out as follows:—

Coal gas (ordinary burner) at 4s. per 1,000 c.f.	1·45
Welsbach (not including mantles) ...	·98
Acetylene (carbide at £20 per ton)...	·85

Generators.

A good generator would be—

1. One that produces the gas without detrimental heat being evolved.
2. One that produces the practical maximum of gas (5 cubic feet) from each pound of carbide.
3. One that is simple in construction and without delicate parts that wear out quickly.
4. One that is easy to charge and clean, and regular in its working and not given to fouling.

Unfortunately a machine perfect in all these respects has not yet appeared.

Generators are divided into two distinct classes—automatic and non-automatic. In both classes the contact between the carbide and water is effected in one of the three following ways:—

Type 1. The water drips or is sprayed on to the carbide.

Type 2. The water rises underneath the carbide, and gradually submerges the entire charge.

Type 3. The carbide is precipitated into a large volume of water.

Automatic Generators

are an inventor's craze and their advantages are practically infinitesimal. They are the outcome of the kitchen cupboard idea and are therefore to be avoided.

(*a*) Automatic generators are those which have too small a storage space to contain the whole of the gas generated from their proper charge of carbide. The storage space must not exceed one-fifth of the capacity of the apparatus.

(*b*) When the air in the storage space has been driven out by the ascending gas the capacity of the generator is reached; any excess of gas exerts a pressure which is utilised to end the contact between the carbide and water and so stop the generating process.

(*c*) When the consumption of the gas begins the storage space is exhausted, the pressure relaxes, contact is re-established and generation proceeds. The foregoing is the theory of these generators.

(*d*) The practice is not friendly to the theory. The gas does not immediately cease generating when contact is ended. As long as the carbide is moist the gas will generate until the carbide or the water is quite decomposed. A considerable volume of gas is thus created for which there is no room in the apparatus, and this is forced out of the generator into the open air—a proceeding both wasteful and dangerous.

(*e*) In addition, the extra machinery involved in the automatic action is less easy for the layman to understand and more likely to get out of order. The suction at the burners is likely to hurry the evolution of the gas and cause heat. Also, the automatic type is supposed to generate gas sufficiently quickly to maintain ample pressure at all the burners on the system, but the expectation is not always fulfilled.

The automatic type 1, in which the water drips or is sprinkled on the carbide, is peculiarly liable to overheating. The contact is stopped by shutting off the water supply. The automatic type 2 is also liable to overheating, especially if the automatic action to stop contact raises the mass of decomposing carbide out of the water, or if the water is driven back from carbide that has already been submerged. Both arrangements are very dangerous. The contact is here stopped by preventing the further immersion of the carbide. The automatic type 3, if properly arranged, has no danger of overheating. Contact is stopped by shutting off the supply of carbide; but it will be apparent that, after this is done, the carbide already in the water will have to completely decompose before generation ceases. This class also yields less gas per pound of carbide, owing to some of the gas being dissolved in bubbling up through the water, but through this washing the gas is yielded in a much purer state than by the other classes.

Non-automatic Generators

are likely to come much more to the front. They are naturally simple in design and should be more generally used for permanent installations.

(*a*) Non-automatic generators are those in connection with which a holder is provided with sufficient capacity to receive the whole of the gas generated from the largest charge of carbide the apparatus is capable of taking.

(*b*) In this class of generator the air or circulating space must be as small as possible. An arrangement must also be provided that in case the pipe between generator and holder becomes choked the gas can escape or blow off.

Non-automatic, type 1: This type is the most liable to overheating, as in the case of the automatic type 1. "The makers of apparatus that are liable to give rise to excessive heating invariably deny the possibility of such an action taking place with their generators, and when it is proved to them that it is so fall back upon the defence that even if the mass does become red hot there is no particular danger."—*Report of the Acetylene Committee.* Non-automatic, type 2: This type is very much more satisfactory in the non-automatic class than in the automatic, but care must be taken that the water does not rise too fast, or generation will proceed too rapidly. This type also yields a larger amount of gas than type 3, and will be found generally a useful generator. Non-automatic, type 3: This type is the most simple and safe, but the yield of gas may be less than types 1 and 2 for reasons given concerning type 3 of the automatic class.

Condensation.

Theoretically, half a pint of water is sufficient to decompose 1lb. of carbide. In practice over one pint will be required to thoroughly effect the operation. This is due to the vaporisation of the water by the heat of the combination. This vaporisation points at once to the necessity of condensation, especially when it is considered that the liquid products are very corrosive to paint and metals. In the case of non-automatic generators a drip-pipe or catch-box between generator and purifier may be all that is practically necessary, but for those of the automatic or non-holder type a proper condenser must be provided.

Purification.

All authorities are agreed on the necessity of purification, for the crude gas is tainted with ammonia and phosphuretted and sulphuretted hydrogen. Three materials for purification are in favour:—

1. Bleaching powder.
2. Acidulated chromic acid.
3. Acidulated copper or iron salts.

The two latter are safer to use than the first named. The acidulation is effected by dilution with sulphuric or acetic acid.

Distribution.

The piping is exactly the same as that employed for coal gas. Owing to the small consumption per hour (½ cub. ft.) the piping may be proportionately smaller in diameter, but never small enough to risk stoppage by corrosion. It is hardly necessary to emphasise the superiority of wrought-iron piping over lead or compo, owing to its greater strength and the fact that it is not easily pierced or crushed. The slide chandelier and ball-joint fittings must not be used with this gas. The burners have been a considerable trouble. Owing to the richness of the gas in carbon it requires the presence of a large volume of air to ensure complete combustion. If the air supply is deficient the burners become carbonised and clogged, the flame is smoky and pure lamp black is given off. To obviate this defect fine holes are drilled radially just below the top of the burner and the stream of gas sucks in sufficient air on its way to the orifice. Ordinary metal burners were found to be unsatisfactory and given to carbonising, so experiments were made with other materials. Steatite is the material now generally employed, and the burners are either made wholly of it or have steatite tips. The best form of burner is the double arm or horseshoe type, in which two small streams of gas, one from each arm, impinge on one another. The body of the flame does not touch the burner, but is suspended, as it were, between the two arms. The question of shades is a matter of taste, but the brilliancy of the light usually demands such protection. It should not however be forgotten that the test of a good lighting specialist lies in his ability to arrange the lights in such a manner that the eye is not compelled to encounter direct rays. The complaint that acetylene is too brilliant is absurd, for it is not so strong as sunlight. Sensible people do not look at the sun without the aid of smoked glass.

Uses and Prospects.

Lighting is not the only purpose for which acetylene is adapted. Gas engines have been adapted to its use, but any serious development in the direction of motive power is

dependent on a considerable fall in the price of the carbide. Seeing that the carbide can be made at a cost of £8 a ton, the prices at present ruling, from £15 to £20 per ton, are absurd. It must be acknowledged, however, that the cost of production rests largely on the use of water power to drive the dynamos, for the cost of steam power means a prohibitive price. Attempts have also been made to use acetylene for cooking purposes, but it has a deleterious action on flesh meats, and is unfavourably viewed for this purpose by medical men. In photographic work of all kinds it is invaluable. Generally speaking, acetylene will not supersede coal gas or electric light where they are at present installed, but in country villages or remote districts possessing no system of lighting it has a wide field, for the small size and cost of the apparatus required for its manufacture, compared with the size and cost of an electric or coal gas installation, render it especially valuable in such districts, which have, as a rule, but a small rateable value. But its success in the future must necessarily depend on a reduction in the price of carbide, which is at present much too high.

Enquiries Answered.

The services of a large staff of experts, including all those engaged on "Specification," are at the disposal of readers who require information on architectural, constructional, or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Removing Paint from Old Panelling.

CATFORD, S.E.—W. H. G. writes: "Which is the best method of removing paint from old panelling, &c, without injuring the wood itself?"

It is almost, if not quite, impossible to remove paint from wood without more or less affecting the fibres of the wood itself, for it stands to reason that anything which is powerful enough to destroy the paint is also powerful enough to have a baneful action upon the wood. The damage, however, may be only a question of degree, dependent upon the care or skill of the operator. At the last Building Trades Exhibition I watched a demonstration of paint removal from wood with a material named "Stripso," the use of which, it was claimed, required only the application of clean water after the removal of the paint or varnish to render the surface fit for painting on again. The ordinary potash-lime method is a good one: Take American potash or pearl-ash (the sub-carbonate of potassium) and fresh stone lime in the proportion of 1 to 3, and after slaking the lime in clean cold water add the potash, and bring the mixture to the consistence of a thick cream. Apply with an old brush, and let stand until the paint softens. Before being repainted the work should be washed with a weak acid solution (vinegar and water will do) in order to correct any alkalinity remaining in the fibres. Ordinary washing soda may be used in place of the potash, although it is not quite so powerful. The European agents for "Stripso" are Charles Atkins and Nisbet, 1 Water Lane, Great Tower Street, London, E.C. H. E.

The Society of Architects.

CROUCH END, N.—S. H. B. writes: "Where can I get full particulars of the examinations for M.S.A.? What are the fees?"

Write to the secretary of the Society of Architects, St. James's Hall, Piccadilly, W. He will give you all the information you seek.

Plans of London Clubs.

NEWCASTLE-ON-TYNE.—B. P. writes: "I shall be very much obliged to you if you can tell me where I can see or obtain plans of the Junior Constitutional and Junior Military and Naval Clubs, or any other good and representative examples of clubs."

We are unable to refer our correspondent to any publication containing the plans of London clubs. Application could be made to the secretaries, who could perhaps put our correspondent on the right track.

Lights for Billiard Table.

NORTHAMPTON.—Q. writes: "What is the best light for a billiard room, more especially for over the tables? I am told that electric light has a bad effect on the eyes and that more shadow is thrown by the balls than by incandescent gaslight. Which do the best professionals (billiard players) favour?"

Incandescent light is very good for billiard tables. Professional matches, however, are usually played under the electric light. One lamp (32 candle-power) under each of the six shades is quite sufficient, and is much better than two lamps of less power. No bad effect is experienced if the shades are so made as to properly screen the eyes.

BURROUGHES AND WATTS, LTD.

Civil Service Examinations.

BRIXTON, S.W.—DERRICK writes: "Where could I obtain full information about the following Civil Service appointments:—The Admiralty Works Department, Royal Engineer Department, the English Office of Works, and the Irish Board of Trade? I read with interest an article on these appointments on p. 265 of your issue for May 16th last."

Particulars of the examinations named can be obtained through the secretary of the Civil Service Commission, London, S.W. "Draughtsman" can also make application to the Commission for the particulars he needs.

HENRY ADAMS.

Examinations for Surveyors.

DUNDALK.—IRELAND writes: "Is it necessary under the Act of 1899 to pass an examination for a borough surveyor, and, if so, what are the subjects and where can I obtain suitable books dealing with them?"

Our correspondent presumably refers to the London Government Act, 1899 (62 & 63 Vic. c. 14), which contains no provision as to the appointment of surveyors to the boroughs created by the Act. The Act transfers the powers of vestries and district boards to the new borough councils, which will, presumably, take over the present vestry surveyors. Advice as to preparation for a surveyor's duties might be obtained from the Secretary of the Surveyors' Institution, Great George Street, Westminster, S.W. G. H. B.

Ancient Lights.

SUNDERLAND.—ENQUIRER writes: "I am adding a new block two storeys high to my house; the block projects 13ft. from the main wall and 7ft. 9in. along neighbour's main wall. There are windows on both storeys. Can my neighbour claim compensation for interfering with his right of light?"

Yes, if the lights are "ancient lights," or if in any other way the neighbour has a right to the uninterrupted access of light to the windows. He can, in either of these cases, restrain "Enquirer" by injunction from proceeding with the building, and compel him to take it down so far as it obstructs the light.

H. P. B.

Builders' Notes.

The "Champion" Chimney Pot is made by the Patent Chimney Pot Company, Limited, of 105 Albion Street, Leeds, and can be obtained in two qualities, one now costing 16s. and the other 18s. It is made of fireclay and in buff and red terra-cotta, and can be fixed on any ordinary chimney stack. There are six trumpet holes and tubes, the pot has no cowl-cap, and it is claimed that down-draught is entirely prevented.

Hamblet's Blue Brick Company, Limited, has declared for the year ending March 31st, 1900, a balance of £12,544 15s. 8d. The interest on the 4½ per cent. first mortgage debentures absorbs the sum of £2,700, the depreciation written off amounts to £1,159 18s. 1d., leaving a balance of £8,684 17s. 7d., out of which the directors have paid interim dividends on the preference and ordinary shares amounting together to £4,800, and a balance of £3,884 17s. 7d. remained at March 31st, 1900. A final dividend at the rate of 6 per cent. per annum, absorbing a sum of £1,800, has since been paid out of this balance upon the preference shares, leaving £2,084 17s. 7d. undivided, which is carried forward to the next year.

Piece Work and Housing.—A correspondent recently called attention in a daily paper to a point which is worthy of grave consideration. He said:—"Some time ago correspondents doubted whether a bricklayer could lay 1,300 bricks a day. A builder says that when he was a workman he used to lay 2,000. Sixteen years ago London bricklayers laid 1,000, and now lay half as many, and Bristol bricklayers are not allowed to lay more than 400. Like restrictions prevail in other branches of the trade, and so the cost of building houses is doubled. The restrictions are aimed at the middle class, and fall most on the poor, who pay nearly twice as much rent in Nottingham as in Belfast, where bricklayers, &c., contract for their work and are paid for piece work. Do not these facts point to a chief difficulty in housing the poor?"

The Improved Industrial Dwellings Company, Limited, held its ordinary general meeting recently. Sir Sydney Waterlow, who was in the chair, said that the expenditure on capital account amounted to £1,114,685, which included the sum which had been expended on their new buildings in the Old Kent Road. The cost for these worked out at £75 per room, which compared with a cost of £45 per room which prevailed when the company first started its operations. There were several causes for that advance, the chief one being the higher cost of labour, while materials had also risen to a considerable extent in price, and the demands of the sanitary authorities were expensive matters. The average charge per room per week over the whole of the company's estates was 2s. 3d., but with regard to the new buildings the company would have to charge 3s. per room. All the rooms which the company had to let were readily taken up, which showed, he thought, that the weekly wages' class were in a better position than they were 25 or 30 years ago. The rents were paid to the company with a regularity which he thought would surprise anyone not connected with the undertaking. The rents and sundry receipts of the estates amounted to £115,381, leaving a balance of £41,164, allowing of a dividend on the ordinary stock of 5 per cent. for the year, and a dividend of 5 per cent. on the deferred shares for the year ending June 30th, 1900.

New Building By-Laws for Portsmouth.—Portsmouth, perhaps following the lead of Glasgow, is going to have some new building by-laws. The revised proofs are now under consideration. These do not include any by-law dealing with the erection of buildings on land which has been used for the deposition of rubbish, though there is the general provision that the entire ground surface or site of any new building is to be properly asphalted or covered with a layer of good cement-concrete, rammed solid, at least 6in. thick. There are districts at Southsea where even this proviso would not be sufficient to ensure a dry foundation. It is enacted that all new streets shall have a minimum width of 40ft., and there is a clause which provides that no building shall, without the previous consent of the Council, be erected which shall exceed in height the width of the street. The restrictions as to the materials are very scanty, it being merely stated that walls should be constructed of good bricks, stones, or other hard incombustible materials, properly bonded, and solidly put together with mortar "compounded of one part good lime and two parts of good sharp sand or other suitable material, with good cement, or with good cement mixed with clean sharp sand." Considering the numerous varieties of mortar used by the trade, some consisting of road dust and lime, and others of sea sand, or even earth, this clause should have been more definite. The regulations relating to drainage seem to be satisfactory, and the by-laws generally may be regarded as a great improvement on any that have previously obtained in the borough. They are framed on the model by-laws approved by the Local Government Board.

Bricks and Mortar.

APHORISM FOR THE WEEK.

Oh, to build, to build!
That is the noblest art of all the arts.
Painting and sculpture are but images,
Are merely shadows cast by outward things
On stone or canvas, having in themselves
No separate existence. Architecture,
Existing in itself, and not in seeming
A something it is not, surpasses them
As substance shadow.

"Michael Angelo," Part III.—LONGFELLOW.

Priced Quantities. AT the recent summer meeting of the National Association of Master Builders, held at Nottingham, Bristol scored in respect of a subject which has for many years occupied the attention of the local association. Mr. George Humphreys, the president, moved a resolution to the effect that no priced quantities should be sent in with the estimate, but should members receive an invitation to tender for work where it was stipulated that quantities should be sent in with the tender they should immediately inform the secretary of the Federation and the committee will at once take up the matter, with the view of avoiding friction between the contractors and the architects. After arguing the point with the meeting and remarking that the Bristol architects generally accepted this principle, he said the rule was made in the Bristol Association when Mr. A. Krauss was president, and he believed that the majority of the members supported it. The tenders were submitted and the bills of quantities were taken when the tenders were accepted. The proposition was seconded by Mr. W. Church and carried unanimously, so that the resolution will now be forwarded to all local associations throughout the country, and no doubt the majority of them will strictly adhere to it.

Cardiff and its New Town Hall. AS we have already noted, the good people at Cardiff have been enjoying themselves in lengthy discussions over the matter of their new Town Hall, which, by the way, will be situated in Cathays Park. One party wanted to delay the erection on account of the present high price of materials; the other party said, "Cost or no cost; let's make a start now or we never shall." Matters see-sawed in this way for some time, but last week the Cardiff Town Hall Committee came to a decision. Councillor Beavan said he was connected with a big undertaking in Cardiff which proposed to spend £60,000 or £70,000 in extending their works and buildings. They had the plans prepared and tenders in, but the contract was so heavy that they simply laid it aside for a time. Mr. Veall, speaking of the leading item of Portland stone, prophesied that the tendency would rather be upwards than downwards with large new quarries being opened. They had the park, and the ground was lying idle. When it had been utilised the valuable site on which the present buildings stood would be in the market. Of the 1¼ millions, the cost of the scheme, probably one-third would be spent upon labour and circulated in the town. The deputy-mayor pointed out that they were talking, to a great extent, in the dark. The law courts, they had been given to understand, were badly wanted, and they might, perhaps, proceed with them and defer the new Town Hall. Finally it was decided to postpone further consideration until tenders had come in.

Brighton Aquarium. BRIGHTON Aquarium is about to be purchased by the Corporation. A report prepared by the General Purposes Committee holds out the prospect of a most important development of the undertaking, which will, among other things, place Brighton in possession of a large winter garden. The Committee are of opinion that it is desirable that the character and use of the premises as an aquarium should be preserved as far as possible. The winter garden will consequently be an addition to and will not supersede the present buildings. The extra space demanded for this purpose will be obtained by the demolition of the restaurant and bazaar under the cliff—the last-named being the sole remaining vestige of the old Chain Pier—and by absorbing a portion of the roadway. Concurrently with this project, an improvement of the Marine Parade will be carried through. At present that portion of the Marine Parade immediately overlooking the Aquarium is bow-shaped. The intention is to make the line of frontage straight by carrying the promenade forward on arches. This alteration will be an improvement of great value, as it will add much to the comfort of the large number of persons using the promenade. All these various matters, including permission to ascend above the present restricted building line, will require the assent of Parliament, and a Bill is to be prepared accordingly; whilst the Committee ask for authority to obtain competitive designs for the adaptation and alteration of the buildings, and to offer premiums not exceeding £500 for such designs.

Archæological Researches at Hayles, Gloucestershire. FOR some time past Mr. St. Clair Baddeley and the Rev. William Bazeley, of the Bristol and Gloucestershire Archæological Society, have been conducting researches at the abbey church of Hayles, about twelve miles from Cheltenham. One of the most interesting discoveries this year is an old chronicle of Hayles Abbey, written about 1365, shortly after a devastating inroad of the Black Death, but containing little information regarding the abbey itself. One of the earliest entries tells us that the church and monastic buildings were commenced in 1246. The moulding of the stonework shows that the church is distinctly of two dates—Early English of *circa* 1250, and Transitional Early English of *circa* 1275. In 1271-77 an eastern apse was constructed with five polygonal chapels, two semicircular ambulatories, and another structure from a point in which radiated all the rest. This structure is, without doubt, the base of the shrine in which rested for 200 years the Holy Blood of Hayles and the piece of the true Cross. Considering that the site has been twice dug over for materials to build a home for the Tracy family at Toddington, and that many farmhouses and buildings in the vicinity are built of stone taken from the abbey ruins, it has been an agreeable surprise to find the base of the shrine intact. The beautiful apse in which it stood is believed to have been unique. The two chapels of the eastern apse on the north and the two on the south were floored with late thirteenth century encaustic tiles bearing the arms of Edward I., Richard King of the Romans, Queen Sanchia, Edmund Earl of Cornwall, and the Countess Margaret. Westward of the presbytery is the monks' choir, occupying the crossing and one bay of the nave. There are no traces of a central tower as at Tintern, nor of a tower at the north end of the north transept as at Fountains; but there are traces of a tower to the west of the north transept—a very unusual place for it. The church with the apse is about 320ft. long, as long as Gloucester Cathedral without the Lady Chapel. The work, which has proved so interesting and so fruitful in discovery, is being carried out by voluntary subscription, the treasurer of the excavation fund being Mr. G. M. Currie, 26 Lansdowne Place, Cheltenham. Until the end of August, when it will probably be found necessary to cover in the church, Mr. Bazeley and Mr. Baddeley have arranged to act as guides to the abbey and museum to visitors on Thursday afternoons.

A New Surrey Asylum. THE Visiting Committee of the Surrey County Council appointed to provide additional asylum accommodation recently sent out invitations to the members of the Council to suggest the names of suitable architects for the proposed asylum at Netherne. They received 49 replies, and after carefully considering them they arranged with Mr. George Thomas Hine, of 35 Parliament Street, S.W., to assist and advise them generally in connection with the methods to be adopted to secure the erection on the Netherne Estate of an asylum designed to provide in the best manner accommodation for 1,200 lunatics of all classes. Mr. Hine's fee for this assistance and advice will be 300 guineas, but it has been mutually agreed that, if Mr. Hine is appointed to carry out the work of designing the asylum, such fee would merge in his commission as architect.

Yatton Church Tower. YATTON is a place near Bristol, and for some time past—in fact, for years past—there has been a good deal of discussion as to what should be done to the truncated tower of the parish church. There has been a flood of correspondence and almost countless meetings and consultations. Antiquaries almost to a man were in favour of patching up; but practical opinion inclined to rebuilding the tower so long as the picturesque truncated character which renders Yatton a landmark to all Great Western travellers was preserved. The final decision is to take down and rebuild, and this has been decided by the parishioners who use the church and are proud of it; those of them who opposed rebuilding, now that the verdict has been given, have intimated their intention to do their best to raise the needful funds.

A County Architect's Duties. THE Cheshire County Council has decided to vary the remuneration and duties of their architect as follows:—The salary to be £500 per annum; the commission to be £5 per centum, but only to be charged upon the actual expenditure on all works carried out when the contract price exceeds the sum of £1,000, such increased commission to apply to all contracts in course of completion on July 2nd, 1900; to be paid a sum of £100 in full satisfaction for all professional services and disbursements, including the preparation of plans prepared by him, in respect of the alterations at Chester Castle and development of the prison estate, and the carrying-out of all contracts relating thereto, and in addition to be paid fees for preparing the plans showing the drainage of the several police stations of the county; in addition to the duties specifically prescribed in the terms of his appointment, the county architect is to examine and report upon all sites offered to the Council, to survey and peg out such sites, to prepare plans for conveyances, leases, &c.; and to superintend the carrying out of all work on the prison estate at Chester Castle.

"Ye Olde Dick Whittington." CLOTH FAIR boasts the oldest licensed house in the City of London—"Ye Olde Dick Whittington." Compared with the rest of the house, says the "City Press," the base is of modern construction, and yet not modern as the term is understood at the present day, for it must have been in existence for nearly two centuries. In the upper part of the house nothing has been altered since the days when the house was erected: the huge oak beams still bridge the ceilings of the rooms, in which, no doubt, Flemish and Italian merchants foregathered in the troublous times of the Plantagenets. There can be no question as to the whilome importance of "Ye Olde Dick Whittington": its position was such as to give warranty to the belief that many historic notables must have found accommodation within its walls, and have been entertained in the style characteristic of the days that are gone. Dick Whittington, "Lord Mayor of London Town," possessed a residence in Milton Street, once the famous Grub Street, which is but a short distance away; and to this fact must be ascribed the origin of the name of the house. As Whittington died in 1427 it is easy to conclude that the tavern existed as such in the time of the War of the Roses, so that, no

other tavern in the City laying claim to establishment at that period, "Ye Olde Dick Whittington" may fairly be regarded as the oldest licensed house in the City of London. It is somewhat curious, considering these circumstances, that most writers on London antiquities should have failed to notice this hostelry.

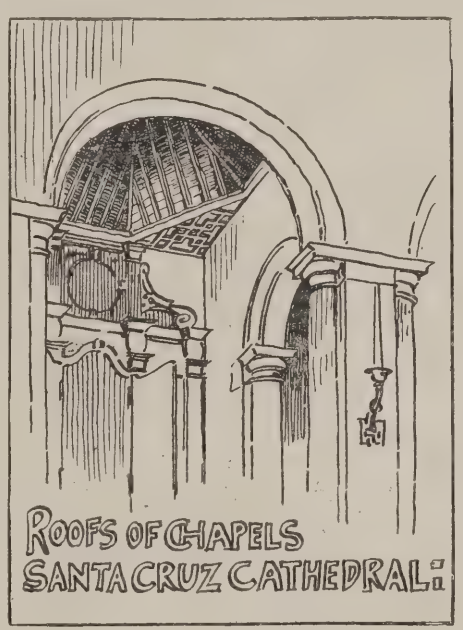
Liverpool's Garden. "WHAT shall be done with St. John's Garden?" This is a question which bothered the Liverpool Corporation a long time, but now they have settled it by adopting the scheme of Mr. Shelmerdine, their city surveyor. This provides for the widening of St. John's Lane from 50ft. to 70ft., by taking 20ft. off the churchyard; for the widening of William Brown Street from 66ft. to 90ft., by the removal of the plateau in front of the Brown Museum; and for the laying-out of the churchyard according, in the main, to the suggestions of Mr. Frampton, R.A., the sculptor of the monument to Mr. William Rathbone. At present the churchyard not only slopes from east to west, but from north to south. The scheme provides for the lowering of the level on the north side by an average of 3ft. This will necessitate the removal of a great many remains. The estimated cost of this part of the work is £20,000. The churchyard will then, however, be level from north to south. The main feature of the plan of decoration is an avenue 40ft. wide, extending from the terrace adjoining St. George's Hall to the Old Haymarket. From the Old Haymarket the entrance to the garden will be through three gates of light and elegant ironwork, hung between massive piers surmounted by sculptured lions. In the centre of the avenue will be a circular space surrounding a fountain and enclosed by an ornamental stone balustrade decorated with obelisks. The avenue will lead up to a circular level space, 110ft. in diameter, laid out in walks and flower beds.

A Satisfactory Scheme. ON the east side of this level space will be the semi-circular retaining wall of the upper terrace. The wall will be supported by buttresses treated architecturally, and will be surmounted by an ornamental balustrade of stone. On each side of the main promenade, and parallel with it, are two promenades, each 20ft. wide, leading to the flights of steps by which the upper terrace will be approached. The steps will be flanked by two pairs of pillars, on which it is proposed to place bronze griffins. In the centre of the circular space below the terrace the idea is to locate an important public monument—probably that to Mr. Gladstone. Other monuments will be placed on the terrace in effective positions. The existing statue to Mr. Alexander Balfour will be placed in the main avenue. Connecting the three main promenades are walks 10ft. wide. The garden will be surrounded by plantations, and the outer wall will be an ornamental construction, with strong piers at intervals of 30ft. and light railings between. Instead of the plateau in William Brown Street, the scheme provides for laying out the land in front of the museum in slopes and terraces. The approach to the building will be by a flight of thirty-four steps, extending the width of the portico.

Santa Cruz Cathedral. SANTA CRUZ is the capital of the island of Teneriffe, and the Cathedral of the Conception stands in a low quarter of the city, but it is redeemed from the commonplace by its fine campanile. This stands on the left side of the nave, its basement forming a porch to one of the principal entrances to the church. The architectural features of the interior are unpretending enough, the windows being mere holes in the walls, while the arcades consist merely of thin slightly-moulded elliptical arches carried on plain Doric pillars. The roofs of the chapels, of one of which we give an illustration by Mr. C. A. Nicholson on this page, are each formed into a small octagonal cone with flat triangular soffits at the corners. These soffits have slight decoration, small fillets of wood being nailed on to the boarding in an interlacing pattern, rather less bold than that upon the nave tie-beams. In one chapel the dome is pleasingly painted in bright colours; but, with this exception, the roofs have all been whitewashed.

A Despicable Act. MUCH indignation prevails among the townspeople of Leighton Buzzard over an audacious deed of disfigurement of the antique market cross which has for centuries stood in the centre of the town. At an early hour the other morning some young men fixed a couple of ladders against the cross, and by this means one ascended the structure and deliberately hacked off the left arm of the beautiful statue representing the Virgin Mary and Child—the most conspicuous figure in a group of five. The townspeople are at the present time spending £200 on repairing the cross and renovating its ancient carving. The cross is fourteenth century work and is one of the most famous in the kingdom.

Vandalism at Windsor. WINDSOR has now sacrificed an ancient street for a drill hall, which could just as well have been erected on a piece of unoccupied land. The street was one of the most ancient and interesting in the town, and



ROOFS OF CHAPELS SANTA CRUZ CATHEDRAL.

DRAWN BY C. A. NICHOLSON.

facing as it did King Henry the Eighth's gate it formed part of the *tout ensemble* of the Castle. We have such a lack of historical houses lying in the path of the public. The ancient seats of our nobles are mostly far from towns and surrounded by private parks. It was pleasant, therefore, to have these old houses built for the gay Court of King Charles the Second standing in a main street. As these houses were built purposely for the residences of ladies and gentlemen in attendance at the Court, an underground passage connected all the houses on the east side of the street as far as the old Vicarage, and branched off from there to the Castle. This passage was closed up about forty years ago. The house in which Nell Gwyn is said to have stayed is on this side of the street, but it is more than doubtful if she really resided there. In several of the old maps and prints Church Street is wrongly marked as St. Alban's Street, which may have given rise to this supposition. The only letter of Nell Gwyn's composition known to exist is dated "Windsor, Burford House, April 14th, 1684." This was the residence built by her and occupied later on by her son—the young Earl of Burford, afterwards created Duke of St. Albans—and was situated on the north-east or Castle side of what is now St. Alban's Street, running parallel to Church Street. In Norden's map of the town (1607) the street is shown leading up to the town church, which probably accounts for its name. In Hollar's view it is shown terminating abruptly, as it does at the present time. The old Town Hall stood at the Castle end of Church Street, but was done away with when the present Guildhall was built in 1889. At the opposite end of the street was the lock-up, and it was here, early in the nineteenth century, that the notorious Barthelmy was brought after his arrest at Priest's Hill, the scene of his last duel, in which he killed his antagonist.

The Carthage of To-day. A RAILWAY now runs to Carthage from Tunis. The summer palace of the Bey may be visited but superficially. A walk through the courtyards is allowed, surrounded by thickly latticed windows, but one may not stand still within the precincts. Not on the direct road to Carthage, but easily reached during the same drive, is the museum at Bardo, opened in 1888 in the old harem adjoining the Bey's public palace, and full of most interesting results of recent North African excavating. Catalogues can hardly keep pace with discovery and addition, so that of many beautiful things a verbal description by the intelligent attendant comprises all available information. Especially rich in mosaics, the museum contains room after room filled with fine examples of wall and floor decoration, those found in Suza (Hadrumetum) being generally in a better state of preservation than the Carthage remains. The ancient inhabitants would seem to have pleased themselves by reproducing with their bits of coloured stone many familiar scenes; and so "fishing," with men and boats and nets, a "seashore banquet," quite elaborately worked out, the "chase," with dogs, hunters and flying game, appear. In 1897 a very large pavement design was discovered near Zajhrun, representing the signs of the zodiac in a circle, surrounded by the seven days of the week. In addition to the earlier mosaics, there are many exhibiting Christian designs. But mosaics by no means comprise the chief wealth of the museum. Hundreds of Punic lamps of earthenware are gathered, showing simple but graceful forms and decoration, weird masks with ingenious varieties of contortion in the features, tear-vials and water-jars, and fine bits of sculpture. Three statues have been recently excavated together at Carthage, perhaps the most beautiful at Bardo. The central figure in this exquisite group is thought to be a Ceres, and is more perfect than the others. A few fine relics in gold and silver are shown, and altogether the Musée Alaoui would be an enthralling spot for months of study.

Pagodas. IT is not to China only that pagodas are confined. At Kew Gardens there is a large pagoda. It was erected in 1762 by Sir William Chambers, the architect of Somerset House. His own description of the pagoda as it appears in his work, "The Gardens and Buildings of Kew," is interesting. He says: "The tower commonly called the Great Pagoda was begun under the direction of William Chambers in the autumn of the year 1761, and covered in the spring of 1762. The design is an imitation of the Chinese Taa. The base is a regular octagon, 49ft. in diameter, and the pagoda is composed of ten storeys, all of them octagonal in plan. The lowest is 26ft. in diameter, exclusive of the portico which surrounds it, and is 18ft. high. The second is 25ft. in diameter and 17ft. high, and all the rest diminish in diameter and height in the same arithmetical proportion to the ninth story, which is 18ft. in diameter and 10ft. high. The tenth story is 17ft. in diameter and with the covering 20ft. high, and the finishing on the top is 17ft. high, so that the whole structure from the base to the top of the 'Fleuron' is 163ft." It is not generally known that at Osborne there is a garden cottage in the shape of a pagoda, where none may enter except Her Majesty. This cottage holds nothing but mementoes of the late Prince Consort and relics of the Queen's youth, as well as the toys and games of all her children, many of which the Prince Consort made himself. The pagoda at Pao-tah is the most curious in China, and is regarded with great veneration and respect by the Chinese, for it is the only pagoda on which trees may be seen growing. The Chinese have a leaning pagoda at Ningpo.

Keystones.

Guildford Corn Market.—The Guildford Town Council have instructed the Borough Surveyor to prepare plans and estimates for a new building.

"Some Points in Architectural Photography" is the title of an illustrated article by Mr. C. H. Hewitt in "The Amateur Photographer" for August 10th.

The Wallace Memorial at Robroyston was unveiled recently. The memorial takes the form of a cross 17ft. high, standing on a pedestal 8ft. high.

The Hampstead Hospital Committee have secured a site for a new hospital building at Hampstead Green, which the Vestry is endeavouring to secure as a public open space.

Town Hall for Leigh.—The Leigh Town Council are considering the question of erecting municipal offices and a borough police court and offices on the vacant land in Market Street, at an estimated cost of £50,778.

New Municipal Buildings for South Shields.—The Town Council has decided to erect new municipal buildings on some vacant ground belonging to them between Ogle Terrace and Broughton Road at a cost not exceeding £25,000.

"Photography" for August 9th contains an article on "Analytical Portraiture," a process invented by Mr. Francis Galton which puts Lewis Carroll's Cheshire Cat on a scientific basis—that is, photographing a smile without the face. The number also contains four reproductions of Dutch houses at the Cape.

Home of Rest at Southend-on-Sea.—The foundation stone of a new Home of Rest, to be erected on the Marine Parade at an estimated cost of £3,000, was laid last week. The new home will be open for respectable and deserving poor, irrespective of denominational consideration, and will accommodate forty visitors.

Newcastle Improvement.—The Town Improvement Committee of Newcastle Corporation have passed plans for extensive alterations to the Douglas Hotel, Grainger Street; to the house facing St. John's Church and the Central Railway Station; and also to the Douglas Bar public-house, opposite St. John's Church, and other properties, covering a frontage in Neville Street and Westgate Road of nearly 80ft. The alterations, when completed, will make a gigantic structure with an imposing appearance, and be fully as high as the present Douglas Hotel.

Historic Statues Removed.—The south side of Nicholson's Wharves, Lower Thames Street, which are on the north bank of the Thames, has recently been altered by the proprietors, Nicholson's Wharves, Limited, and a number of statues have been removed. This wharf was up to the early part of the century in the occupation of the East India Company, and there appears to be little doubt that these monuments were placed in position by the Company. There were originally four statues and one bust, but only three now remain, and these are representative of India, Canada or America, and the Colonies. The sculptor was Mr. J. G. Bubb. The owners are thinking of presenting the statues to some London museum.

The Joiners' Company have lately discovered that they are more important than they had supposed themselves to be. Hitherto they have entertained the idea that the guild has been the representative merely of the joiner pure and simple; but it has now been ascertained beyond all question that the art of carving comes within the scope of the Company, and that in times gone by the members exercised a very close supervision over those who practised that calling. Among the members in past ages have been not a few of the most celebrated wood carvers. In view of the discovery the Company have decided to offer a special prize for carving at the exhibition to be held next year in conjunction with the Carpenters' Company.

The Museum of Practical Geology in Jermyn Street, W., is closed until September 10th.

The Ruskin Exhibition at Coniston will be open during this week and the next two. About 2,500 persons have already visited it.

A new Mission Church Room, Camden Church, Peckham, S.E., is to be erected shortly from designs by Mr. Arthur H. Ryan-Tenison, of 7 Great College Street, Westminster, S.W.

Tile Maps.—The "tile map" of the North-Eastern Railway Company is made up of 6-in. tiles and about 6-ft. square. The outline is printed on the tiles and baked in a kiln. The tiles are then coloured and enamelled. Such maps are likely to be useful in schools.

"Builders' Journals" Offered.—Mr. W. H. Tranter, of 3 Blacon Terrace, Taughall Road, Chester, writes as follows:—"I have the 'Builders' Journal' for 1899, minus a few copies. I should be glad to forward the numbers to any reader if he will pay the carriage."

Proposed new Mission Church at Arlesey, Three Counties.—It is proposed to erect a new mission church in Arlesey village immediately. The vicar and wardens and committee have entrusted the work to Mr. Arthur H. Ryan-Tenison, A.R.I.B.A., of 7 Great College Street, Westminster.

Australian Industrial Exhibition.—After a lapse of four years it has been decided to hold at Ballarat another exhibition of manufactures, machinery and industrial and fine arts. The three previous exhibitions were of a most successful character, there being about 100,000 visitors to the last. The exhibition will be opened on November 1st next.

The "Swan" Fountain Pen.—Messrs. Mabie, Todd and Bard have introduced an improvement in the larger sizes of their well-known "Swan" fountain pen. By an ingenious arrangement the pen may now be filled without the removal of any part and the flow of ink regulated without danger of the fingers being soiled. Our readers should send for all particulars and catalogue to 93 Cheapside, London, E.C.

A Clock for the Shah of Persia has just been made by which not only the Teheran time but the time in 12 other cities of the world can be seen. The centre dial, which is the largest, shows Teheran time, while the smaller dials show the time in Peking, Washington, Yokohama, Bombay, Samarkhand, Constantinople, Vienna, Rome, Berlin, Paris, St. Petersburg and London. The work was entrusted to Benson's, of Ludgate Hill.

The Bath Stone Firms.—Another step towards the acquisition by the Bath Stone Firms of the entire stone trade of Portland has now been completed, and only one important firm—that of Mr. F. J. Barnes—remains outside the monopoly. Messrs. Stewards and Co., of Portland, Nine Elms, and Pimlico, have disposed of their business, comprising some of the largest quarries on the island, to the Bath firm, and Mr. R. D. Thornton, a director of Stewards, has handed over to Mr. J. T. F. Turner, a director of the Bath Stone Firms, a conveyance of the property.

Fire Tests with Partitions.—Publication No. 57 of the British Fire Prevention Committee deals with the comparative results of a fire test with (*a*) an ordinary wood and matchwood and coated with "non-flammable" paint. On the side opposite the fire were furniture and boarded partition painted in oil colour, and (*b*) a partition exactly similar but of fireproofed hangings—"non-flammable" and ordinary. In two minutes after the test commenced the ordinary wood partition caught fire and one minute later smoke appeared inside the chamber. After three-quarters of an hour everything was consumed except the studs, which were blazing freely. The prepared wood stood the test well, for after three-quarters of an hour the chamber was entered and the furniture, curtains and antimacassars were intact and unaffected, except at one end, where scorched by the burning of the timber roof of the hut. The fireproofing was done at the London Non-Flammable Wood Company's works at Fulham.

New Public Baths and Washhouses are to be erected at Melmoth Place, Fulham. Mr. H. Dighton Pearson, of 27 Chancery Lane, W.C., is the architect.

Glasgow's New Act.—The Glasgow Buildings Regulations Act, 1900, which was dealt with on page 339 of our issue for January 3rd last, came into operation on July 30th.

The Church of St. James the Less, Teignmouth, has been presented with a new pulpit. The general character of the work is Early English, and the material consists mainly of Caen stone and Derbyshire alabaster.

The new National Schools, Hatfield Heath, have just been opened. They provide accommodation in two rooms for more than a hundred scholars. The site adjoins Trinity Hall. The cost of the work has been about £839.

Excavations at Baalbec.—The German Expedition to undertake excavations at Baalbec, consisting of Professor Puchstein, Dr. Sobersheim, and two architects, has left Constantinople, and will stay at Baalbec about three years.

Alterations to Earlswood Asylum.—A sum of £5,000 is needed for sanitary improvements, now in progress, in addition to the deficiency of £3,000 in ordinary income of the year. Contributions should be sent to Mr. H. Howard, the secretary, at the offices, 36 King William Street, E.C.

Croydon's New Lunatic Asylum.—In order to provide for the accommodation of their pauper lunatics the Croydon County Council are erecting at Chelsham an asylum which will cost about £200,000—£60,000 more than the original estimate. The building will occupy an extremely picturesque and healthy site, and provision is to be made for 400 patients.

Boston "Stump."—The famous tower of St. Botolph's Church at Boston—known to Lincolnshire men as "Boston Stump"—has been struck by lightning. While the "Dead March" was being played for the late Duke of Coburg a mass of masonry, one of the pinnacles of the great tower, which is 290ft. high, fell amid the congregation, but without hurting anyone. The church is one of the largest without aisles in the kingdom and dates back to 1309.

New Fire Stations for Dublin.—The new fire station for the north-east district of Dublin, in Lower Buckingham Street, was opened last week. The new station is the first of a series of three additional fire depôts which are being provided. The building of the second station in Dorset Street has already been commenced, while the site of the third will be in Great Brunswick Street. The Buckingham Street Station has been erected from the designs of Mr. Charles J. M'Carthy, city architect.

Stanstead House Burned Down.—This mansion, on the borders of Sussex and Hants, one of the largest mansions in the two counties, has been completely destroyed by fire, which originated in the roof, where some plumbers had been working. The tapestry, valued at £30,000, was saved, but some valuable pictures, wood carvings by Grinling Gibbons, the bedstead used by Queen Elizabeth, and various heirlooms were destroyed. The loss is estimated at more than £200,000, of which only about £60,000 is covered by insurance. The mansion had been magnificently decorated and furnished. The stables were saved.

Proposed Town Hall for Cheltenham.—The Cheltenham Town Council recently adopted a report and plans by Mr. F. Waller, architect, for a new town hall on the Winter Garden site. The great hall is to be 112ft. by 52ft. and 45ft. high, and will accommodate 1,000 on the floor, with another 450 odd in the galleries. There are to be refreshment and supper rooms, with drawing rooms, card rooms, &c. The architect did not think an outlay of less than from £25,000 to £30,000 should be calculated for a good plain building, exclusive of decorative features and fittings, and a further sum of £5,000 ought to suffice for the latter works. The Council has resolved to apply to the Local Government Board for sanction to a loan of £35,000 for the purpose in view.

Engineering Notes.

Proposed New Bridge at Swansea.—It is proposed to construct a bridge over the river Tawe at Hafod, Swansea.

Torquay and Electric Trams.—The Torquay Town Council has instructed a committee to report upon the introduction of electric trams.

Enniskillen Union Workhouse is being fitted with the latest improved hot-water heating apparatus by Messrs. John King, Ltd., engineers, of Liverpool.

The Board Schools at Flimby, Cumberland, are being warmed and ventilated by means of Shorland's patent Manchester grates, supplied by Messrs. E. H. Shorland and Brother, of Manchester.

School of Practical Engineering. — Mr. Arthur Thomas Walmisley presided on Thursday last at the award of certificates to students of the School of Practical Engineering at the Crystal Palace. The next term commences on September 10th.

Electric Trams for Southend. — At the Southend Town Council on Wednesday last the tender of a London and Philadelphia firm was accepted, at the price of £87,500, for carrying out a system of electric tramways for the borough. The work is to be commenced almost at once.

A Lighthouse Builder.—"The Life of Sir James Nicholas Douglass" (Longmans), the builder of the Eddystone Lighthouse, has been written by Mr. Thomas Williams, who served under the eminent engineer for more than thirty years. Douglass came of a well-known Northumbrian family. He began his career of lighthouse building when only twenty-one years old with the lighthouse on the Bishop Rock, Scilly Isles. Thereafter his progress was practically unbroken until he received the honour of knighthood on the completion of the Eddystone in 1882.

A New American Bridge.—The construction of a masonry bridge of considerable magnitude for carrying the Pennsylvania Railroad across the Susquehanna river at Rockville, near Harrisburg, has recently been commenced. This structure is intended to take the place of the present double-track iron bridge, which was erected in 1874 and which consists of 23 spans of about 160ft. each, centre to centre of piers. The new bridge will be located below the existing bridge and will cross the river nearly at right angles to the current. It will consist of 48 spans of 70ft. each and will be in all about 3,820ft. in length, the rail level being 46ft. above the water level at ordinary height. The bridge will be laid with four lines of rails and will probably be the longest stone arch bridge for railway purposes in existence. It is anticipated that its construction will involve the employment of an army of labourers for two years.

Westminster Abbey Decaying.—With regard to the alarming decay of Westminster Abbey, owing to the fumes from the Lambeth potteries, the *Daily Chronicle* says:—"That any sentimental reason will be allowed to interfere with the potteries, it is foolish to suppose. But it is equally foolish to imagine for a moment that the Dean and Chapter will look on calmly at the gradual ruin of the fabric under their charge. It seems very probable therefore that the report of Professor Church is but the prelude to some large scheme of restoration. Far better an Abbey in ruins than an Abbey reduced to the present condition of the Pearsonised transept. There is not much use hoping that a protest from any quarter will be considered, even if it is made. It will be sad, indeed, if to Peterborough, and for that matter to St. Paul's, and the long list of other desecrated churches, Westminster Abbey before long must be added. But it will be interesting to watch the stand taken by Mr. Micklethwaite, the new architect."

Correspondence.

Architects' Assistants' Salaries.

To the Editor of THE BUILDERS' JOURNAL.

BRIGHOUSE.

SIR,—I have read the correspondence on this subject with much interest. The suggestion by "Vigilans" is a very good one, and he is quite correct in saying that combination alone will effect a change. What is wanted, too, is that the general public should be enlightened at once, so that any man who is thinking of placing his son as pupil to an architect should have a clear idea as to the number of years of labour and study his son will have to undergo before he can earn £2 a week by hard work.

Yours truly,
ADVANCE.

To the Editor of THE BUILDERS' JOURNAL.

MANCHESTER.

SIR,—Is it not time for another view of the subject, other than that advanced by the majority of your correspondents? To come straight to the point, it is probably their own fault that so many men have salaries of 20s. and 25s. per week. In my experience the profession is comparatively just in regard to remuneration, and men are paid for what they can do, not as workmen at a standard wage, irrespective of their degree of intelligence: this, in my opinion, is conducive to a healthy competition, which to a great extent would be wanting if all received the same salaries immediately articles were completed.

In contrast to cases cited, I know several young assistants, with only three years' experience after pupilage, who are earning between £2 and £2 15s. a week. If the discontented ones would so *improve* their talents that they would be worth more, and be in a position to command more, it would be a better way to achieve their desire than the forming of architectural "trade unions."

Yours truly,
AMBITIOUS.

To the Editor of the BUILDERS' JOURNAL.

BIRMINGHAM.

SIR,—This subject is, as you state, one of wide importance. By importunity only can we hope for a hearing, and the sooner the Association enquires into the matter the better it will be for the profession.

So far, of course, we have only had *our* side of the question, and no doubt "Art Worker" and his fellows hold their opinions, which would give us great delight to hear. "Vigilans" offers a good proposal for surmounting this difficulty, but I am of opinion that the letters of "Hopeful" and "Nil Desperandum" contain too much querulousness, which is a bad sign and will not enhance the reputation of our League. Straightforward combination for the redress of our grievance should be our object.

Yours truly,
JUNIUS.

Double-faced Moulded Skirtings.

To the Editor of THE BUILDERS' JOURNAL.

PUTNEY, S.W.

SIR,—On page 13 of your issue for last week it is stated you are unacquainted with the term "Double-faced Moulded Skirting," and are inclined to think it is incorrectly stated. The term is applied to a skirting having two faces in different planes, separated by a quirk or small moulding. A skirting with only a moulding or chamfer is sometimes described as single-faced. The terms "single-faced" and "double-faced" are also applied to architraves.

Yours truly,
W. A. S.

Discovery of an Old Oil Painting.—The workmen employed in making excavations in connection with the new Roman Catholic Church, Wapping, have discovered a valuable oil painting in a perfect state of preservation by one of the old masters. A gentleman has offered £400 for it.

Professional Practice.

Abingdon.—The Warden and Council of Radley College have approved the plans prepared by Mr. Arthur H. Ryan-Tenison, A.R.I.B.A., of 7 Great College Street, Westminster, S.W., for the extension of the College to the west of the large dormitory block. The work, which is to be undertaken shortly, consists of a new master's residence, a porter's lodge and entrance, a house containing classrooms, studies, dormitories and bedrooms, baths and drying rooms and the necessary offices. Mr. Arthur H. Ryan-Tenison has lately designed and carried out, for the College authorities, the jubilee memorial in the shape of a new cricket pavilion.

Crosland Moor, Huddersfield.—The memorial stone of the new church which is being erected at Crosland Moor, to be dedicated to St. Barnabas, was laid last week. Mr. C. Hodgson Fowler, F.S.A., of Durham, is the architect. The site adjoins the road leading from Lockwood railway station to Crosland Moor. The new church will be in the Perpendicular style. The plan is founded on that of many fourteenth and fifteenth century town churches, consisting of a wide nave and chancel of the same height, and without a chancel arch, but with a continuous high-pitched roof, and having wide side aisles of the full length of the nave, with nearly flat roofs. The nave will have six bays, and will be 93ft. long by 24ft. wide; the chancel will be 37ft. long by 24ft. wide; and the aisles 77ft. by 14ft. East of the south aisle will be a side chapel, 37ft. long by 15ft., and one bay east of the north aisle is to be set apart as an organ chamber. To the east of the north aisle and organ chamber will be the sacristy, and to the north of that the choir vestry. At the west of each aisle will be a large porch, with a doorway into the aisle and western part of the nave. At present it is proposed to place only a wooden bell-cote at the west end of the church; but a western tower 25ft. square and 73ft. in height will be added later. The church will be built of local stone; the high roofs will be covered with tiles, and the flat ones with lead. The accommodation will be for 702 persons, for whom chairs will be provided. The church will be warmed by a hot-water apparatus. The contractors are Messrs. Graham and Jessop, Moldgreen, masonry, joinery, and slating; Mr. W. E. Jowett, Fitzwilliam Street, plastering; Messrs. George Garton and Son, Market Place, plumbing; and Mr. Alfred Beevers, Great Northern Street, painting.

Lancaster.—For some years prior to the disastrous fire which burnt out a portion of the premises of the Lancaster and Skerton Co-operative Society, Limited, in September last, it had been felt that the existing buildings were quite unworthy of a concern doing a trade of nearly £150,000 a year, and soon after the fire it was decided to rebuild the whole block. Negotiations were entered into with the Corporation, the nett result being that in consideration of receiving the two shops, the property of Mr. Marsden, the Society undertook to set back the whole of the buildings to a new street line, 11ft. behind the present one, making New Street 30ft. instead of 19ft. wide. The new premises are to be erected from designs prepared by Messrs. Austin and Paley. The style is Renaissance. The grocery department, with two large windows divided by the entrance doorway, will be followed by the confectionery shop, to which will be added a tea room; the butcher's department, with refrigerating machinery in the cellar; and then the drapery shop, with a corner entrance and two large windows in New Street and two in Church Street. Leading from the shop is a broad staircase, giving access to the show rooms, the dimensions of which will be greater than those of the present hall, and will contain waiting and fitting rooms. Work rooms in connection with the various departments, together with certain store-rooms, dining-rooms for workpeople, &c., are on the top floor. Below the drapery department in Church Street arrangements have been made for a cart passage, which will extend the full length of the New Street block and communi-

cate with each department. The premises allotted to the boot and shoe department will be extended and will contain a ladies' fitting room, the basement being used for stock and cutting-out rooms, while the machinists' and repairing department will be housed underneath the passage. These basements will be lighted by means of deck lights. For the furnishing department all the rooms at present constructed below the hall will be utilised, and by this means an area as large as that of the hall will be available for show purposes, the store-rooms being in the basement. The limit of the block is formed by the main entrance to the hall and offices, which will stand partly on the site of the shop now occupied by Mr. C. D. Sutton. A new doorway will be made into the hall itself, and the present one will be retained for emergency purposes. The offices and committee room are directly over the shoe and furniture departments, and the top floor of this portion is occupied by the library, in connection with which there is a room capable of seating 200 or 300 people. The present building line in Church Street will be preserved. For insurance purposes the block has been divided into four parts, separated by strong division walls, and connected only by gangways across the open space at the back. Provision is being made for the generation of electricity, and a complete plant, consisting of two engines and two dynamos, will be installed below the grocery and confectionery establishments. This portion of the work will be carried out under the supervision of the electrician to the Co-operative Wholesale Society. The whole of the premises will be heated by hot water and will be provided with electrically-worked lifts. The total cost of the premises, including fittings and electric installation, will be about £22,000. A fine new warehouse to cost £7,000 is also being erected in Bath Street from designs by the same architects. It is intended to make it up to date in every respect. It will be three storeys high, with a basement, and will be built of local stone with Westmorland green slate roof.

Manchester.—The Palace Theatre of Varieties has been re-opened after having been closed for re-decoration and structural alterations in the interior by which the seating accommodation has been considerably increased. The work has been carried out under Mr. Frank Matcham, architect, of London. The bottom "boxes" have been taken out and reconstructed, the fronts being built with Italian marble. The marble decoration has also been carried to the other boxes above. The stalls have been re-upholstered, and another row of seats put in. The three front rows of the pit have been removed and form the pit stalls. In the circle the iron girders have been covered in and decorative panels inserted, whilst the seating is new in this portion of the building. The walls round the circle have been re-painted to imitate stonework. The fore part of the foyer has been converted into a grotto of massive rock-work, illuminated by electric lamps fixed in the crevices. To the right of the fountain that is provided is a cascade. The gallery has been structurally altered, and now seats 300 more people. The dome has had four large hand-painted panels inserted. The theatre has been re-decorated in buff and gold.

Portsmouth.—The Royal Theatre has just been re-opened after reconstruction from plans prepared by Mr. Frank Matcham. The building, with the exception of the two side walls, has been rebuilt. A very elaborate portico and balcony of steel, extending along the whole front, has been added, and gives shelter to seven entrances and exits. There are six large electroliers beneath the balcony and two large arc lamps, each 1,000 c.p., projecting from the top of the building, and on the apex of the front is a figure of Neptune. The front entrances are formed of Labrador marble pillars, with sgraffito work on top. The doors, on swing hinges, are of carved mahogany and lead lights, and the approaches are lined with white marble. The grand vestibule for circle and stalls is reached by two white marble steps and mosaic floors, the grand staircase being of white marble. At the top are two figures, standing on marble pedestals, on either side, each holding a spray of electric lights. Here there is the foyer, and the circle is approached on both sides through an arcade. From the foyer is a grand saloon and beyond is a smoking-room and lounge. The circle, which has been considerably extended, is supported by two steel columns only, and constructed on the cantilever principle. The orchestra is sunk. The pit has two more rows than hitherto, and the seats have been placed wider apart to give more room for seating. The front of the three tiers and boxes is of fibrous plaster and scagliola work carried out by A. R. Dean, Ltd., Birmingham. The front of the grand circle and boxes is decorated with nautical emblems, the front of the upper circle having paintings representing Music and Art. The ceiling is painted in delicate sky colours and picked out in cream and gold. The proscenium, with an opening of 33ft., is elaborately decorated; over the top is a painting of an allegorical representation of the Muses, and on either side, level with circle and boxes, are carved figures representing Comedy and Tragedy. The stage has a depth of 60ft., all lighting being electric. The whole of the electric lighting has been carried out by Messrs. Blackburn and Starling, Nottingham. The gridiron, with patent sliding blocks, is 60ft. above the stage. Over and at the back of the stage is a capacious paint-room, and adjoining the stage are a large scene dock, a green-room, property-room, &c. Suites of dressing-rooms for ladies, gentlemen and choruses have been provided, all fitted with lavatories, &c. The dress circle will accommodate 200 and the stalls 120, the seating of the whole house being nearly 3,000. The work has cost over £40,000. Mr. J. H. Corke was the builder. The whole of the elaborate machinery has been executed by Mr. A. House.

Romford.—New public baths have been erected in Mawney's Road, Romford, by the Urban District Council at a cost of £8,000, and were opened recently. The building, which is of red brick with Bath-stone dressings, was illustrated in our issue for March 7th last. There are separate entrances for men and women. In the centre are offices and pay windows, and the front block also contains well-furnished waiting-rooms, a spacious crush hall, a laundry and drying-room, and six slipper baths, the first-class ones being fitted with shower apparatus. The floors are tiled in mosaic, the walls having blue and terra-cotta glazed brick skirting. The rooms and passages are heated with hot-air pipes. The swimming bath is 70ft. long by 30ft. wide, and varies in depth from 3ft. 6in. to 6ft. The sides are lined with white glazed bricks, and the bottom is paved with Terazzo Venetian mosaic in a two-coloured design. There are on each side thirty dressing-boxes, lavatories, attendant's office, and foot bath and shower bath. In the galleries there is seating accommodation for 130 persons. The building is 74ft. by 46ft. 6in. The water for the bath is procured from a well in the rear. The bath holds 65,000 gallons of water, and can be pumped full in ten hours. The water can be heated by steam pipes, by which means the dressing-boxes are also warmed. When the bath is not in use it will be covered with a deal flooring, and converted into a public hall for concerts, meetings, &c. On the first floor there are two large technical instruction classrooms, and a committee room. Above are the caretaker's apartments, and in the basement is the engine and boiler house, pump-room and store-room. The architects were Messrs. Harrington and Ley, of 65 Bishopsgate Street Without, E.C., and Romford. Mr. S. B. Horrocks has had charge of the engineering works, while Mr. Thomas Bruty, of Hornchurch, has erected the buildings and sunk the well.

Thornaby.—The foundation-stone of a new church for the parish of St. Luke, Thornaby, was laid recently. The entire outlay in connection with the new church is estimated to be £6,500, and £3,500 has been raised. The new church is to be of the Transitional Norman type, with round arches throughout, with the exception of a few of the windows, which have lancet heads. It is to be built entirely of stone, with Greek faced-walling inside and out, and dressed stone for windows, doors, pillars, arches, &c. The present contract does not include the western portion of the church, but when the work is completed sitting accommodation will be provided for 700 adults. The plan comprises nave, aisles, transepts, chancel, morning chapel, vestries, organ chamber, porches, &c. Only the lower portion of the tower is to be built at present, but when complete it will be 86ft. high. The first contract, amounting to £4,656, is let to Mr. Henry Harwood, of Manfield, Darlington. Messrs. Hicks and Charlewood, of Newcastle-on-Tyne, are the architects.

THE PANTHEON AT ROME.

THE Pantheon at Rome, in which the remains of the murdered King of Italy have been placed, may be said to embody and to perpetuate the entire history of Rome, from the Cæsars to the Amadei. Agrippa reared the wonderful edifice twenty-seven years before Christ, yet it stands, almost unchanged, older than the Christian era, and by turns a vast calidarium of the great Agrippæan baths, a temple of Mars and of Venus, a meeting-place for the Fratres Arvales—about whom Henzen writes so learnedly—and, in after years, a Christian church, given as such by Phocas to Boniface IV. The wealthy and artistic Rome of Augustus, says the "Daily Telegraph," lavished upon the structure all that art could bring or gold and silver pay for. The Athenian sculptor Diogenes adorned it with his finest labours. The capitals of its pillars, its dome covering, and the ceiling of its portico were all of Syracusan bronze, borne up by massive tubular girders of the same material—which, by the way, were melted down by Pope Urban VIII. to make cannon for St. Angelo's embrasures and the bronze baldachino in St. Peter's. The bronze tiles of the dome were stripped away and plundered to bedeck Constantinople, but the Saracens waylaid the noble loot, which now roofs some mouldering palace of the East. The columns were of white and coloured marbles; its tympanum glowed with the battles of the gods and giants, in ruddy bronze; its interior was lined with mighty slabs of porphyry and syenite and alabaster and agate, which, like its metal work, were all ruthlessly pillaged age after age. But Agrippa's work was like a mountain for solidity and endurance. With walls 20ft. thick of tufa concrete, faced with brick, and a roof which was a wonder of the whole world's masonry, being constructed in one mass of pumice-stone and pozzolana, the plunderers could not destroy, could, indeed, hardly injure or alter, the stupendous and eternal fabric. It comes down to modern times very much as Hadrian and Severus witnessed it, if not as its magnificent designer first created it; and no sight is stranger or finer, even in Rome, than when for the first time the pilgrim turns aside from the Corso to the Piazza di Rotondo and beholds with what nobleness of purpose and material the old Romans housed their deities and glorified their city. The Pantheon still possesses its original doors, between two fluted pilasters, and over these an open screen work, all of bronze. The circular interior—which measures in diameter 142ft., the same as from the floor to the great ring in the dome, admitting light and air—has seven large recesses, between which altars have been erected. Some architects say that the portico of the Pantheon is the most perfect piece of building in the world. Enthusiastic critics have styled it "more than faultless, unmatched," and Byron wrote of it well-known lines of admiration, commencing, "Simple, erect, severe, austere, sublime," which prove how profoundly it affected the poet's mind. Now a new dignity invests the grand old structure.

A Church Manse at Stanley, Perthshire, is being erected. The architect is Mr. I. Murray Robertson, of Dundee. The site is on the top of a wooded slope overlooking the Tay. The front of the building will face the river. The main entrance will be from King Street, with side passages leading to the church.

New Patents.

These patents are open to opposition until September 18th.

1899.—Waste-water Closets.—14,577. S. H. ADAMS, 7 Old Queen Street, London, S.W. This invention relates to a waste-water closet in which the feed pipe is so contracted at its connection with the closet that it momentarily holds back the flushing liquid in the pipe, thus improving and prolonging the flush.

Refuse Destructors.—15,629. E. WILLSHEAR, 113 Whyteville Road, Forest Gate, London, E., and E. C. Amos, 20 Bucklersbury, E.C. The object of this invention is to secure the complete combustion of the refuse and the gases given off. This is achieved by having three cells so arranged that the two outer ones feed the centre one (which is immediately under the steam generator) with partially burnt refuse.

Purifying Acetylene Gas.—17,376. G. F. L. GILES, Harbour Office, Belfast. The purification is effected by passing the gas through a box which is divided by deflecting plates into compartments, each of which is filled with cotton wool, peat moss or other fibre.

Sloping Footways.—17,794. A. R. KAY, 5 Bow Street, Huddersfield. In order to make sloping footways easier to ascend, the materials used—bricks, slabs, &c.—are so laid that a series of wedge-shaped channels are formed across the path, against which the heel of the boot abuts, improving the foothold. For drainage purposes the path may be made convex.

1900. — Heating Apparatus. — 8,263. W. DILWORTH AND E. CARR, both of Charnley Street, Preston. The valve which forms the subject of this invention enables certain parts of a hot-water heating apparatus to be shut off without affecting the remainder of the pipes. A double-action valve is used.

Block Sawing Machines.—8,796. J. BARR, Walkinshaw Foundry, Johnstone, Renfrewshire. This machine is for cutting deals and battens into blocks for paving or other purposes. It consists of a table with a sliding carriage on it carrying a series of circular saws at one end. The backward and forward motion is obtained through a shaft connected with a rocking lever. After the timber is cut the table on which it rests automatically tilts and lets the blocks fall down at the front of the machine.

Fire Escapes. — 10,730. C. R. HARRIS, Williamsport, Lycoming County, Pennsylvania, U.S.A. Fixed in a recess below the window frame is a flexible ladder or reel. A cover is provided which forms a step when opened.

The following specifications were published on Saturday last, and are open to opposition until September 25th. A summary of the more important of them will be given next week. The names in italics within parentheses are those of communicators of inventions.

1899.—14,612, OWEN, manufacture of artificial stone. 14,643, HARDINGHAM (*Musciacco*), means applicable for use in proportioning and mixing finely divided or powdered substances. 14,915, PARSONS AND CARNEGIE, ventilating apparatus. 14,995, DUNCAN, NEW SUNLIGHT INCANDESCENT CO., LTD., AND BARNETT, incandescent gas burners. 15,102, SELLARS, manufacture of covering or surface tiles, slabs and other articles, partly applicable to cement. 15,224, ADAMS, flushing and discharging siphons and apparatus connected with them. 16,913, SMITH, Venetian blinds. 17,809, CLIFTON, circular sawing machines for cutting metal. 18,427, GARRATT, workmen's time recording and wage computing apparatus. 18,590, CHUBB AND BONE, apparatus for the generation, condensation and storage of acetylene and other gases. 18,667, SÖRENSEN, water cock. 18,800, NORDMANN, process for the production of incandescent bodies for lighting purposes. 18,818, BAVERSTOCK, adjustable elevator. 18,902, MARTIN AND MARTIN, spark arresters for smoke stacks and chimneys. 19,288, FARMAR, slide rule for computing and calculating purposes. 20,480, CURWEN, electric arc lamps. 21,929, SAGE, water cocks and hydrants, in relation to their becoming frozen. 22,431, PUDDEPHATT, friction hoists, winches, &c.

1900.—1,969, GANTER, means for jointing and securing glass plates in show cases, show windows, &c. 2,524, ADAMS, taps or stop cocks. 3,005, STAINCLIFFE, house, stable and street gulley trap. 5,838, CONSENTIUS, appliance for facilitating the opening of doors. 7,733, BLACKBURN, artificial granite. 7,806, CROPPER, windows. 8,485, EDISON, method of and apparatus for grinding, screening, and re-screening very fine materials in bulk. 8,625, HEIN, automatic apparatus for forcing fluids any required heights or distance. 8,829, SKOPEC AND HERD, safety lock with electrical door-opening device. 9,422, FEBIGER, extinguishing of fires in closed compartments. 9,423, FEBIGER, extinguishing of fires occurring in closed compartments. 9,769, HUNT, conveyor, elevator and other chains. 9,989, HADDAN (*Huelsberg and Co.*), method of rendering wood, paper, &c., fireproof. 10,490, ALEXANDER, feeding apparatus for use on brick-making machines. 10,937, RUNDELL, window sash fasteners and ventilators. 11,088, WEIR, appliance for the opening and closing of skylight sashes. 11,110, BOULT (*Koyl*), process for the purification of water. 11,112, BOULT (*Koyl*), apparatus for softening and purifying water. 11,137, OLLIVER, dust bins and similar receptacles for rubbish and garbage.

Masters and Men.

To Counteract Trades Unionism.—The master builders of Birmingham and the Midlands are deeply interested in a scheme for the object of counteracting the spirit of trades unionism among their employees. At a conference at Nottingham some few days ago the scheme was formulated, and one of the main points is to get their foremen to leave the men's societies and join a new body to be formed by the masters. They are also to take other steps to combat trades unionism; but, curiously enough, while seeking to destroy combination among their employees, they are going to combine against the architects, who, they think, do not always treat them fairly.

Aberdeen Painters' Dispute. — Proceedings were recently taken in the Sheriff Court with regard to the funds of the old Operative Painters' Society, the members of which had joined the Scottish National Union of Painters. Some considerable time ago the old union of painters, which was purely a local one, resolved to give it up, and to join the National Union. They also intended to convey the funds to the new organisation. Certain members objected to that course, and raised an action of interdict to prevent the appropriation of the funds. Sheriff Burnet granted the interdict as craved, and a meeting of the men now resolved to appeal the case to the Sheriff-Principal.

The Wakefield and District Master Builders' Association held an ordinary monthly meeting on August 2nd. Mr. E. A. Elvey, the president, occupied the chair. Before the ordinary business of the meeting was commenced reference was made to the deaths which had occurred since the last meeting of Mr. Henry Sanderson, of Ossett, and Mr. Alfred Swallow North, of Castleford, who were members of the Association; and on the motion of Mr. J. Bagnall, seconded by Mr. G. Wilson, votes of sympathy and condolence with the bereaved families were passed. It was reported that the labourers' strike had been satisfactorily settled and that the men had resumed work on the old terms, except as to the rate of wages. It was decided to hold the next meeting of the members on the first Thursday in October.

Bristol Building Trade Disputes.—We have referred before to the negotiations which have passed between the Bristol Master Builders' Association and the various operatives in the building trade. Everything is now settled and copies of the new working rules are being issued to the parties interested. The rule as to disputes is as follows:—"Should a dispute at any time take place between any department of the building trade and their employers on any question of disputed interpretation or infringement of these rules that cannot be mutually arranged between the parties affected a Board of Conciliation shall be formed, composed of four employers and four members of the trade affected, to whom all questions shall be referred. The decision of the majority of such board shall be binding on parties concerned. Such Conciliation Board shall meet within 36 hours of the information being laid. That in case of an equal division, each body shall appoint an arbitrator, and the two arbitrators shall themselves, in case of disagreement, appoint an umpire. The decision of such arbitrators, if unanimous, or of the umpire, to be final, binding and conclusive."

Misapplying Trades Union Funds.—At the Marylebone Police Court last week, Thomas Donald, a member of the Battersea Vestry and the president of the General Labourers' Amalgamated Union, living in Golden Street, Battersea, was summoned at the instance of the trustees of the union for fraudulently misapplying the sum of £7 3s. 2d. The solicitor who prosecuted said that the defendant went to the Nine Elms branch of the union, and by representing that he had been sent by the central office to collect the money in hand he obtained various amounts, for which he had rendered no account. In addition, he had appropriated to his own use moneys he was authorised to receive from the same branch when an officer of that branch was in default. Evidence having been given in support of the statement, the defendant offered no defence, pleading in extenuation that, owing to lack of employment, he had got into debt and had kept the money in order to pay his creditors, who were pressing him. Mr. Fenwick remarked that the defendant ought to have protected the interests of the men belonging to the union and not robbed them: he ordered the defendant to repay the sum of £7 3s. 2d. and fined him 40s., with 20s. costs.—An order was also made at the instance of the same union against George Gibbs, of Cuthbert Road, Kingston, to refund a sum of £8 4s. 10d. and to pay a fine of 10s., with 20s. costs.

Surveying and Sanitary Notes.

Holborn—Strand Improvement: Progress of the Work.—Although some time must necessarily elapse before the great Strand improvement can be seen in all its glory, the work of removing Holywell Island is proceeding apace, and the public will soon be able to walk over ground which was erstwhile occupied by buildings of more or less historic interest. Nearly the whole of the houses on the north side facing the big establishment of Smith & Sons have been razed to the ground, and only the White Hart, the entrance to the Opera Comique, and a couple of shops remain to be taken in hand by the housebreaker before the whole length from St. Clement's to St. Mary-le-Strand will be cleared. The space to be thrown into the roadway is being paved with wood: the available space will be doubled, and a wide footway is being constructed at the side of the hoardings which are for the time being to hide the ugly and in some cases half-gutted backs of the houses which still remain in Holywell Street proper. There is not much in the removal over which the antiquary can grieve. None of the houses which have been razed had records of much interest, and they presented an incongruous mixture of various styles.

New Companies.

Crisp Browne, Limited.

This company was registered on August 2nd with a capital of £1,000 in £1 shares to acquire and carry on the business of an ironmonger now carried on at 43 Broadway, Wimbledon, S.W., as S. Crisp Browne.

L. H. Woodhouse and Co., Limited.

This company was registered on July 31st with a capital of £5,000 in £1 shares to take over the business of builders and contractors carried on at Hound Road, West Bridgford, Nottingham, and at Orange Street, Nottingham. T. V. Woodhouse is the permanent managing director.

Bullocks, Limited.

This company was registered on July 25th with a capital of £2,000 in £1 shares to carry on the business of builders, painters, decorators, oil and colour merchants, earthenware manufacturers, &c. The first directors (to number not less than two nor more than five) are A. E. Bullock, H. Watkins and G. B. Eccles (chairman).

Rowley Regis Granite Quarries, Limited.

This company was registered on July 18th with a capital of £120,000 in £1 shares to adopt and carry into effect an agreement made between the Carrara Marble Quarries Syndicate, Limited, and this company to acquire certain businesses mentioned in the agreement, and generally to carry on business as quarry owners, colliery proprietors, coke manufacturers, brick, tile and terra-cotta manufacturers. The first directors (of whom there shall be not less than four nor more than 10) are W. Bassano, S. Blewitt, J. Currall, W. Fitzmaurice, G. Law, jun., D. D. Rees and F. Bassano.

London Properties Development Corporation, Limited.

This company was registered on July 17th with a capital of £250,000 in £1 shares to acquire land, buildings and hereditaments of any tenure in the City and County of London and the metropolitan area; to construct or build and maintain offices, flats, houses, factories, warehouses, buildings, works and conveniences of all kinds; as bankers, financiers and concessionnaires, builders and contractors, dealers in stone, sand, lime, &c.; and as brick, tile and terra-cotta manufacturers, timber merchants, sawmillers and sawmill proprietors, jobmasters. The first directors (of whom there shall be not less than two nor more than seven) are to be appointed by H. Rydon, C. T. Hopkins and Co., F. W. Merriman and J. F. Seacombe, the first four signatories to the memorandum of association.

Nicholls and Clarke, Limited.

This company was registered on July 18th with a capital of £150,000 in £1 shares to acquire the business of lead, glass, paint, varnish, wall-paper, metal and general merchants, dealers and manufacturers, as now carried on at 1, 6, 7 and 8 High Street, 1, 2, 3, 4, 12, 13, 14 and 15 Blossom Street, and Elder Street and Fleur de Lis Court, Shoreditch, and at Brick Lane, Bethnal Green, under the style of Nicholls and Clarke, with all or any the assets and liabilities thereof, to develop and extend the same, and generally to carry on in all their branches the businesses of brokers, commission agents, oil and colour merchants, dealers in paints, colours, oil pigments, varnishes of all kinds, iron, brass and other metal founders, converters and workers, ironmongers, paper stainers, builders and contractors; to construct and maintain roads, sewers and other public and private works of all kinds; as chemical manufacturers, engineers and ironfounders, tube and wire drawers. The first directors (of whom there shall be not less than three nor more than seven) are S. Nicholls, S. H. Nicholls and J. L. Lythgoe. Registered office: 6 High Street, Shoreditch.

Wells Lime Company, Limited.

This company was registered on July 31st with a capital of £500 in £1 shares to acquire from J. E. Kitton a lease of a brickyard at Wells-next-the-Sea, Norfolk, and to carry on the business of lime burners, brick, tile, whiting, pottery and cement manufacturers, &c.

London General Financial Corporation, Limited.

This company was registered on August 3rd with a capital of £1,000 in £1 shares to acquire land, buildings and property in London or elsewhere, and to carry on the business of builders, financiers, &c. The first directors (to number not less than three nor more than five) are to be appointed by the subscribers.

Retford Real Estate Company, Limited.

This company was registered on July 25th with a capital of £5,000 in £10 shares to acquire any property in the county of Nottingham or elsewhere, and to carry on the business of builders, contractors, warehouse, bank, store, shop and office fitters, &c. The first directors (to number not less than three nor more than thirteen) are to be appointed by the subscribers.

New Cwmgorse Colliery Company, Limited.

This company was registered on July 25th with a capital of £10,000 in £10 shares to carry on the business of colliery proprietors, miners, fuel, brick, gas, coke and coal tar manufacturers, iron and steel converters, smelters, founders, engineers, &c. The first directors (to number not less than three nor more than seven) are to be appointed by the subscribers.

North Wales Paving Company, Limited.

This company was registered on July 30th with a capital of £10,000 in £5 shares to acquire the concrete works of the Shap Granite and Patent Concrete Company, Limited, of Penmaenmawr, and to carry on the business of limestone, slate and mineral merchants, &c. The first directors (to number not less than two nor more than five) are G. O'Dwyer Briggs and N. Brooke (managing directors). Registered office: Chirk, Denbigh.

J. J. Stockall and Sons, Limited.

This company was registered on July 24th with a capital of £25,000 in £1 shares to acquire the business carried on by J. J. Stockall, T. J. Stockall and W. H. Stockall at 6 to 8 Clerkenwell Road, E.C., and elsewhere, as J. J. Stockall, and to carry on the business of jewellers, clock and watchmakers, gold and silversmiths, opticians, &c. The first directors (to number not less than three nor more than seven) are T. J. Stockall, W. H. Stockall, W. B. Griffiths and J. J. Stockall, jun.

Cheadle Collieries, Limited.

This company was registered on July 31st with a capital of £200,000 in £1 shares to carry on the businesses of coalmasters, colliery proprietors, ironmasters, steel makers, steel converters, coke manufacturers, brick, tile and terra-cotta manufacturers and dealers. The first directors (of whom there shall be not less than three nor more than seven) are to be elected by the signatories, C. Streete, C. Laidlaw, S. Longhurst, F. W. Mould, R. T. Parker, A. Potter Hatton and E. A. Brett. Registered office: St. George's House, Eastcheap.

Gardner Electric Drill and Hammer Company, Limited.

This company was registered on July 28th with a capital of £40,000 in £1 shares to acquire certain inventions and improvements relating to electric power, rock drills and electric hammers, and to carry on the business of mine owners, mining and mechanical engineers, manufacturers, smelters, refiners, metallurgists, contractors, mineral and ore merchants, &c. The first directors (to number not less than two nor more than five) are F. L. Gardner, A. Gaskell and F. L. Roudebush.

Thomas Saul and Son, Limited.

This company was registered on July 18th with a capital of £50,000 in £5 shares to acquire the business of timber merchants, &c., carried on by T. and T. J. Saul at Great Yarmouth, and generally to carry on the businesses of timber importers and merchants, sawmillers and sawmill proprietors, manufacturers of and dealers in cement, hardware and building materials of every description; as iron and steel merchants, builders and contractors, joiners, slate merchants, brick, tile and terra-cotta merchants, engineers and ironfounders, metal workers, wire-drawers and tubemakers. The first directors (of whom there shall be not less than three nor more than five) are L. W., C. L., T. and T. J. Saul. Registered office: Sawmill Offices, Sawmill Road, Cobholme, Great Yarmouth.

CURRENT PRICES.

		£	s.	d.	£	s.	d.
FORAGE.							
Hay, best	per load	3	17	6	4	7	6
Sainfoin mixture	do.	4	0	0	4	10	0
Clover, best	do.	4	5	0	5	0	0
Beans	per qr.	1	8	6	1	10	0
Straw	per load	1	4	0	1	16	0
OILS AND PAINTS.							
Castor Oil, French	per cwt.	1	8	0	1	12	8
Colza Oil, English	do.	1	10	0	—		
Copperas	per ton	2	0	0	—		
Lard Oil	per cwt.	1	17	0	—		
Lead, white, ground, carbonate	do.	1	2	10	—		
Do. red	do.	1	0	4½	—		
Linseed Oil	do.	1	13	3	1	13	4½
Petroleum, American	per gal.	0	0	6½	—		
Do. Russian	do.	0	0	6¼	—		
Pitch	per barrel	0	8	6	—		
Shellac, orange	per cwt.	3	2	6	—		
Soda crystals	per ton	3	0	0	3	2	6
Tallow, Town	per cwt.	1	5	9	1	8	0
Tar, Stockholm	per barrel	1	6	0	—		
Turpentine	per cwt.	1	9	6	—		
METALS.							
Copper, sheet, strong	per ton	85	0	0	—		
Iron, Staffs., bar	do.	10	0	0	11	10	0
Do Galvanised Corrugated sheet	do.	13	10	0	—		
Lead, pig, Spanish	do.	17	15	0	17	17	6
Do. do. English common brands	do.	18	2	6	18	5	0
Do. sheet, English, 3lb. per sq. ft. and upwards	do.	20	0	0	21	0	0
Do. pipe	do.	22	0	0	—		
Nails, cut clasp, 3in. to 6in.	do.	12	0	0	13	0	0
Do. floor brads	do.	11	15	0	12	15	0
Steel, Staffs., Girders and Angles	do.	8	10	0	9	0	0
Do. Mild Bars	do.	9	7	6	9	15	0
Tin, Foreign	do.	144	0	0	144	10	0
Do. English ingots	do.	147	10	0	—		
Zinc, sheets, Silesian	do.	23	10	0	—		
Do. do. Vieille Montaigne	do.	24	5	0	—		
Do. Spelter	do.	19	10	0	19	15	0
TIMBER.							
SOFT WOODS.		£	s.	£.	£	s.	d.
Fir, Dantzic and Memel	per load	3	0	0	4	0	0
Pine, Quebec Yellow	do.	4	7	6	6	0	0
Do. Pitch	do.	3	6	0	3	11	0
Laths, log, Dantzic	per fath.	4	10	0	5	10	0
Do. Petersburg	per bundle	0	1	1½	—		
Deals, Archangel 2nd & 1st	per P. Std.	12	15	0	18	0	0
Do. do. 4th & 3rd	do.	13	5	0	—		
Do. do. unsorted	do.	11	0	0	12	10	0
Do. Riga	do.	6	15	0	8	10	0
Do. Petersburg 1st Yellow	do.	15	10	0	—		
Do. do. 2nd „	do.	10	15	0	13	15	0
Do. do. Unsorted „	do.	8	15	0	13	0	0
Do. do. White	do.	11	5	0	—		
Do. Swedish	do.	10	0	0	16	15	0
Do. White Sea	do.	15	10	0	20	10	0
Do. Quebec Pine, 1st	do.	13	15	0	23	15	0
Do. do. 2nd	do.	18	15	0	—		
Do. do. 3rd &c.	do.	9	0	0	9	15	0
Do. Canadian Spruce, 1st	do.	10	10	0	11	15	0
Do. do. 3rd & 2nd	do.	7	5	0	9	10	0
Do. New Brunswick	do.	7	5	0	8	0	0
Battens, all kinds	do.	8	10	0	11	0	0
Flooring Boards, 1in. prepared, 1st	per square	0	12	6	0	13	0
Do. 2nd	do.	0	9	9	—		
Do. 3rd &c.	do.	0	9	6	—		
HARD WOODS.							
Ash, Quebec	per load	3	17	6	4	10	0
Birch, Quebec	do.	3	12	6	3	17	6
Box, Turkey	per ton	7	0	0	15	0	0
Cedar, 1in., Cuba	per ft. sup.	0	0	3	0	0	3½
Do. Honduras	do.	0	0	3⅜	—		
Do. Tobasco	do.	0	0	3¼	—		
Elm, Quebec	per load	0	12	6	5	10	0
Mahogany, Average Price for Cargo, Honduras	per ft. sup.	0	0	4⅛	—		
Do. African	do.	0	0	3⅛	—		
Do. St. Domingo	do.	0	0	6⅜	—		
Do. Tobasco	do.	0	0	4⅛	—		
Do. Cuba	do.	0	0	4⅜	—		
Oak, Dantzic and Memel	per load	3	15	0	5	7	6
Do. Quebec	do.	4	12	6	5	0	0
Teak, Rangoon, planks	do.	8	10	0	14	10	0
Wainscot, Riga (Baulk)	do.	3	15	0	5	15	0
Do. Odessa Crown	do.	3	15	0	5	15	0
Walnut, American	per cub. ft.	0	1	8	0	3	2

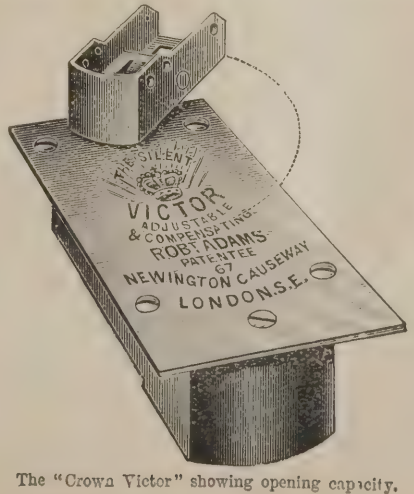
COMPLETE LIST OF CONTRACTS OPEN.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
	BUILDING.		
Aug. 17	Cardiff—Chapel	Trustees of Plasnewydd English Presbyterian Church of Wales	Rees and James, 37 St. Mary Street, Cardiff.
" 17	St. Giles, Devon—School Buildings	School Board	Wise and Wise, Architects, Launceston.
" 18	Blaenavon, Mon.—Alterations		S. Alsop, 13 New William Street, Blaenavon.
" 18	Halifax—Additions		C. F. L. Horsfall and Son, Lord Street Chambers, Halifax.
" 18	Resolven, Wales—Inn	Mr. E. Evans Bevan	J. C. Rees, St. Thomas's Chambers, Neath.
" 18	Skerries, co. Dublin—Baths	Baths Company, Limited	F. Shaw, 20 Lawrence Street, Drogheda.
" 18	Farnham—Farm Buildings	Managers of Farnham and Hartley Witney School District	A. H. Guyer, South Street, Farnham.
" 18	Haverfordwest—Alterations	Directors of the Metropolitan Bank of England and Wales	D. E. Thomas, Victoria Place, Haverfordwest.
" 18	Mawgan, Cornwall—Repairs		Rev. R. H. Sowell, The Rectory, Mawgan, R.S.O.
" 20	Kingston-upon-Thames—Extension	Corporation	Borough Surveyor, Clattern House, Kingston-upon-Thames.
" 20	Newcastle-upon-Tyne—Rebuilding	Mr. R. Newton	J. G. Crone, 26 Cloth Market, Newcastle.
" 20	Sedgley—Alterations	School Board	S. H. Eachus, Lichfield Street, Wolverhampton.
" 20	Weston-super-Mare—Swimming Bath	Urban District Council	H. Nettleton, Town Hall, Weston-super-Mare.
" 21	Fenny Stratford—Girls' School	School Board	Clerk, School Board Offices, Fenny Stratford.
" 21	Leeds—Boiler House	Tramways Committee	City Engineer, Municipal Buildings, Leeds.
" 21	London, N.—Refuge	Shoreditch Vestry	J. R. Dixon, Surveyor, Town Hall, Old Street, E.C.
" 21	Brighton—House		F. J. Tillstone, Town Hall, Brighton.
" 21	Hull—Additions	Kingston-upon-Hull School Board	B. S. Jacobs, Lincoln's Inn Buildings, Bowlalley Lane, Hull.
" 21	Lytham, Lancs—Purifying House	Urban District Council	C. A. Myers, Clerk, Lytham.
" 21	Maesteg, Wales—Hospital	Hospital Committee	J. Humphreys, Town Hall Chambers, Maesteg.
" 22	Aberdeen—House	Mr. H. M'Lennan	Jenkins and Marr, 16 Bridge Street, Aberdeen
" 22	London, E.—Alterations	Shoreditch Guardians	F. J. Smith, Parliament Mansions, Victoria Street, S.W.
" 23	London, S.W.—Annexes	Wandsworth and Clapham Guardians	A. Sharp, 110 Old Queen Street, Queen Anne's Gate, S.W.
" 24	Brighton—Concrete Groyne	County Council	Borough Engineer, Town Hall, Brighton.
" 25	Armagh—Floor		Macan Asylum, Armagh.
" 27	Bristol—Cottage	Barton Regis Rural District Council	A. P. J. Cotterell, 28 Baldwin Street, Bristol.
" 28	Gravelly Hill, near Birmingham—Building	Guardians of Aston Union	J. North, Union Offices, Vauxhall Road, Birmingham.
" 29	Clown, Derbyshire—Lock Up	Standing Joint Committee	J. S. Story, County Offices, St. Mary's Gate, Derby.
" 30	London, S.E.—Alterations and Repairs to Workhouse	St. Saviour's Union Guardians	G. D. Stevenson, 13 and 14 King Street, E.C.
" 31	Belfast—Hospital		W. H. Stephens and Sons, 13 Donegall Square, North, Belfast.
" 31	Lincoln—Boiler House		W. Watkins and Son, St. Edmonds Chambers, Silver Street, Lincoln.
" 31	Witton-le-Wear—Church Restoration		Borcham and Morton, 24 John Street, Sunderland.
Sept. 4	Marlborough, Wilts—Hall	Corporation	C. E. Ponting, Architect, Marlborough, Wilts.
" 10	Walsall—House	School Board	Bailey and McConnal, Bridge Street, Walsall.
" 17	Cardiff—Law Courts	Corporation	Town Clerk, Town Hall, Cardiff.
	ENGINEERING.		
Aug. 17	Halesowen—Heating Apparatus	Hospital Committee	A. T. Butler, Architect, Cradley Heath.
" 18	Madrid—Electric Tramway Lines	Spanish Government	Commercial Department, Foreign Office, S.W.
" 18	Grimsby—Electric Lighting	Corporation	Professor A. B. W. Kennedy, 17 Victoria Street, Westminster, S.W.
" 20	Bredbury—Outfall Works	Urban District Council	W. Spinks, 20 Park Row, Leeds.
" 20	Clacton-on-Sea—Scrubber	Gas and Water Committee	S. Francis, Town Hall, Clacton-on-Sea, Essex.
" 20	Clacton-on-Sea—Sulphate of Ammonia	Gas and Water Committee	S. Francis, Town Hall, Clacton-on-Sea, Essex.
" 20	Clacton-on-Sea—Purifiers	Gas and Water Committee	S. Francis, Town Hall, Clacton-on-Sea, Essex.
" 20	London, W.—Boilers	Central Electric Supply Company, Limited	F. J. Walker, 19 Carnaby Street, Golden Square, W.
" 21	Bury, Lancs.—Filters	Waterworks Committee	J. Cartwright, Peel Chambers, Market Place, Bury.
" 21	Bury, Lancs.—Valves	Waterworks Committee	J. Cartwright, Peel Chambers, Market Place, Bury.
" 21	Boxtel—Bridges	Lexden and Winstree Rural District Council	J. Ennals, Surveyor, Copford.
" 21	Congleton—Footbridge		Borough Surveyor, Congleton.
" 21	York—Gasholder Tank	United Gas Company	The Manager, Gas Office, York.
" 22	Belper—Waterworks	Rural District Council	J. F. Baslow, Engineer, Council Office, Belper.
" 22	Warningcamp, Sussex—Well	Littlehampton Urban District Council	H. Howard, Town Offices, Littlehampton.
" 22	Newport, Mon.—Electric Lighting	Guardians	B. Lawrence, Austin Friars Chambers, Newport.
" 25	Hanley, Staffs—Boilers	Electric Lighting Committee	J. Lobley, Town Hall, Hanley.
" 27	Taunton—Reservoir	Town Council	F. W. Roberts, Engineer, Taunton.
" 28	Nottingham—Engines	Water Committee	O. Moore, St. Peter's Square, Nottingham.
" 28	Warsaw—Telephone Service	Russian Government	Commercial Department, Foreign Office, S.W.
" 28	Church Stretton, Salop—Reservoir	Water Committee	J. Taylor, Sons and Crimp, 27 Gt. George Street, Westminster, S.W.
" 31	Stockport—Tramcars	Tramways Committee	J. Atkinson, Borough Surveyor, Stockport.
Sept. 1	Fenton, Staffs—Railway	Leek and Manifold Valley Light Rlwy. Co.	J. Forsyth, Heron's Cross, Fenton, Staffs.
Sept. 4	Portsmouth—Electric Tramways	Corporation	E. Rotter, Town Hall, Portsmouth.
" 5	Lisbon—Iron Bridge		Public Works Department, Lisbon.
" 8	Bradford—Refuse Destructors	Corporation	Mr. McTaggart, Corporation Depôt, Hammerton Street, Bradford.
" 17	Jassy, Roumania—Waterworks		Technical Department, Communal Council Office, Jassy.
" 30	Wellington, New Zealand—Engines	Corporation	J. Duthie and Co., Limited, 23 Lime Street, London, E.C.
Oct. 2	Barcelona, Spain—Elevators	Harbour Commissioners	Commercial Department, Foreign Office, S.W.
	IRON AND STEEL.		
Aug. 20	Epsom—Railing	Urban District Council	E. R. Capon, Bromley Hurst, Church Street, Epsom.
" 21	Bury, Lancs.—Pipes	Waterworks Committee	J. Cartwright, Peel Chambers, Market Place, Bury.
" 21	Leeds—Iron Work	Tramways Committee	City Engineer, Municipal Buildings, Leeds.
" 22	Java—Ironware	Netherlands Colonial Ministry	Commercial Department, Foreign Office, S.W.
" 22	Lancaster—Railings	Water Committee	Water Engineer, Town Hall, Lancaster.
" 23	Aberdeen—Rails	Town Council	W. Dyack, Town Hall, Aberdeen.
	PAINTING AND PLUMBING.		
Aug. 18	Shrewsbury—Painting	Markets Committee	W. C. Eddowes, The Square, Shrewsbury.

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COMPLETE LIST OF CONTRACTS OPEN—*continued.*

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
	ROADS AND CARTAGE.		
Aug. 18	Urmston, Lancs.—Flagging	Urban District Council	J. Heath, Council Offices, Croft Bank Road, Urmston.
„ 18	Whitley, Northumberland—Road Works	Urban District Council	Clerk, Council Offices, 30 Esplanade, Whitley.
„ 18	Whitley, Northumberland—Tar Macadam	Urban District Council	Clerk, Council Offices, 30 Esplanade, Whitley.
„ 20	Woodford, Essex—Granite	Urban District Council	Clerk, Council Office, Woodford, Essex.
„ 21	Barnet—Granite and Cartage	South Mims Rural District Council	G. D. Byfield, 16 High Street, Barnet.
„ 22	Aylesbury—Paving	Urban District Council	J. H. Bradford, 2 Rickford's Hill, Aylesbury.
„ 30	Brightlingsea, Essex—Making-up	Urban District Council	Clerk, Council Offices, Brightlingsea.
	SANITARY.		
Aug. 20	Sunbury-on-Thames—Sewer	Urban District Council	H. F. Coales, Council Offices, Sunbury-on-Thames.
„ 20	Bredbury—Sewage Outfall Works	Urban District Council	W. Spinks, 20 Park Row, Leeds.
„ 21	Brighouse—Sewers	Corporation	A. M. Fowler, 1 St. Peter's Square, Manchester.
„ 21	Newport Pagnell, Bucks—Sewerage Works	Rural District Council	D. Balfour and Sons, 1 Victoria Street, Westminster, S.W.
„ 22	London, S.E.—Sewers	Lee Board of Works	Clerk, Board Office, Eltham Green, Eltham.
„ 27	London, E.—Sewers	West Ham County Council	Borough Engineer, Town Hall, West Ham, E.
Sept. 8	Andenshaw, Lancs—Sewers	Urban District Council	J. P. Wilkinson, 47 Arcade Chambers, St. Mary's Gate, Manchester.
	TIMBER.		
Sept. 1	Hoyake, Cheshire—Timber	Urban District Council	T. Foster, Council Offices, Hoylake.

COMPETITIONS OPEN.

DATE OF DELIVERY.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	BY WHOM ADVERTISED.
Aug. 18	Southport—Bridge	£25 and £10	Borough Surveyor, Town Hall, Southport.
„ 18	Machynlleth—Schools	£30	D. D. Williams, School Board Clerk, Machynlleth.
Sept. 15	Cardiff—Asylum	£105	Borough Engineer, Town Hall, Cardiff.
„ 30	Devizes—Hospital	£20, £10	O. Sheppard, Clerk to Joint Committee, Devizes.
„ 30	Musselburgh—Town Hall	£26 5s. and £15 15s.	Town Clerk, Council Offices, Musselburgh.
Oct. 30	South Shields—Municipal Buildings	£200, £100, £50	J. M. Hayton, Town Clerk, Court Buildings, South Shields.
No date.	Riviera—Villa for Sir William Ingram	£78 15s., £26 5s., £5 5s.	"Architectural Review."

COMING EVENTS.

Wednesday, August 15.

BUILDERS' FOREMEN AND CLERKS OF WORKS' INSTITUTION.—Ordinary Meeting at 8 p.m.

INSTITUTE OF SANITARY ENGINEERS.—Meetings of Examination and Literary Committee at 2.30 p.m., General Purposes and Finance Committee at 3.30 p.m., Election Committee at 5 p.m., and Council at 7 p.m.

INSTITUTION OF JUNIOR ENGINEERS. — Summer meeting at Newcastle-on-Tyne. Trip up the river to inspect the Tyne Improvement Commissioners' works.

Thursday, August 16.

INSTITUTION OF JUNIOR ENGINEERS. — (Summer meeting continued.) Excursion to Sunderland to inspect the works of the River Wear Commission.

Friday, August 17.

INSTITUTION OF JUNIOR ENGINEERS. — (Summer meeting continued.) Visit to the Allhusen Works of the United Alkali Works Company and the preliminary works of the Corporation's Electric Tramway undertaking; summer dinner in the evening at the County Hotel, the President, the Hon. Charles A. Parsons, F.R.S., in the chair.

Saturday, August 18.

ARCHITECTURAL ASSOCIATION.—Fifth summer visit to Mereworth House, near Wateringbury, Kent.

Saturday, August 25.

NORTHERN ARCHITECTURAL ASSOCIATION, NEWCASTLE-UPON-TYNE.—Visit to South Shields.

Saturday, September 1.

ARCHITECTURAL ASSOCIATION.—Sixth summer visit.

Wednesday, September 5.

BRITISH ASSOCIATION.—Meeting at Bradford. Presidential address by Sir W. Turner, F.R.S., 8.30 p.m.

Tuesday, September 18.

IRON AND STEEL INSTITUTE.—Autumn Meeting begins in Paris.

TENDERS.

Information from accredited sources should be sent to "The Editor." Results of tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the Work.

BATH.—For the erection of a house, stables, &c., Midford, for Mr. W. B. Grant. Mr. H. W. Matthews, architect, Terrace Walk, Bath. Quantities by architect:—

Wills & Sons, Bath	£3,210
Rudman, Wilts	2,921
Hayward & Wooster, Bath	2,884
Long & Sons, Bath	£2,765
Mannings & Son, Bath	2,740
Erwood & Morris, Bath	2,625

CROYDON.—For the execution of sanitary and hot water engineer's work at The Mount, Duppas Hill, Croydon, for Mr. W. F. Knight. Mr. H. Fuller Clark, architect, 28 John Street, Bedford Row, W.C.

W. B. Simpson & Sons	£445
T. J. Boulting & Sons*	£377

* Accepted.

DEAL (Kent).—For the erection of Wesleyan Sunday-school buildings, for the school trustees. Mr. C. L. Crowther, architect, Deal. Quantities by the architect:—

Austin & Lewis	£1,672 0 0	A. W. Thompson	£1,289 16 0
Gibbons & Son	1,559 0 0	F. Collyer	1,280 0 0
G. & A. J. Cottew	1,532 0 0	Hayward & Son, Wellington Road, Deal*	1,259 0 0
T. Turner	1,469 0 0		
Lewis & Sons	1,450 0 0		
Denne & Son	1,430 0 0		

* Provisionally accepted.

FULHAM, S.W.—Accepted for the erection of public baths and washhouses at Melmoth Place, Fulham, for the Fulham Vestry:—

C. Wall, Lots Road, Chelsea ... £42,953

HANLEY.—For the erection of shop, Lamb Street, Hanley, for Messrs. Huntbach & Co. Messrs. R. Scrivener & Sons, architects, Hanley:—

J. Gallimore	£4,584	Grant & Son	£4,130
Bennett Bros.	4,500	G. Ellis, Hanley*	4,103
Cornes & Son	4,160	T. Godwin	4,099

* Accepted.

KING'S LYNN.—For extensions to electricity station for the Corporation. Mr. H. J. Weaver, Borough Engineer, Town Hall, King's Lynn:—

A. F. Foreman	£1,395 10 6	Bardell Bros., King's Lynn*	£1,178 0 0
Robert Dye	1,292 0 10		

* Accepted.

LONDON.—For certain structural alterations and new shop fronts, &c., to Nos. 31 to 37 Westbourne Grove, for Messrs. Wm. Whiteley, Limited. Messrs. Howgate & Keith, architects, 70 Gower Street, W.C.:—

Holloway Bros.	£5,620	Dove Bros.	£4,995
Hall, Beddall & Co.	5,400	Lawrance & Sons	4,548

LONDON.—For the erection of new counting-house in Douglas Place, extension of shops Nos. 31 to 37 Westbourne Grove, for Messrs. Wm. Whiteley, Limited. Messrs. Howgate & Keith, architects, 70 Gower Street, W.C.:—

Holliday & Greenwood	£89,256	McCormick & Sons	£87,890
Lascelles & Co.	88,900	Lawrance & Sons	87,773
Holloway Bros.	88,500	Simpson & Son	86,442

NORTHAMPTON.—For erection of new warehouses and workshops, Northampton, for Messrs. Jeffery, Sons & Co., Limited. Mr. Alexander Anderson, architect, Northampton. Quantities by architect:—

W. Heap	£2,745	Wingrove & Stanley	£2,510
A. P. Hawtin	2,665	Harper	2,431
Branson	2,610	Crow & Gardner, Northampton*	2,400
Wilford & Judkin	2,555		
Allright	2,580		

* Accepted subject to modification.

NORTHAMPTON.—For erection of new leather warehouse, Fish Street, Northampton, for Messrs. Malcolm Inglis & Co., Glasgow. Mr. Alexander Anderson, architect, Abington Street, Northampton. Quantities by architect:—

Bricklaying, Masonry and Carpentry Work.

H. Martin	£6,923	G. J. Fisher	£5,967
Sharman & Son	6,816	H. Green	5,963
J. M. Panting	6,608	E. Archer, Northampton*	5,874
Wingrove & Stanley	6,125		
A. P. Hawtin	5,985		

Plumbing, Glazing and Painting.

R. Cleaver	£1,025	Westley	£891
A. P. Hawtin	970	Martin	888
H. Green	960	Harris	872
E. Archer	937	Nichols	867
Wingrove & Stanley	920	Hanwell, Northampton*	819

* Accepted.

OXFORD.—For the installation of electric light at Messrs. Elliston & Carell's additional premises, Magdalen Street, Oxford. Mr. Herbert Quinton, architect and surveyor, 22 George Street, Oxford:—

W. Watson	£323	Hill, Upton & Co.*	242
Lucy & Co.	252		

* Accepted.

OXFORD.—Accepted for heating Messrs. Elliston & Carell's additional premises, Magdalen Street, Oxford. Mr. Herbert Quinton, architect and surveyor, 22 George Street, Oxford:—

Haden & Sons, engineers, Trowbridge ... £417

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PAIGNTON.—For alterations, additions, and new stabling at "Kingshurst," for Mr W. Morrison. Mr. W. G. Coudrey, of Paignton, architect. Quantities by Mr. Vincent Cattermole Brown, of Paignton :—

R.F.Yeo, Torquay	£2,794 15 0	E. P. Bovey, Torquay	£2,679 0 0
E. Westlake	2,766 0 0	H. Webber & Sons	2,648 10 6
R. Harris	2,716 0 0	C. & R. E. Drew*	2,490 8 4
		[Rest of Paignton.]	

* Accepted.

RUSHDEN, NORTHANTS.—For the erection of a Baptist Chapel. Mr. H. H. Dyer, architect, 1 Sheep Street, Northampton. Quantities by architect :—

E. Mitchell	£5,712	T. Wilmott, jun.	£4,805
T. H. Coleman	5,450	H. Sparrow	4,793
E. Brown & Son	5,300	R. Marriott	4,778
Hackaley Bros.	5,089	Bayas, Griffith Street, Rushden *	4,703
Geo. Henson	5,060		
Whittington & Tomlin	4,889		

* Accepted.

RUSHDEN.—For extensions and alterations to shoe factory, for Messrs. Cunnington Bros., Rushden. Mr. Alexander Anderson, Abington Street, Northampton. Quantities by architect :—

Brown & Son	£2,142	T. Swindall	£1,974
Willmott	2,050	E. Mitchell	1,973
T. & C. Berrill	2,013	H. Sparrow (Rushden) *	1,900
Whittington & Tomlin	1,997		

* Accepted.

SHREWSBURY.—For alterations to Shrewsbury College. Messrs. Dalgleish & Dickens-Lewis, architects, 18 Talbot Chambers, Shrewsbury. Quantities by the architects :—

G. H. Bickerton	£1,780	John Gethin	£1,694
Geo. Bullock	1,727	R. Price & Sons *	1,660
Henry Price	1,699	[All of Shrewsbury]	

* Accepted.

SMITHAM BOTTOM (Surrey).—For the erection of two houses, one shop, office, stabling, &c., Brighton Road, Smitham Bottom, for Mr. T. H. Ebbutt. Mr. C. H. Ridge, architect, 17 Park Street, Croydon :—

J. Burton & Son	£3,425	E. P. & C. Balled, Croydon*	£3,290

* Accepted.

WARMINSTER.—For the erection of a residence, Boreham Road. Mr. H. F. Price, architect, Weston-super-Mare. Quantities by architect :—

Cock & McLean	£2,830 0 0	G. & J. E. Stokes	£2,523 0 0
P. J. Ponton	2,738 15 2	Butcher & Son	2,475 2 10
J. Gaisford	2,703 0 0	C. Addicott, Weston-super-Mare *	2,404 8 0
Parsons & Son	2,684 9 7		
H. Franklin	2,675 16 5		

* Accepted.

CONTRACTS OPEN.

LEXDEN and WINSTREE RURAL DISTRICT COUNCIL.
TO BUILDERS AND CONTRACTORS.

The above Council invite TENDERS for BUILDING TWO NEW STEEL GIRDER BRIDGES, with abutments, &c., complete, in the Parish of Boxted.

Plans and specification can be seen at the Office of Mr. JOHN ENNALS, Surveyor, Copford, or at my Office on SATURDAYS.

Sealed Tenders, endorsed "Tender for Bridge," to be sent to the undersigned not later than TUESDAY, the 21st AUGUST.

The Council do not bind themselves to accept the lowest or any Tender. By order,

CHAS. H. THOMPSON,
Clerk to the Council.

Victoria Chambers, Colchester,
August 1900.

PARISH of ST. LEONARD, SHOREDITCH.
TO BUILDERS.

The Guardians of the above Parish invite TENDERS for ALTERATIONS at their Infirmary, 204 Hoxton Street, N.

Plans and specifications may be seen and all information obtained at the office of Mr. F. J. SMITH, F.R.I.B.A., Parliament Mansions, Victoria Street, S.W., upon payment of £5, to be returned to persons bonâ-fide tendering.

Sealed Tenders, upon the forms supplied, must be delivered to the Guardians at their meeting to be held at the Board Room, 204 Hoxton Street, N., on WEDNESDAY, the 22nd inst., at FIVE o'clock in the afternoon precisely.

The Guardians do not pledge themselves to accept the lowest or any Tender.

By order,
ROBERT CLAY,
Clerk to the Guardians.

Clerk's Office,
No. 213 Kingsland Road, N.E.,
August 1900.

FENNY STRATFORD SCHOOL BOARD.
TO BUILDERS AND CONTRACTORS.

The above-named Board invite TENDERS for the ERECTION of a New GIRLS' SCHOOL at Fenny Stratford. Plans and specifications, as prepared by Mr. JOHN CHADWICK, M.S.A., Fenny Stratford, may be inspected at my Office between the hours of TEN a.m. and FOUR p.m.

Application for bills of quantities and form of Tender, accompanied by the sum of £2 2s. (which will be returned on the receipt of a bonâ-fide Tender and priced bill of quantities), to be made to me the undersigned.

Sealed Tenders on the forms supplied, together with priced bill of quantities, to be delivered at my Office on or before TWELVE o'clock noon, TUESDAY, AUGUST 21st, 1900, endorsed "Tenders for School."

No pledge given to accept the lowest or any Tender.

August 1900. THOS. BEST, Clerk.

TO BUILDERS and CONTRACTORS.

The Vestry of Lambeth are prepared to receive TENDERS for the EXECUTION of certain WORK at the PUBLIC BATHS and WASHHOUSES at the corner of the Kennington and Lambeth Roads, plans and specifications for which may be seen at the Offices of the Architect, A. HESSELL TILTMAN, Esq., 51 Russell Square, between the hours of TWO and FOUR o'clock in the afternoon.

Parties desirous of submitting Tenders may obtain Forms of Tender and Bills of Quantities at the Architect's Office on payment of £2 2s., which sum will be retained by the Vestry and forfeited if a bonâ-fide Tender is not made by the parties depositing the same.

No Tender will be considered except upon the prescribed form.

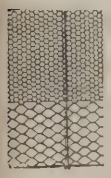
Sealed Tenders must be delivered at the Lambeth Vestry Hall, Kennington, addressed to the undersigned, not later than TWELVE o'clock at NOON on THURSDAY, the 6th SEPTEMBER.

The Vestry reserves to itself the right to decline all or any of the Tenders sent in.

HENRY J. SMITH,
Clerk to the Vestry.

Lambeth Vestry Hall,
August, 1900.

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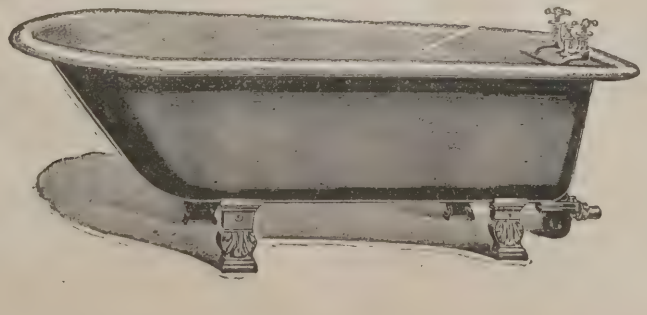
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ASYLUMS COMMITTEE, LONDON COUNTY COUNCIL.

TENDERS are invited for the ERECTION of an OAK PARK PALED BOUNDARY FENCE, GATES, and FOUNDATIONS at the Horton Estate, near Epsom Surrey.

Instructions for Tender, and forms of Tender and contract, with specification, can be obtained from the undersigned on and after the 13th inst. A plan showing the position and approximate length of the fencing may be inspected at the Office of the Asylums Engineer, 6 Waterloo Place, S.W.

Tenders must be on the printed form, and be accompanied by the form of contract and schedules thereto and form of bond.

The Tender, completed in accordance with the instructions, must be enclosed in the authorised cover, sealed and endorsed "Tender for Oak Paled Fence, Horton Estate," and be delivered at the Office of the Committee, 6 Waterloo Place, S.W., not later than TEN a.m. on SATURDAY, the 22nd SEPTEMBER, 1900, after which time no Tender will be received.

Any Tenders not made on the printed forms or not filled up and completed in every particular in accordance with the instructions, will be rejected.

The contractor will have to enter into a bond in the penal sum of £250 with two approved sureties, each in the sum of £125, as security for the due performance of the contract.

The Committee do not bind themselves to accept the lowest or any Tender.

R. W. PARTRIDGE,
Clerk of the Asylums Committee.

Asylums Committee Office,
No. 6 Waterloo Place, S.W.
August 1900.

TAUNTON CORPORATION WATER WORKS.

The Taunton Town Council are prepared to receive TENDERS for the CONSTRUCTION of a STORAGE RESERVOIR and other Works at Luxhay, Pitminster, about six miles from Taunton.

Drawings may be inspected and specification and schedules of quantities and forms of Tender may be obtained at the Offices of the Engineer, Mr. F. W. ROBERTS, Taunton; or of the Water Works Manager, Municipal Offices, Taunton, upon payment of £2 2s., which will be returned on receipt of a bonâ-fide Tender.

Sealed Tenders, upon the form supplied, addressed to the Town Clerk, Municipal Buildings, Taunton, and endorsed "Tender for Reservoir," must be delivered on or before MONDAY, the 27th day of AUGUST instant.

The lowest or any Tender will not necessarily be accepted.

GEORGE H. KITE,
Town Clerk.

COUNTY BOROUGH of WEST HAM.
TO CONTRACTORS.

The Council hereby invite TENDERS for the CONSTRUCTION of about 4,700 lin. feet of 12-inch STONEWARE PIPE SEWER, with MANHOLES, in Barley Lane, Chadwell Heath.

Plans may be seen, and specification, form of Tender, and further particulars obtained at the Borough Engineer's Office, Town Hall, West Ham, E., upon payment of One Pound, which will be returned upon the receipt of a bonâ-fide Tender.

Tenders, endorsed "Tender for Sewer, Barley Lane," to be sent to my Office not later than FOUR o'clock on MONDAY, AUGUST 27th, 1900.

The Council do not bind themselves to accept the lowest or any Tender.

The contractor will be required to enter into a bond, with two sureties, for the due performance of the contract, and no work will be ordered under the contract until such bond has been duly executed.

The contractor whose Tender is accepted, and with whom a contract is entered into, will be required to pay to the whole of his workmen such rate of wages, and observe such hours of labour, as are recognised by the workmen's trades unions, and shall not assign, nor underlet, or make a subcontract with any person or persons for the execution of any part of such work. In the event of any breach of such agreement the Council will enforce the penalty clause in its entirety.

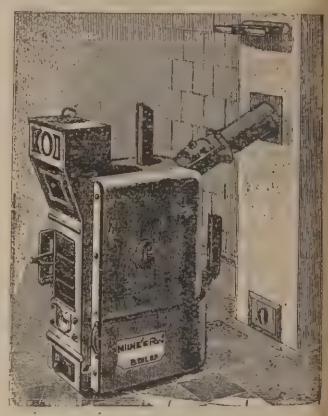
By order of the Council,
FRED. E. HILLEARY,
Town Clerk.

Town Hall,
West Ham, E.,
August, 1900.

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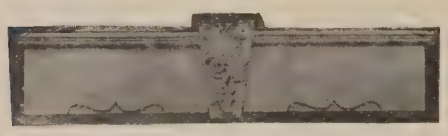
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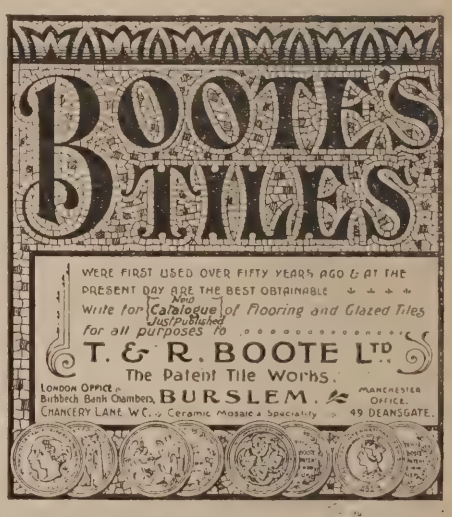
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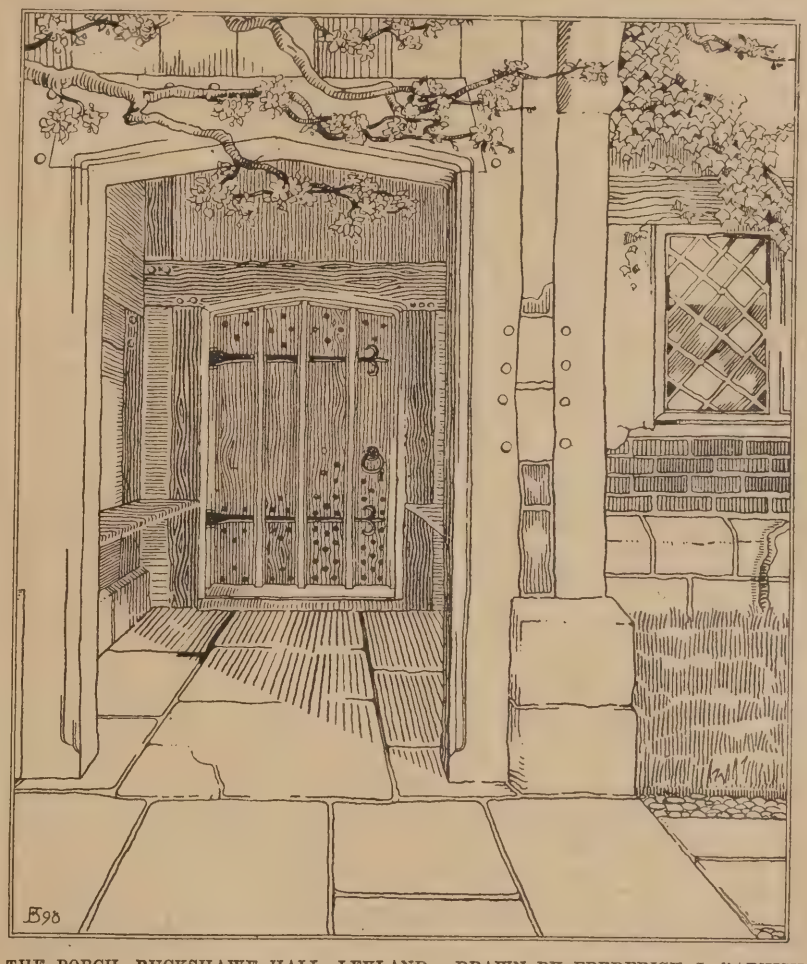
August 22, 1900.
No. CCLXXXIX.

Effingham House,
Arundel Street,
Strand, W.C.

An Architectural Causerie.

Differences in House Design.

Architecture, an expression of human life, manners and customs, assumes varying forms and adopts varying methods to express the varying conditions of the life which it represents. The conditions of life in the cities being so entirely different from those in the country districts, the expression of these different conditions naturally produces different results. The civilised inhabitant of the city is not the same being as the man who lives in the wilderness. Society has to some extent modified his character and imposed certain restrictions on his conduct. The man who lives in absolute solitude is the only man who is absolutely independent and self-sufficient and so at liberty to do as he likes or to build as he likes. He need not consider other people when there are none to consider. The more secluded his dwelling the more his individual life tends to develop as a separate, self-centred and independent entity, thinking and acting without deference to others. But the nearer he lives to other people the more does he become dependent on them, the more his thoughts and actions are influenced by them, till in the great centres of life he simply could not exist without their assistance; consequently, his independence vanishes and his individual life merges in the common life. Civilisation only exists on the understanding that the interests of the individual are subordinated to the common welfare, and this subordination seems to be in proportion to the dependence of the individual on the community. Hence the inhabitant of the city can no longer be regarded as a separate entity. He is little more than a bee in a hive and his house than a cell in the honeycomb. This fact necessarily influences his dwelling and influences the methods and aims of the artist who designs it. The man in the country may be a more or less independent entity and his house may express it; but the man in the town is not, neither is his house. It is not for the artist to deplore this fact, but to express it. In more or less civilised countries men who live on their own estates, in secluded spots far from the centres of life, can and do behave very much as they please. If other people do not approve of their manners and customs they do not go near them. But the moment such men come into contact with their fellows their conduct must be modified. Such a man's own house, hidden from public view in his own grounds, may be as eccentric and as ugly as he pleases, no one need see it but himself; but if he build a lodge at his entrance gates he is at once bound to consider those who pass by. There are limits, however, even to this private licence. In conduct there are the limits laid down by the law of the land, and besides this it is felt that the mere knowledge of the fact that anyone is guilty of outrageous behaviour in his own house constitutes an offence to others. So in building; simply the knowledge of the existence of a house that is an outrage on good taste is felt to be an offence, even though one had never seen it. Within the limits of decency, however, the more secluded a man's dwelling is the more he is at liberty to indulge his own fancies and fads and develop his individuality, both in his conduct and his building operations; but the nearer he lives to other people the less scope is afforded him for the display of either. The owner of a house hidden away in private grounds is not only free to express his own tastes uninfluenced by others, but the artist is also free to design it without reference to other and pre-existing designs. It may be a complete work of art in itself, as a single figure in sculpture may be; it can be designed solely with reference to its own unity. But directly another building or another figure is introduced the conditions alter absolutely; the two objects have to be designed with reference to one another—they have to compose. There is nothing more wearisome than the continual contemplation of a collection of works of art, all of which have been designed without any consideration for one another—as witness the Academy headache. To allow buildings to occur at haphazard is not art and to arrange independent designs so that they interfere with one another as little as possible is no more than arranging a picture gallery or a museum. It is this which seems to give direction to the architect's aim when designing town houses. He has to remember that he is not free to do as he likes; that the same restrictions that are placed on his client's conduct are placed on his own. He must realise that he is not creating something entirely new and independent. He finds a complete creation—the city—the individual units of which—the houses—are continually decaying, but whose collective life continues. His occupation is to renew these decaying members in harmony with the whole, but not to design a fresh and independent work of art, as is the case with an isolated building in the country. He has to express his client's existence as a most insignificant unit of the thousands that go to make up the collective life of the city; he has to show that deference to other designs that his client shows to other people. From this point of view it would seem that the man who would introduce a staring and petulant red brick house into a street of dull and uniform stucco work is akin to the man who keeps fowls in his area or who performs on the cornet in his back garden—he is indulging his own taste at the expense of his neighbours. It may well be that the red brick house is a more interesting work, in itself, than any of the houses forming its surroundings, but it is out of tone—out of harmony—and where there is no harmony there is no art. Possibly the owner, or the artist, said to himself, "How dull is this street; let us have at least one touch of colour to lighten it up a bit"—precisely what is said by the man who enlivens



THE PORCH, BUCKSHAWE HALL, LEYLAND. DRAWN BY FREDERICK J. BARNISH.

the twilight hours with the dulcet strains of his concertina. It is by no means the architect's business to instruct his client in the elementary laws of civilisation and good citizenship. He is not necessarily a censor of morals; his primary concern is to reflect and express life as he finds it—to hold the mirror up to nature. If, therefore, his client demands something startling it may be considered his business to provide it; and such houses have at least this claim to be called art, that they do thoroughly express the character of their occupants. But while the owner is uncivilised and out of harmony with his surroundings his dwelling must necessarily be so too if it would reflect his nature. From the social point of view it might rather be said that, though the inside of one's house may be designed to please oneself, yet the outside must be designed to please one's opposite neighbours, who see a great deal more of it than we do ourselves. But the architect must never forget that in a city these startling expressions of individual opinion are out of place and therefore inartistic. They may be clever and "original," but the more clever they are the more they destroy the harmony of the whole conception, not only of the city, but of the larger harmony of the universe. They degrade a street to the level of a picture gallery, and a picture gallery where the pictures have not even frames to separate them. A private dwelling in a town which stands out from its surroundings cannot but be a vulgarity; and it is also artistically untrue in this way, that it usually denotes more individuality in its owner than he can ever possess. If his character and his conduct were as eccentric and out of harmony with their surroundings as is the appearance of his house he would not be living in it; he would be in the hands of the police or in Colney Hatch. The distinguishing mark of a gentleman is that he has no distinguishing mark. He is never out of place, he is never assertive. His house should be like him. The artist designing in the country may consider himself as a soloist, but in the city he is but a member of an orchestra, who must follow the beat of the conductor's baton. While, then, a private house may fitly reflect individual sentiment within the limits of sense and right feeling, it is not so in public buildings, buildings for collective use, which have rather to reflect the sentiment and express the life of the community. Strictly speaking, there are no public buildings in the country. Buildings for collective use are naturally placed where men collect together, and so are to be found in villages and towns. A few isolated churches, or possibly wayside inns, might be held the necessary exceptions; but even these were probably not built in such utter solitude as that in which we now find them. Public buildings, therefore, have not only to express the public sentiment, but they have also to be in harmony with and make some concession to surrounding buildings. Individual fancies and conceits would seem to be quite out of place here, and therefore not really artistic. It is in designing public buildings, perhaps, that the architect's greatest satisfaction is to be found—to so enter into the life of the community that one's own personal failure and disappointment count for nothing, in comparison with the success of the life of humanity, which, through whatever misfortunes it may experience, rises ever with renewed strength and an eternal freshness of youth. In reflecting some glow, however faint, of this bright and eternal youth, the artist may surely find a larger opportunity and a deeper satisfaction than in expressing the fancies of an individual or the passing whim of the moment. A. R. J.

On Reflection.

Vauxhall Bridge Again?

For some time past a gracious peace has been our lot in regard to the new bridge across the Thames at Vauxhall, but now there is a risk of the spell being broken. It will be remembered that the old bridge, with its nine iron arches supported on stone piers (which by the way occupied one-sixth of the waterway), was condemned as unsafe owing to the foundations having become undermined by the currents, and that after a design for a steel-arched erection was rejected (in July, 1897) the London County Council approved the design prepared by their engineer-in-chief, Sir Alexander Binnie. This showed a concrete bridge faced with granite, and though the construction received much approbation the architectural qualities—particularly the general scale and the mouldings—were extensively and adversely criticised, architects of repute affirming that the bridge would not be worthy of its position and its use. There was a good deal of correspondence between the Council and the Royal Institute of British Architects on the subject, the greater part of which, however, was confined to an iron bridge with stone piers, and not to the concrete one, a model of which was only examined by Mr. Waterhouse and Mr. Mountford, whose opinions, given confidentially, were after published as representing the views of the Institute. Certain modifications and suggestions were adopted, and then, as the Council remained as obdurate as the Academy, the matter died down and became no more than a memory. Now the buried is perhaps to be dug up again. The time fixed for getting in the foundations and completing the piers and abutments was two years and a-half, of which only seven months remain. But not half the work is done yet. The reason for this is that the contractors (Messrs. Pethick Brothers, of Plymouth) found that instead of the blue clay being where it should have been it was 16ft. lower down, and instead of excavating and filling up with concrete (the expense of which would have been very great) piles were sunk and the pier built on top. At the present time four of the old piers and part of another are still in the river, the diversion of the sewers will take about four times as long as was estimated, and instead of the foundations taking two years and a-half to complete it looks as if double the time will be necessary. This means that the contractors will have to pay penalties, or (what is more probable) be granted an extension of time, and without doubt this will be the cause of more discussion. The contractors will say that it is not their fault, and the engineer will plead the impossibility of pre-determining the nature of river beds: in the meantime those who have to pay for the extras will not forget to mention the fact.

Another Competition Fiasco.

The Eastbourne Town Council is the latest public body to make itself ridiculous over a competition. "Man wants but little here below" is a maxim that is now behind the times. The Eastbourne Council requires a Free Library, an Art School, Technical Institute and Fire Engine Station all for the sum of £20,000. Moreover, the first three are to be under one roof. And not content with setting the competitors this puzzling problem the Council specified the floor-space required in each room. The first premium was won by Mr. P. A. Robson, and the assessor, commenting upon his design, says: "The author of this design has adhered with the greatest exactitude to your instructions, and has not only provided the floor-spaces you require but has also in almost every instance succeeded in giving you the exact dimensions given in your printed instructions." The building is also commended for its lighting, its economy and compactness. But this does not please the Eastbourne Council. It wants an ornamental building, and we all know what that means. Councillor Maude said: "It would be a thousand pities, if when the building was erected, they would in a short time be tired of looking at it. Among the plans there were many much more ornamental in appearance than those selected, and which would commend themselves far more to those who had any taste in the matter." Councillor Welch made a stand for the architect, but without avail. The Eastbourne councillors must understand that each of the buildings they require needs a different architectural expression, and should stand by itself. If they cannot afford this they must put up with plain construction; the conditions preclude any hope of a building possessing architectural feeling. At present the whole matter is in abeyance and the ratepayers are to be communicated with, but if they will elect such men as these councillors to represent them the outside world is justified in judging Eastbourne by the acts of its Council.

More Light.

A grave defect in public street lighting by means of the electric light forms the subject of a paragraph in the current number of "The Liberty Review." Our contemporary says that "the method of applying it (the electric light) in the streets is ugly and inconvenient to the last degree. At immense distances apart are fixed arc lamps of overwhelming strength; the glare of white light is blinding for a few seconds; then we pass into darkness, then into the glare again, and so on. The only satisfactory mode would be by reviving the old double line of lamp-posts, with an *incandescent* lamp upon each, the wires being taken through the interior, as the gas-pipe is now. In this way we should regain the old beautiful effect of a long avenue of lights at night; the light itself would be far pleasanter to the eyes and it would be diffused, as all street lighting should be." We have more than once called attention to this anomaly ourselves. The reason for so arranging the lights doubtless hinges on the fact that one arc light is equivalent in power to many gas burners, and the authorities accordingly enormously increase the distance between the lamp-shafts. This concentration of light is opposed to all scientific reason, for it simply means a greater dead-point and more intense darkness between the lamps. But the whole system is open to question. As we understand it, the reason for adopting the electric light in the streets at all is to increase the amount of light, not to keep it at the present strength as the authorities endeavour to do, or to diminish it, as by ignoring the effects of concentration they succeed in doing. Our object is to provide light for the passenger and vehicular traffic, not to illuminate the housetops every hundred yards or so. We are not inclined to accept with the childish enthusiasm of the "Daily Mail" the erection of an arc lamp as an evidence of progress, and it may interest that contemporary to know that the St. Martin's district is much worse lighted by its much-belauded arc lights than it was by the old gas lamps. We sincerely trust that the Strand Board will not follow the foolish example of its neighbours when its electric-light scheme is completed.

TOWNS OF NORTHERN FRANCE.

By ERNEST T. MARRIOTT, M.A.

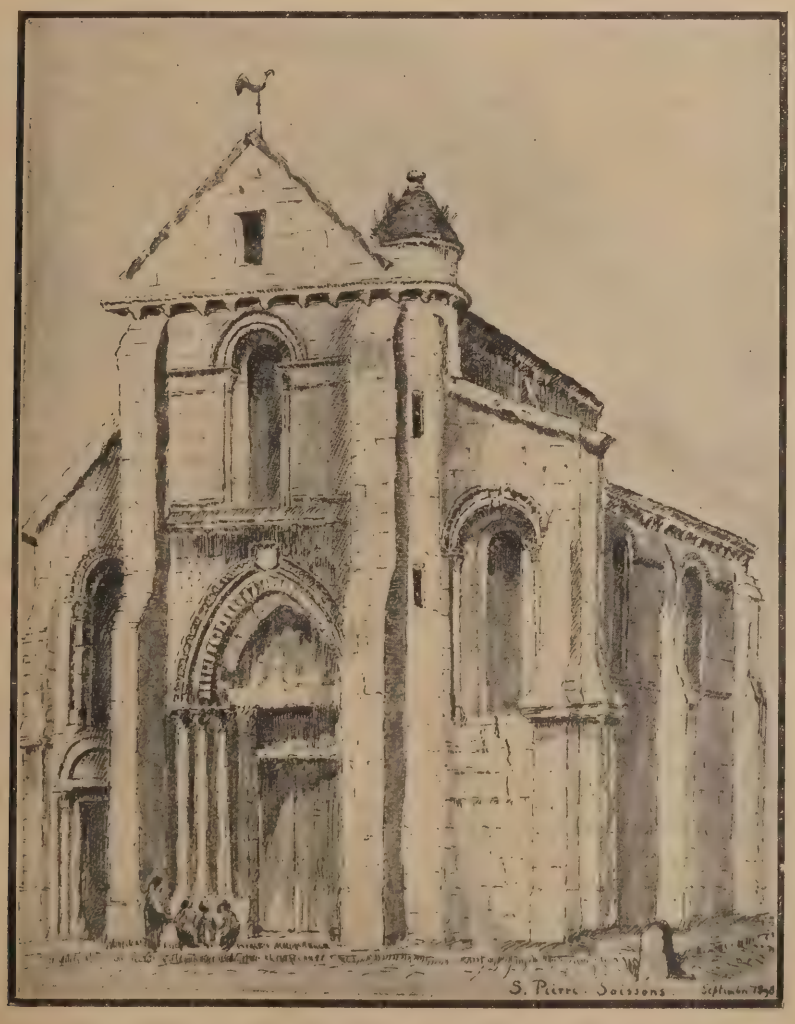
WHEN the dog days are upon us, when London towards the West is shut up, in the East is a sweltering mass of humanity, what better thing than to go for a trip through Northern France with a bicycle? Dining in London and leaving Southampton at midnight, one escapes from the meshes of the "Douane" at Le Havre in time for an early breakfast. Havre is not an appetising "hors-d'œuvre" for the commencement of a trip somewhat architectural. But, on the first day abroad, what need to open a sketch-book? Just rub your eyes, grow accustomed to the change of scene and colouring; get your ear turned to the language; send off your heavy luggage to meet you at some further point in your trip, taking sketching materials and the absolutely necessary impedimenta on your bicycle, and sally forth to spend the night in a more congenial atmosphere. So, to Lillebonne, a small town about twenty miles east of Havre. The student of ancient Roman monuments will find here a tolerably perfect amphitheatre—in fact, Murray tells us that it is the best preserved and indeed almost the only example of an ancient theatre in the North of Europe. No Englishman should leave Lillebonne without paying a visit to the Castle, where the Conqueror held solemn conclave, discussing with his barons the preliminary business for the attack on Britain. But with the exception of a round tower with walls 13ft. thick little remains of the original. From the terrace one obtains a fine view of the valley of the Seine. The fifteenth century double portal of the parish church is interesting.

A short evening ride brings us to Caudebec-en-Caux. This place is so well known that it is superfluous to dwell on its merits. A spin of two hours, through lovely pastoral country and great open fields, brings Rouen into sight—a city which has recently been dealt with in these columns.

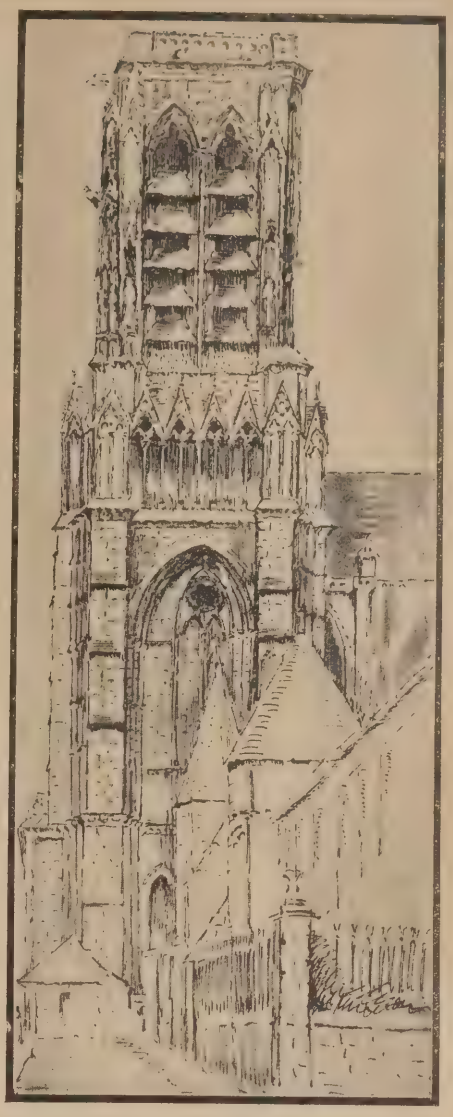
Riding eastwards for fifty miles, passing Gournai (of cheese fame) *en route*, we come to Beauvais, a town teeming with historical associations, full of fine old buildings and innocent (as yet) of electric trams. Froissart, referring to the suppression of a great revolt here in 1357 of the serfs against their lords, remarks:—"They set fire to the town and burned it clean, and all the villagers of the town that they could close therein." Mercifully, this is not strictly true, for the old cathedral, begun in 1225, still rears up her head, rears it up rather high too, for the choir is the loftiest in the world; that, together with the two transepts, constitutes the cathedral, as it has never been finished. The vaulting of the roof collapsed in 1284, so slender were the supports, but it was built up again, additional piers being added. Ruskin in "The Seven Lamps of Architecture" has remarked that there are few rocks, even among the Alps, that have a clear vertical fall as high as the choir of Beauvais. As a matter of fact, the roof rises 153ft. above the pavement.

When one has had time to recover from the feeling of amazement at this "Colossus on tiptoe," there are many details about the cathedral worthy of particular attention—e.g., the portal of the north transept, retaining the original doors; the elaborate Flamboyant south portal; the stained glass, which, as a rule, is admirable; the tapestry hanging in the transept, which reminds one of the long famous tapestry manufactory at Beauvais. The traveller should also visit the church of St. Etienne with its transitional (from Romanesque to Gothic) nave. The whole town is full of streets of overhanging half-timbered houses, some of which are well worth the study of the architect, and all of which appeal to the artist.

But we must push on to Compiègne, forty-two miles east, stopping for a while at Clermont, a town which possesses (so the guide book says) the oldest hôtel-de-ville in France.



S. PIERRE, SOISSONS. DRAWN BY ERNEST T. MARRIOTT.



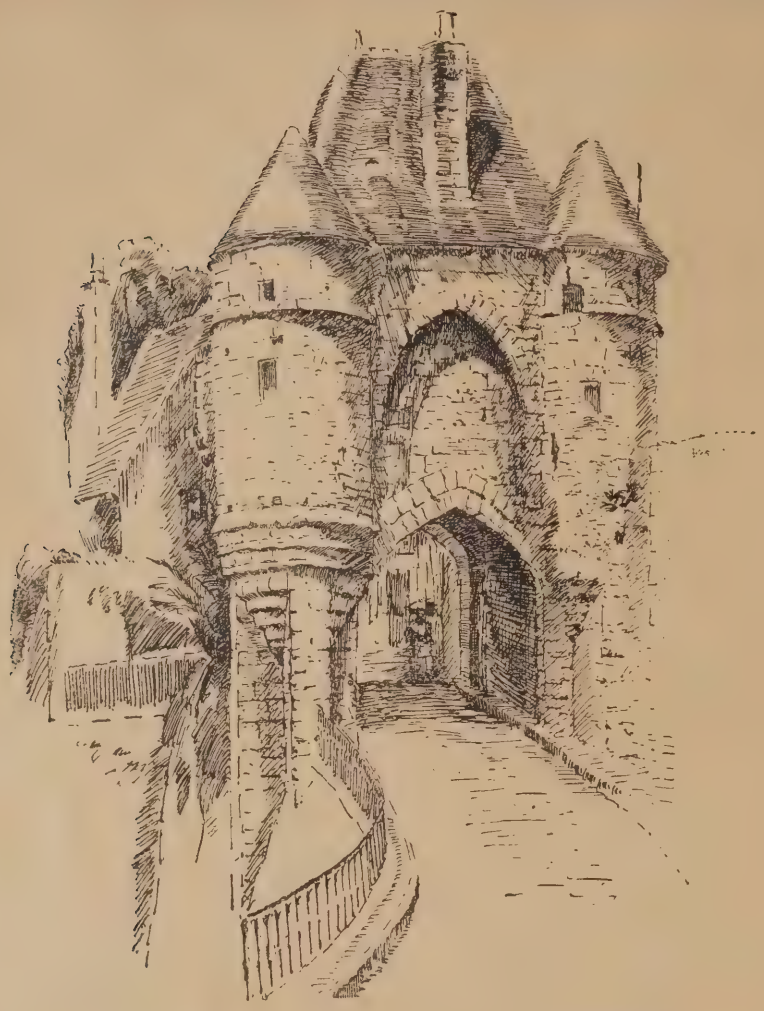
SOUTH-WEST TOWER OF CATHEDRAL, SOISSONS. DRAWN BY ERNEST T. MARRIOTT.

If the flavour of Beauvais is mediæval, that of Compiègne is what one may describe as Watteauesque. Louis XV.'s palais, built by Gabriel, rather dominates the placé. Yet two other buildings at least deserve attention—the Church of St. Antoine and the Renaissance Hôtel-de-Ville.

Louis N. Stevenson in his "Inland Voyage" says:—"My great delight in Compiègne was the town hall. I doted upon the town hall. It is a monument of Gothic insecurity, all turretted and gargoyled and slashed, and bedizened with half a score of architectural fancies. Some of the niches are gilt and painted, and in a great square panel in the centre, in black relief on a gilt ground, Louis XII. rides upon a pacing horse. . . . Over the King's head, in the tall centre turret, appears the dial of a clock; and high above that, three little mechanical figures, each one with a hammer in his hand, whose business it is to chime out the hours and halves and quarters for the burgesses of Compiègne. . . . I had a great deal of healthy pleasure from their manœuvres, and took good care to miss as few performances as possible."

Far more pleasant is it to wander about the grounds of the palace and to dream of the fêtes of long ago than to pass through the semi-bare rooms of the palace itself, with the "sic gloria mundi transit" feeling forced upon one at every corner.

No wonder the Napoleons were devoted to Compiègne with such a forest for "la chasse." How lovely it looked in the early morning as we rode through it for an hour on our way to Pierrefonds. There, on a hill, that huge hulking impersonation of Feudalism, the Château of Pierrefonds, stands. It is impossible to get away from it. Outside and inside, with all the decoration, fittings, and furniture, it is to-day



PORTE D'ARDON, LAON. DRAWN BY ERNEST T. MARRIOTT.

as it was in the fifteenth century. The restoration was carried out by Viollet-le-Duc at a cost of five million francs. Those who would sketch in the precincts of the château must obtain an official order from Paris. There is nothing of exceptional interest in the village of Pierrefonds, so we pushed on to Senlis the same evening.

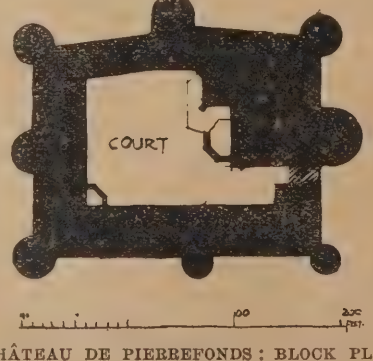
Perhaps the most remarkable feature about this little provincial town, about forty miles north of Paris, is the number of fine churches which have been desecrated. St. Vincent, St. Pierre, St. Frambourg—all interesting, and two dating from the twelfth century—are used respectively as a theatre, a riding-school, and a vegetable market. The scene in St. Frambourg on a market morning, with the fruit and vegetable stalls ranged down the nave and round the aisles, the market-women with spotless white caps and bright coloured aprons sitting at the bases of the piers, fruit and vegetable of every colour spread around them, the gay crowd flitting about from one stall to another, everyone talking at the highest pitch of voice, makes up a striking and animated scene, one which would fill the painter with enthusiasm and perhaps sadden the architect, for in a church put to such a purpose surely but little attention will be given to the preservation of architectural details. If the roof and walls hold good, the church can always be used for a vegetable market—that is enough.

The cathedral is small but quite interesting. The splays of the twelfth century west portal retain their carved statues with a trace of colour. The west façade is singularly charming. It has escaped both the restorer's and the spoiler's hands. Inside one notices that the choir is longer than the nave. The triforium is as wide as the aisle beneath; some of the capitals are interesting, and the east end is apsidal in form.

We did not discover any domestic work here worthy of particular attention. Before leaving Senlis the cyclist ought to ride over to Chantilly (eight miles off) to see the late Duc d'Aumale's château, which was thrown open to the public some time ago. There are some very fine pictures, a magnificent library and a dainty collection of bric-à-brac. The park, too, is delightful.

About forty miles north-east of Senlis lies Soissons. Few of us in early youth have not read of the inhabitants of this part of France, for did not Cæsar himself find the king of the Suessiones the most powerful monarch in Gaul? This fact speaks well for the antiquity of the town, and during successive centuries Soissons appears to have been the favourite butt for attacking parties in this region. It has the misfortune to hold a commanding position on the river Aisne. As a consequence, the town has been sacked by the Huguenots, twice taken and retaken in a week during the campaign of 1814, and finally bombarded in 1870. With such a record (not to speak of the furies of the first revolution) what wonder if most of the good things have disappeared?

But there is a west front here flanked by two towers with spires superimposed which alone would make the place worthy of a visit. This is the remnant of the thirteenth century abbey church of St. Jean des Vignes—a superb remnant too. The Suessiones did well to pray the spoilers, "At least spare this."



CHÂTEAU DE PIERREFONDS: BLOCK PLAN.

The cathedral is remarkably interesting. It is one of the earliest existing examples of Early French work. The choir was finished in 1212. J. H. Parker has said that nearly all the churches of the Soissonais district are of the character of transition from the Romanesque to the Gothic, and some of the most learned of the French antiquaries consider that this district was the birthplace of Gothic architecture. "It is to be regretted," he adds, "that they have not more carefully investigated the history of these churches." And as we look at the very beautiful south transept rounded off in apsidal form, built between 1168 and 1175, with its four series of acutely pointed arches rising one above the other, all resting upon slender shafts, it requires but slight imagination to assure oneself that this very spot *is* the birthplace of the Gothic style.

St. Pierre, not far off, is an interesting half-Romanesque church. It is now used for a gymnasium.

Ten miles from Soissons is the Château de Coucy. Enough of it remains to give point to the motto of the Sires of Coucy—

> "Roi ne suys,
> Ne prince, ne duc, ne Conte aussy;
> Je suys le sire de Coucy."

The donjon, which is 180ft. high and 100ft. in diameter, the walls in places being 34ft. thick, is still virtually intact. Viollet-le-Duc thought it the finest bit of mediæval military architecture in Europe: "Compared with this giant," he says, "the largest towers known appear mere spindles." Even the gunpowder which Mazarin's engineers brought to bear upon it had but little effect. It is an interesting fact that this château was bought from the Sire of Coucy by Louis of Orleans, the same who built the Château of Pierrefonds. The love which this Louis must have had for magnificence was surely as great as that of the late King of Bavaria.

And now to Rheims; but no! in a short article of this kind one cannot even touch the hem of the garment of such a city, such a cathedral. A long monograph dealing with the cathedral, the Church of St. Remi, and other buildings would offer but scant justice to such subjects. For the rest, Rheims is a great contrast to the quiet provincial towns which we have been visiting. Here is all bustle begot of commerce, and Champagne is writ large in the streets.

A thirty-mile ride in a westerly direction brings us to Laon.

Joseph Pennell has called Le Puy the most picturesque place in the world. Certain places seem to hold the secret of being able to take possession of one's whole being—Oxford, Rothenburg, Florence, and I would add Laon. During our eleven days here, the visitors (those at least who were English) came as veritable birds of passage, never spending more than two nights, generally one, for Laon lies on the main line from Calais to Bâsle. To them, Laon, I feel sure of it, would not be much more than a little town perched on a hill with rather a nice cathedral. Laon is a place which "grows on one." You begin by liking her, and end by passionately loving her. Whether her situation or her buildings make up the greater charm it would be idle to speculate. A city on a hill always has a peculiar charm, and in Laon this is intensified, since from each of the four sides the views are so essentially different. Possibly that from the spur of hill called St. Vincent is the most striking. This, with the spur on which the cathedral stands, together with that on which the bulk of the town is built, makes up a perfect horseshoe. The space thus enclosed is the "Cuve Saint Vincent," to which the woody sides of the hill descend rapidly. Between the ends of the horseshoe one catches a glimpse of plain, all blue and melting away into the sky. Of the old cathedral it may be said—

"There stands a structure of majestic frame."

From the highest arcades of the four towers can be seen the oxen carved big in stone, the beasts thus honoured for their share in the raising of this monument—the dragging up of the stones from the valley to the top of the hill.

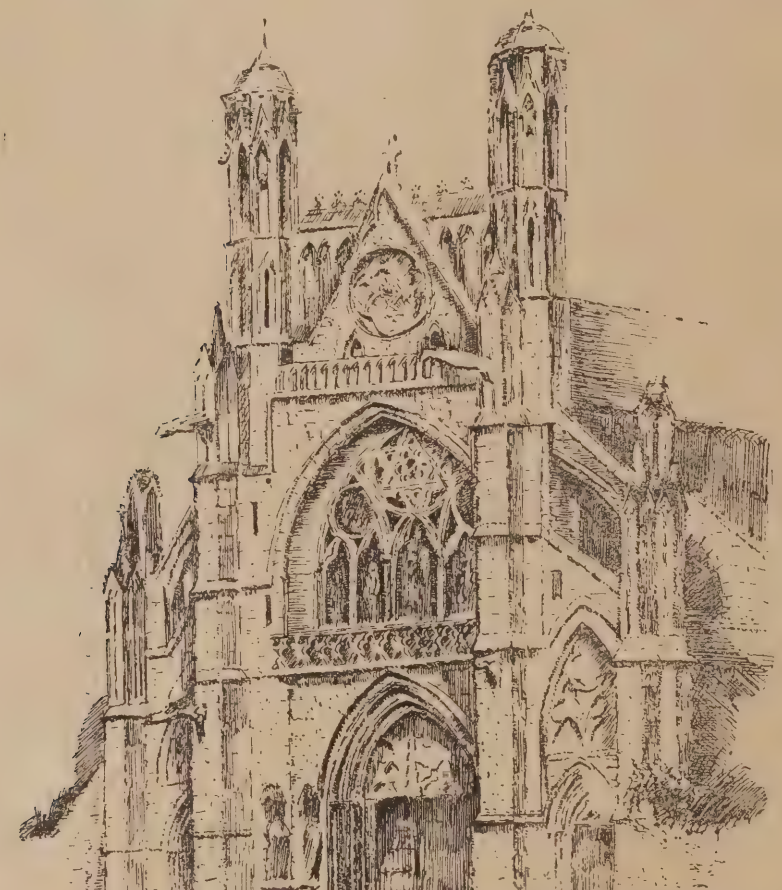
Laon has been compared to Sienna, but the



THE CHÂTEAU DE PIERREFONDS FROM THE VILLAGE. DRAWN BY PATTEN WILSON.

comparison does not, I think, hold good. There is not the utterly old-world look here which Sienna, in common with most Italian towns, possesses. The town is encircled by the old fortress walls. Just outside, the pleasantest promenades imaginable, all overhung by trees, have been made.

But to explore the buildings. The most remarkable features of the cathedral are those four towers, two at the west end and two at the end of each of the transepts. They are exquisite. Some say that the cathedral was built in two years, 1191-1193. To quote from J. H. Parker, it was "considered by Viollet-le-Duc to be of the beginning of the thirteenth century, and the reasons he gives for assigning it to this date appear conclusive. The style is Early Gothic, but very heavy, and with considerable remains of the transitional character; the east end is square, which is very unusual in France, though common in England at that



S. MARTIN, LAON. DRAWN BY ERNEST T. MARRIOTT.

period. Rodulphus de Warnaville, or Venneville, who was Bishop of Laon from 1182-1193, had previously been Archdeacon and Treasurer of York and Chancellor of England. . . . Many of the country churches round Laon have also square east ends, after the English fashion; they are chiefly imitated from the cathedral church, though some of them would appear earlier. They are a very interesting set of churches of the twelfth and thirteenth centuries, several of which are well worthy of careful examination." The interior is very regular. The aisles are flanked by thirty-two side chapels, with finely-carved wooden Renaissance screens. A few yards from the cathedral is the octagonal chapel of the Templars, a very interesting early twelfth century building. The roof is formed of small plaquettes of hard stone, an example which is unique in France. Adjoining is a musée which is worth a visit. The picturesque Porte d'Ardon is one of the few remaining gateways of Laon. It was built in the thirteenth century on the site of a Roman gateway of which to-day one can see the substructure formed of immense stones put together without cement. The church of St. Martin is one of the most remarkable buildings of Laon. Viollet-le-Duc calls the façade of this church one of the best models of the end of the thirteenth century or of the beginning of the fourteenth century. This beautiful façade is a little marred by the ignoble "calottes" placed on the top of the flanking "tourettes."

These are a few of the many interesting buildings in Laon. Eleven days pass all too quickly for a thorough exploration of the city with her environs. The villages in the immediate neighbourhood — Bruyères-sous-Laon, Vorges, and Nouvion-le-Vieux—all possess churches of exceptional interest, and further afield are the celebrated pilgrim church of Notre-Dame-de-Liesse and the historic château of Marchais.

Truly Laon is delightful: a fitting place in which to conclude a holiday full of interest, full of pleasurable recollections.

The Statue of Admiral Blake executed by Mr. F. W. Pomeroy is to be unveiled at Bridgewater on October 4th by Lord Brassey.

The National Gallery has lately acquired the following works by gift, bequest, or purchase: Lady Layard has presented a fresco painting of the Madonna and Child, by Giovanni Bellini. Mr. G. F. Watts, R.A., has added two important works to those which he had already given to the Gallery—"The Triumph of Love" and "Time, Death and Judgment." A large body of subscribers to the Burne-Jones Memorial Fund have presented to the National Gallery the well-known and important work by Sir Edward Burne-Jones, "King Cophetua and the Beggar Maid." Mr. Henry Vaughan has bequeathed to the Gallery a life-sized statue of Flaxman by Weeks, and a similar statue of Sir Joshua Reynolds by Foley. By purchase, a picture by Fra Bartolommeo, representing the Virgin and Child, has been acquired.

PRINCIPLES OF GOOD ARCHITECTURE.*

BY JOHANNES OTZEN.

A VAST and powerful movement is gaining upon all domains of art, endeavouring to act either in a reformatory or in a revolutionary manner on each of them. The history of art shows many such periods, but though the events and the general conditions of these movements repeat themselves their appearance has always differed. As far as ancient nations are concerned, and as far as we know the incidents of those ancient times as regards revolutions in art, they always appear as a slowly progressing but irresistible change in the mode of thinking and feeling of the nation. The fundamental causes of these changes were probably always the same: the exhaustion of their own intellectual power and the invasion of superior elements of civilisation of another (frequently politically vanquished) people. No doubt in every movement of the kind certain powerful individualities have often been the centre, but they never appeared on the surface and their works became the property of the community from the very beginning. In proportion as the general development of civilisation progresses, the relations between these leading minds and the movement inspired by them appears to change.

Only in the period of the Renaissance and during the art periods developing out of it personalities appear as tyrannical individualities following with prodigious power and reckless energy their own paths, apparently forcing the nations to follow in their track. But only apparently, for in reality it was in the Middle Ages the intellectual currents of the nations that set boundaries to the doings of those heroical natures from which they took their force and their artistic power. If the preceding holds good for art in general, it does especially so for architecture. Architecture as an art was from the first called upon, by its nature, to exclude any absolute arbitrariness, and it is architecture with the inexorable logic of its ideas that shows most distinctly the picture of the development of human civilisation, and least of all the arbitrariness and the momentary influence of morbid impulses.

From the limited time granted to me I must forbear following the general art movement to exclusively investigate the influence on architecture exercised by the eclectic art-currents of the nineteenth century.

If in this respect the more than abundant and rather too exact (photographic) publications of historical monuments of all times; the considerable increase of scientists of architecture, without practical education in the craft, and hence desirous of writing books and of discovering things new; the general human craving for change of the exterior phenomena of life; the artistic speculation on this human weakness; the over-estimation of self, &c.; I say if in this respect the above are the unpleasant reasons of the modern movement of art there are quite as many that are estimable and justified. For every reflecting person with nobler intuitions there is something repulsive and mean in the superficiality of the style of the later decades of the nineteenth century. The more chaste our feelings the easier we shall be inclined to renounce all

* Summary of a paper read before the recent International Congress of Architects held at Paris. Professor Otzen is Senator of the Royal Academy of Arts at Berlin, and an honorary member of the Academy of Arts at Vienna and the R.I.B.A.

styles, instead of using them as it were merely as costumes, applying them only as something outward or external.

Modern life of our present times, in its completely changed forms and with its partly new materials, offers more problems to be solved, which cannot be got at with traditional patterns.

The dying away of the great eclectical movement of the nineteenth century into an insipid and senseless formalism of the types of style must be considered as a decline. As far as modern art tries to check and contest it, it is to be considered as a sound reaction.

Though structures as works of art are to develop from requirements they must be true to the task of any architectonic creation to idealise the real.

With every construction claiming to be a work of art each material it consists of must be treated and employed according to its particularity. Every architectural falsehood, every intended illusion must be rejected, and the ornament must be in accordance with the characteristic treatment of the material. The climate, the country, rural or urban vicinity, must be correspondingly taken into account.

The important question as to the proportion and the extent in using traditional types of art cannot be generally answered. No doubt by creatively treating a tradition there may be produced works quite as artistic as by abstaining from the frequent appliance of historical types and from a predominating propensity of adapting the style to the material.

If a modern architect is possessed of sufficient creative power to replace the great prototypes of tradition by better types of his own choice, or if he has sufficient confidence in his own talent to dare to do so, let him try, and such an honest architect does not deserve any reproach; the crudeness of feeling begins only when a modern artist ignores the eternal laws of architecture, and of the shaping of the different parts of a structure, simply because he wants to be modern and cannot be so otherwise.

The ornament is chiefly destined to point to the character and use of a building; mere arbitrariness in application or even a shaping of the ornament in contradiction to the use of a building is to be avoided.

The proportions of the architectural dismemberment and of the ornamental or figurative decoration must be in accordance with the general proportions of the building and must be uniform for one and the same construction.

We want to be freed from the dead formalism of the last decades; we want a brisk and unconstrained solution of the tasks of our modern times. However, we want to approach this task equipped with the knowledge of a tradition we fully comprehend instead of knowing it only by heart, not with the dynamite of anarchists, capable of destroying but incapable of creating a civilisation by petty self.

We men of the craft may perhaps understand and comprehend how talented architects endowed with a rich fancy have at the end of the nineteenth century been induced to tread the by-ways of boundless arbitrariness. Those who are not of the craft cannot: they see and stick to the visible formalism, confounding poverty with fortitude of mind; ignorance with greatness; impudence with doings of the superhuman; and admire the productions of miserable though excusable aberrations as immense creations of art. Most fatal is this period of the breaking down of old ideals and of the barrenness of the schools of special tendencies of style for the "studying youth."

Gentlemen and colleagues, in this memorable place and in the grave times we are living in I warn all those to whom their art is not only the maintainer but also the holy flame of their spiritual hearth to mind these truths, each in his proper place, be it as a teacher of a whole people by his words in stone or iron, be it as a teacher of students doing his best to cause the fermenting must of our days, the powerful but often savage struggle of our epoch of strongly developed personality, to produce a future of modern architecture the dawning of which we may live to see and rejoice at and in the progress of which we shall rise once more in the domains of the great technical family to the position that is due to us.



THE GREAT TOWER, PIERREFONDS. DRAWN BY PATTEN WILSON.

THE COST OF BUILDINGS.

BY JOHN T. REA, F.S.I.

THERE are five methods of ascertaining the value of buildings before erection. Four of these deal with approximate estimates, and are chiefly used by architects; the remaining one is the more exact method of precise quantities, and is the business of the quantity surveyor. These methods are:—

I. *Estimating by the cost per cubic foot of similar buildings.*—This is the best known and most usually adopted method, because of its general convenience. The dimensions are best taken by measuring the length and breadth from out to out of walls, and the height from half foundations to half-way up the roof. The cubic contents thus obtained are multiplied by the price per foot cube of some similar building. Sometimes the height is measured from the bottom of footings (i.e., top of concrete) to half-way up the roof. Cheaper attached structures, such as annexes, stables, sheds, &c., should be kept separate and priced at a lower rate; while more ornamental portions, like towers and porches, would be valued higher than the main block. Small buildings cost more in proportion than large ones of the same type.

This cubing system is open to some objections. The lumping together of voids and solids at one rate is certainly unscientific, for the same class of building may be divided into many rooms with numerous internal solids in the shape of walls, &c., between; while another may have comparatively few chambers, creating much empty space. In fact, the proportion of voids to the solid structure is not a fixed quantity, so that the price per cubic foot can never be exactly regulated. This requires large experience and a nicety in pricing which the estimator cannot always possess. The description and quality of materials and workmanship, too, are seldom the same; neither are the conditions of contract; and these variations are frequently overlooked when a certain rate per cube foot is assumed. Owing to these imperfections the following methods are better:—

II. *Taking out rough quantities and pricing the items*—This method is described in Leaning's "Quantity Surveying," and in "A Price-Book for Approximate Estimates," by T. E. Coleman, F.S.I., surveyor, Royal Engineer Establishment. The work should be concentrated into as few items as possible in order to save labour, and a schedule of prices or old bills of quantities would be necessary to price these out. Though less expeditious, this is a more reliable system than pricing at per cubic foot.

III. *Estimating per square.*—This method has been recommended by Professor Kerr in his "English Gentleman's House," and by Mr. Webber in his "Choice of a Dwelling," published in 1872. It has, however, been reserved for Mr. S. Alcock, F.S.I., surveyor, R.E. Establishment, to develop and fully describe this system in an article contributed to the "Occasional Papers of the Association of Surveyors of H.M. Service, July, 1894." The mode is to take the constructional shell only, pricing it at so much per 100 sq. ft. Walls, for instance, are taken according to their thickness and manner of finishing, including all digging, concrete, plastering, papering, &c.; floors including joists, struttings, ceilings, &c.; roofs including slating, lead work, rafters, boarding, &c.; and so on—all being reckoned at per square complete. Such a system of superficial measurement appears to be more satisfactory than the cubing, as it takes into account the materials and labour in a more exact and definite form. Of course a special list of prices must be compiled for each of these main superficies, and care and discrimination are certainly required.

IV. *Pricing per unit of accommodation.*—This is a somewhat rough and ready means of estimating the cost of such buildings as hospitals, schools, churches, stables, which may be respectively priced at per patient, per scholar, per sitting, and per horse. It is better, however, to check an approximate estimate by working out two or more styles, thereby ensuring closer results.

V. *Estimating by accurate quantities.*—For full information on this head the reader is referred to such well-known books as Leaning's "Quantity Surveying" and Fletcher's "Quantities." This method is only adopted when it is intended to actually carry out the work, and usually when tenders are sent in by several builders in competition. It is very laborious, and necessitates great skill and a thorough knowledge of building construction, so that the subject is invariably left to quantity surveyors as experts. The system is divided into the three parts of "taking off," "abstracting," and "billing," the last only being forwarded to the contractors for the purpose of inserting their prices, when the completed bills are sent to the architect for his and his client's decision. The whole procedure is, of course, familiar to every reader of this paper.

The following average rates are for brick buildings erected under ordinary conditions. Stone buildings would cost 10 to 20 per cent. more, according to the locality:—

Estimated Cost of Brick Buildings.

	Per ft. cube.	Per unit.
1. Asylums (lunatic), including administrative buildings	6½. to 7d.	£150 per inmate.
2. Barracks, officers' quarters	8d.	£400 per officer.
3. Barracks, married soldiers' quarters	7½d.	£250 per man.
4. Barracks, soldiers'	6d.	£35 per man.
5. Baths, best type, including machinery and appliances	1s. (Saxon Snell)	
6. Breweries	5d. to 7d.	£300–£500 p. qr.
7. Chapels, plain	5d.	£5 per sitting.
8. Churches, including tower	6d. to 8d.	£6–£12 per sitting.
9. Churches, iron, 400 to 700 sittings	—	£3 per sitting.
10. Cottages, labourers'	4½d.	£200 each.
11. Cowhouses, complete with fittings	3½d.	£17 per stall.
12. Factories, exclusive of machinery	6d.	
13. Gymnasiums	5d.	
14. Hospitals, general, including administrative buildings	8½.	£300–£500 p. bed.
15. Hospitals, general military	7d.	£300 per bed.
16. Hotels, first-class	1s. 4½.	
17. Hotels, second-class	1s.	
18. Houses or "Mansions," first-class, main building	10d. to 1s. 3d.	
19. Houses or "Mansions," second-class, main building	8d. to 10d.	
20. Houses or "Villas," third-class, main building	6d. to 8d.	
21. Houses or outbuildings and offices	6½. to 10½.	
22. Law Courts	10d.	
23. Libraries, public	8d.	
24. Maltings, complete	2½d.	
25. Museums, public	1s.	
26. Post-offices	8d.	
27. Prisons	9d.	£150 per cell.
28. Schools, ordinary	7d.	£6 per scholar.
29. Schools, London School Board	6d. to 8d.	£10 to £15 ditto.
30. Schools, technical	8d.	
31. Sheds, iron, roof and sides of corrugated iron	2½d.	
32. Sheds, wagon or cart	4d.	
33. Stables, first-class (including cavalry officers')	8½. to 10d.	£150 per stall.
34. Stables, second-class (including cavalry troop)	7d. to 8d.	£100 per stall.
35. Stables, third-class	5d. to 6d.	£50 per stall.
36. Theatres, first-class	1s. 3d.	£30 per head.
37. Town Halls	10d. to 1s. 6d.	
38. Warehouses, plain	5d. to 6d.	
39. Workhouses	5d. to 6d.	£50 per inmate.
40. Workshops, general artificers', complete	6½d.	

Cost of Buildings Erected.

The following list, showing the actual cost of buildings as erected, will be useful for the purposes of comparison:—

	Per ft. cube.	Per unit.
1. Bow Street Police Station	11d.	
2. British Museum (1843)	1s. 6d.	
3. Chorlton Union Hospital	—	£50 per inmate.
4. City Offices, Gracechurch Street, London (stone front, fireproof floors, stone staircase, hydraulic lift, faience passages, &c.)	1s. 1d.	
5. Flats, South Audley Street, London (stone and terra-cotta, fireproof floors, hardwood finishings, enriched plasterwork, &c.)	1s. 2d.	
6. Foreign Offices (1857)	1s. 0½d.	
7. Herbert Hospital, Woolwich, including administrative buildings	—	£320 per bed.
8. Holborn Town Hall	1s. 2d.	
9. Holborn Viaduct Hotel	1s. 4d.	
10. Hôtel Victoria, Northumberland Avenue, London	1s. 6d.	
11. Houses of Parliament (1843)	2s. 6½.	
12. Manchester Assize Courts	9½d.	
13. Netley Hospital, including administrative buildings	—	£305 per bed.
14. New Post-office, St. Martin's-le-Grand	8½d.	
15. Royal Exchange (1841)	11d.	
16. Schools, Hornsey, London (brick, wood-block floors, &c.)	7½d.	
17. St. Pancras Infirmary, Highgate	—	£69 per inmate.
18. St. Thomas's Hospital, London	9d.	£650 per bed.
19. St. Thomas's Hospital, London, one pavilion, without administrative buildings	—	£250 per bed.
20. Warehouses, Drapery, London (stone front, fireproof floors, &c.)	1s. 1d.	
21. Warehouses, Thames Street, London (brick, unplastered, wood floors)	7d.	
22. Waterlow's Industrial Dwellings	7½d.	
23. West London Workhouse, Holloway	—	£48 per inmate.

Work done in small quantities is worth more than that done in large quantities—usually 20 to 25 per cent. more. Two-thirds of the cost of a building are for workmanship and finishings; the remaining third is for carcase. The total cost of average quality buildings is four times the bricklayers' bill, while carpentry and joinery generally amount to one-fifth of the whole job. The speculating builder employs piecework, which means a minimum of labour everywhere.

The rent of a first-class town dwelling may be calculated at 5 to 6 per cent. on its cost of building.

Closely connected with the cost of a structure is the method adopted for its erection. The cheapest and best is a contract on quantities; next, a contract without quantities (on drawings and specification); then, measured work with a schedule of prices; and, least advisable, employment of workmen supervised by the building owner's clerk of works. For Government work, such as barracks and forts, where the executed quantity will often be uncertain or small, a schedule of prices is invariably made the basis of a contract, the job being measured on completion. The best of these is undoubtedly the War Department Schedule of Prices, which is revised triennially and contains a great deal more useful information than the almost worthless price books that are annually published. In France, where it is called "Bordereau de prix," the schedule of prices obtains somewhat more consideration.

Architects and builders are advised for their own information to keep a notebook, setting forth the cost of buildings designed or erected by them, and giving such particulars as time of erection, estimated cost, highest tender, lowest tender, and actual cost as finished. An office record of this sort is simply invaluable.

The Royal Palaces of Bangkok form a city in themselves. They consist of several hundred individual palaces, surrounded by magnificent gardens and pagodas. Bangkok is really a city of waters: it is an Indo-Chinese Venice, more people living in floating homes on the Menam, "the Nile of Siam," and on many canals, than in permanent buildings.

Dorking Municipal Buildings and Post-office Competition.—Mr. Tanner, the assessor, has selected the plans marked with the initials "Q. E. F." These have been submitted by Mr. W. Shearburn. The second set of plans, marked "S. P. E. S.," were sent in by Messrs. Bargman and Benison. The Dorking Urban Council have resolved—"That, in compliance with the resolution of the 24th May, Mr. W. Shearburn, the designer of the plans marked 'Q. E. F.,' be and is hereby appointed architect, subject to such modification of the plans suggested by Mr. Tanner, and recommended by the special committee, as may be finally adopted, and subject to the Council hereafter deciding to expend the sum required to erect such building, whether amended or not; that the special committee be empowered to confer with the architect in relation to the suggested modifications, and to communicate with the General Post Office."

SOME NOTES ON DRY ROT.—I.

By A SPECIALIST.

THERE is probably no subject connected with the building trade which is of such importance as dry rot, or rather the prevention of dry rot. It is also a subject on which much has been written in the trade journals, though a great deal of this matter is of little practical value, owing to the fact that the theoretical standpoint only has been taken.

In this first article I propose to deal with the *causes* of dry rot from an entirely practical point of view, my knowledge being the result of about ten years' experience, during which period I have made a special study of the subject and have profited as much by other persons' failures as by my own successes.

The primary cause of dry rot is, as everyone knows, want of ventilation, but there is considerable difference of opinion as to what constitutes proper ventilation, as my illustrated examples of cases I have cured will show. Again, some timber would be perfectly safe with a certain amount of air circulating round it, while other timber in the same situation would breed fungus in six months: for this reason the timber for ground floors (which are usually affected first) should be carefully selected. It goes without saying that yellow deal only should be used. It should be seasoned and moderately dry, no sap, and what should be especially avoided is dead wood, that is, timber cut from dead trees: this can easily be recognised by the dead knots, the peculiar appearance of the sap wood and the disagreeable feeling when it is sawn or worked in any way—it will not work clean, but pulls and drags, as it were, in front of the saw or chisel.

Some persons have the idea that pitch pine is free from the attacks of dry rot on account of its resinous nature. This is a great mistake. It is as liable to attack as any other kind of wood, which I shall prove in the next article.

Floors are often put in on a level with, or even lower than, the ground outside, thus often causing bad cases of dry rot where otherwise there would be nothing the matter. The omission of the damp course is also another fruitful cause of dry rot; so also is the fashion of covering floors completely with linoleum or oilcloth. One case in particular I remember. A new floor was put in, and, acting entirely in opposition to my advice, the boards were covered with linoleum, and the result was that in twelve months the floor was decayed and had to be renewed. A square only of linoleum was used the second time, the border being stained and varnished, and the floor was as good as new for years after, and probably is so to this day.

The causes of dry rot mentioned above have all been connected with the timber itself or the situations in which it has been used, but there is yet another very fertile cause of mischief; this is the soil on which the house is built. The safest is a dry sandy soil, as this does not give any encouragement to the fungus. A soil less to be desired is a damp clay, and the worst of all is the made ground—that is, where all kinds of refuse, from any and every place, have been tipped, perhaps for years. There are, of course, intermediate grades of all the above, each requiring more or less precautions before being built on. These precautions, then, will about exhaust the list of the most common causes of dry rot, which may for reference be stated as follows:—Primary cause, defective or entire absence of ventilation. Secondary causes, unsuitable timber; floors placed below the ground line; the omission entirely of the damp course, or the use of a faulty one; linoleum or oilcloth as floor covering; damp or otherwise unsuitable soil. Many other accelerating causes could be mentioned, but if the above are guarded against the minor ones will have little or no effect and may be left out of the reckoning.

In my next article I shall illustrate actual examples which I have dealt with, showing the manner in which they were effected, the probable cause and the method adopted for the cure, which in nearly every case was successful. In the unsuccessful cases I shall show what was, in my opinion, the cause of failure.

(*To be continued.*)

THE RESTORATION OF ANCIENT CHURCHES.*

By THOMAS ELLISTON.

SO much irreparable mischief has formerly been done to our churches under the guise of restoration that no apology is needed for an earnest endeavour to put clergymen and churchwardens on their guard in this matter. In so doing I have no intention of making libellous statements or insinuations, but am content to let bygones be bygones and simply counsel precautions for the future.

Doubtless church restoration is usually entered into on the part of the clergy and churchwardens with the very best of intentions, and with much honesty of purpose. But honesty of purpose is one thing and a practical knowledge of the principles of church restoration is another. Generally speaking, as little new work as possible should be introduced,

True Restoration

consisting of repairing and renewing only those portions which are decayed or unsafe; faithfully copying the better preserved portions of the original work. It very rarely indeed happens that all traces of the original mouldings, stringings, tracery, &c., have disappeared, but, if they have, copies can be obtained from a church of similar style elsewhere, and the nearer such a one can be found the better. It is a great mistake to design new work for old churches (unless extreme care is taken), for, even if the style is correct for the period, you may find out too late that the elaborate tracery of a new window in your plain church painfully attracts the attention, to the equally painful detraction of the original work. Such a window—however good it may be in itself—looks, as it is indeed, entirely out of place.

Anything new which is likely to absorb attention to the detraction or exclusion of other portions must be utterly condemned. It will not blend. What is required is honest restoration, not alteration. Beware of going in for what is termed a "general restoration," that is, handing over the venerable structure to either architect, builder or contractor, and letting him do the lot in one job; resulting in a spick and span, brand new, cheap and nasty modern revolution in tiled work, bricklayer's pointing, flimsy joinery, &c., with all the latest improvements—utterly unrecognisable as part and parcel of the grand old church. Better, by far, to personally superintend the village carpenter and mason in simply copying and repairing.

Practical Hints.

Attend to one thing at a time and devote your constant personal supervision to the work; do it thoroughly well, employing good individual artisans to individual trades, and use only the very best of materials.

Don't be in a hurry; and if you have to build up new work against old work do it a little bit at a time, and rest it to set and settle, or build it in cement and well-washed road sand in equal parts. Remember that cement swells in setting, and is therefore better for underpinning walls, &c., than mortar, which shrinks in setting. But good mortar is not to be despised for ordinary use. New masonry and rubble work cannot be done too slowly, nor grouted too frequently whilst the work is in progress. The surface of the old work should be well hand-picked and roughed to a new face to form a clean key and thoroughly well wetted to secure adhesion. Eschew all such iniquities as iron corrosive ties to masonry, especially secret ones; and let everything you do be honest and fair and above board. Do not, on any account, attempt concealment or, worse still, deception; let everything show and be left to look what it is and the result will be satisfactory. I remember a case in point which will well illustrate my meaning. A builder once suggested painting a piece of lead flashing to match the colour of the tiles on the roof. The architect replied, "Oh, no!" Anyone who understands the work will know that the flashing is necessary, and will expect to find lead there.

Competition contract is fatal to good work and stands self-condemned, as it is only to be expected that the acceptance of the lowest tender risks the satisfactory completion of the work, there being great scope and temptation in such material as concrete and in hidden work to save expense to the contractor. The labourer is worthy of his hire; therefore, do not tempt honesty to stumble by a dishonest attempt to obtain the best of the bargain.

The Fads of Architects.

Architects sometimes have fads: one rejoices in tracery, another introduces ironwork, another goes in for a particular kind of stone (instead, perhaps, of using the local material of which the church is built), and so on, and do not consider that the work is satisfactory until one or other has been introduced. This feeling must, if necessary, be sunk in favour of true restoration. Never attempt the impossible task of improving upon the original, nor humiliate the dignity of humble work by endeavouring to make it tell a lie.

English oak is the standard wood for our church work, but foreign is much used, being milder and easier to work. Chestnut was formerly frequently used, but it fails and decays at the knots. Quarry stone should be of similar kind to the original if that is suitable and procurable.

The most important matter in a church is the state of the foundations of the walls, piers, and columns. Years ago graves and vaults used to be dug inside as well as outside, sometimes quite close to the walls. In such a case it is necessary to underpin the walls—in short lengths at a time—and to carry the foundations down in good cement-concrete to a solid bottom below the depth of the graves or vaults. Also to lay the surface of the ground outside the walls to a fair fall outwards, providing suitable lead (not cast iron) rainwater down pipes and drainage to a distance. If possible, lay the highest part of the fall (next the walls) well below the floor line and provide ventilation beneath any hollow floors.

After the foundations have been seen to, look well round the walls, from a constructive point of view, and see if you can detect any weakness or want of stability. The line of columns and main piers should run from the foundations to the principals of the roof without a break in order to carry the weight straight down; and only intermediate weight should be borne by the arches, which, in their turn, should be well secured against thrust at the springing points by massive masonry, rubble work, or buttresses. Sometimes arches have been thoughtlessly formed by cutting through solid work at a vital point, involving great insecurity to the building. Well examine the buttresses and see if they are properly bonded by the quoins. The set-offs and weatherings of buttresses frequently give out and should be set right by good large bonding stones beneath the stringing.

These remarks will also apply to the tower, and if there exists any excrescence in the shape of a Georgian spire use your influence to have it taken off.

The General Appearance of the Building

should be one of massiveness in preference to lightness of construction. Many old churches are built considerably out of truth as to orientation, plan and elevation. Do not attempt to conceal such apparent errors, as they were probably intentional. The orientation of a church is determined by pointing to the rising of the sun on the morning of the day of its patron saint, which, varying considerably according to the time of the year, accounts for apparent error, and in many churches the chancel is symbolically deflected.

Do not try to point up flint or rubble work with the trowel—bricklayer fashion—but after filling up the joints flush with the flints finish by drawing round the flints a short wooden lath. Well wet all old rubble work and masonry in adding new work or pointing, or the new work will not adhere. It is a good plan (especially if the funds are low) to leave stone carving of corbels, &c., to be finished *in situ* later on. Any plastering should be rendered in gauged

* "Church Times."

stuff, and be floated, not trowelled, well wetting the walls as before mentioned.

In even rude flint or rubble work courses should be maintained, and new work should as far as possible be carried up *en masse*, and not be left down in places for future completion of the mass of stonework. In very thick work it was a common practice to carry up the outer faces of the flintwork a certain distance and shoot in the middle portion; but this is inadvisable, as the process of shooting is apt to bulge the outer faces, for, in order to secure adhesion, it must be done whilst the faces are yet in a green state; if they are allowed to set before shooting in, there is no proper amalgamation or cohesion; likewise, good bonding of such work is impossible.

All quarry stonework must be laid on its proper bed, and care must be taken to provide suitable kinds of stone to stand weather and weight.

The Roofs

next claim attention. Look at these first from a constructive point of view, as in the cases before mentioned, ascertain if they are the original or bastard ones, and act accordingly. In the matter of lead gutters it is not sufficient that good laps and falls should be given, but insist also upon having good, deep drips, or the gutters will fill with frozen snow, and when it begins to melt the water will run back over the laps and get in. Have plenty of outlets of good dimensions; and do not let the plumber lay the roof leads in sheets of too large a size, or the expansion and contraction will cause the lead to crack. Provide that the water does not discharge or splash on other roofs, but carry it down as before mentioned. Have good flashings where required and get rid of the roof water in the shortest available distance, as long falls are usually slight falls, and are undesirable for many reasons. It is not sufficient to simply provide a fair water-way, but a good margin must be allowed for blockage. Avoid square elbows in down pipes, awkward turns in gutter work and lodgments for snow. Let common sense dictate. The upper edges of flashings and gutters should be properly protected against the possibility of becoming loose, either by stepping into the walls or by being covered by a narrower supplementary flashing built or let into the wall and folded over.

The tracery and lights of old windows are seldom exactly true; therefore in ordering new lead lights it is best to cut a paper pattern or template to fit in full size, marking the inside and outside, and the order and number of the lights. Send also a rough sketch of the window—the maker to allow for the grooves in the stonework.

Internal Woodwork.

The seats and fittings of a church should be of a substantial and suitable character, and the former should not, as is too often the case, be made up of joiner's work and finished with a length of moulding stuck on the top and elbow. It is a pity that poppy-head bench ends do not receive more attention.

Intersections of mouldings in church woodwork should never be mitred, but may be scribed, or, in restoring old work, the joints should be of the square and butt kind and the moulding worked on the solid endwise of the grain to complete the intersection.

Doors should be hung with long smith-wrought clasp eyes and hooks and not with butt joints and sham clasps of cast iron screwed on, which are worse than useless. The doors should be well braced to prevent drooping and all outer upper edges of rails should be well bevelled to shoot rain. Remains of old carvings or screen work should be carefully preserved and restored (renewing only defective portions), even if the cost is greater than that of the entire new work. Every detail of fittings and new work must be carefully considered as to proportion and style. Provide ventilation in lead lights and see that a small channel communicating by pin holes with the external window sills is made at the bottom of each light, to allow condensed water to escape without streaming down the inside sills and walls.

Do not disfigure the church by tiers of hot-water pipes and see that lamps or gas-fittings are fixed so as not to do injury by heat, nor must mouldings or ornaments be cut away by them.

Ancient internal tombs, monuments and brasses should be carefully preserved from injury by railing them in, whilst for the more modern floor slabs—if liable to defacement by traffic—permission should be sought to enable them to be removed and placed elsewhere—on the walls, or, if too large, the inscriptions to be copied on a tablet. Internal vaults should be examined and dealt with to render them safe, and if possible the contents should be removed or embedded in solid concrete.

Bells

exercise so great a strain on a tower as to call for serious consideration. The lower they are placed the better for the tower as long as they are not steeple-bound. They should be made to swing in counteracting positions to each other and the walls should not be cut away for the bells to swing, nor should the upper part of the bell-frame touch or be wedged against the walls. Illuminated clock faces require large weakening holes to be cut through the walls, which are apt to endanger the safety of the tower, in which case they should not be allowed to be made.

A great difficulty in old churches is where to put the organ. On no account put it into an organ chamber, which, besides entailing great expense, ruins the tone of the instrument; see also that the case is in keeping with the character of the building and not of the nature of a huge cupboard—a miracle of ugliness—which impairs and retards the tone of the instrument. The less case the better.

If at any time a defect or settlement should appear, attend to it without delay; and keep your eye on the gutters, down pipes and discharge of water.

It is hoped that these few hints may help the reader to avoid some of the greater pitfalls of modern church restoration and enable him to assist in the preservation of what is left of the good old work by arresting the hand of the destroyer and mutilator, so that our churches may be handed down to posterity as creditably as it is possible now to do.

OLDHAM CORPORATION WATERWORKS.

THE NEW RESERVOIR AT ROODEN.

THE recently-completed Rooden reservoir and works have been constructed under the powers obtained by the "Oldham Corporation Act, 1886."

The first sod was cut on July 30th, 1894. The reservoir has a top water area of 21 acres, is at an elevation of 1,068ft. above ordnance datum, and has a capacity of 265,000,000gal. The natural gathering ground of the reservoir is only 25 acres, which is augmented by collecting the flood waters from 370 acres in the Denshaw Valley and 423 acres in the Piethorn Valley, making a total gathering ground of 818 acres.

The north embankment is 578ft. long, with a maximum width of 484ft. and a maximum height of 83ft., and contains 179,500 cub. yds. of banking material. Its top width is 17ft, the inclination of the outer slope, which is soiled, being 2½ to 1, and that of the inner slope, which is pitched and shingled, being 3 to 1. The puddle trench for this embankment is 12ft. wide and 676ft. long, and has been sunk a maximum depth of 114ft. below the natural surface of the ground. The puddle wall above has a maximum height of 84ft., is 8ft. wide at the top, and batters 1 in 12 on each side.

The valve shaft, which is reached from the embankment by a girder bridge of 28ft. span, is constructed of masonry and cement-concrete and is lined with white glazed bricks; it is 89ft. 9in. high, being 7ft. 6in. square to a height of 10ft. 6in. from the bottom and 7ft. 6in. in diameter from that height to the top. It is surmounted by an octagonal masonry valve-house. The discharge tunnel from the reservoir to the valve shaft is built in cement-concrete 18in. thick, the internal dimensions being 3ft. 6in. wide by 3ft. 6in. high. The tunnel under the outer slope of the embankment is composed of cast-iron pipes 42in. in diameter, and discharges into a well at the foot of this embankment, where it is joined by the overflow channel.

The south embankment is 1,518ft. long, with a maximum width of 365ft. and a maximum height of 69ft., and contains 200,804 cub. yds. of banking material. Its width, inclination of slopes, and the materials of which it is composed, are similar to those described for the north embankment. The puddle trench is 1,550ft. long, and has been sunk to a maximum depth of 76ft. below the natural surface of the ground. The reservoir is supplied with water from the Denshaw Valley by means of a tunnel, and the supply from the Piethorn Valley commences in the Ashworth Clough, where the stream is diverted by means of a masonry and cement-concrete weir into a tunnel connecting it with Griffiths Clough.

The tunnel conveying the waters from the Denshaw Valley to the Hanging Lees reservoir passes under the Rooden reservoir at a depth of 130ft., and a ventilating shaft from this tunnel, 8ft. 6in. in diameter, rises into the reservoir. The interior of the reservoir has been lined to a height of 2ft. 6in. above and 15ft. below the top water level. The stone used has been procured from quarries belonging to the Corporation near the sites of the works.

The whole of the works have been designed by Mr. G. H. Hill, M.I.C.E., of Manchester and London, the resident engineers being Mr. W. Watts, M.I.M.E., F.G.S (at present the engineer for the Langsett works of the Sheffield Corporation), during the first portion, and Mr. C. J. Batley, A.M.I.C.E. (the present waterworks manager), during the latter portion. The cast-iron pipes have been supplied by the Staveley Coal and Iron Company; the valves, capstans, and other apparatus by Messrs. J. Blakeborough and Sons, of Brighouse.

A.A. SUMMER VISITS.

MEREWORTH HOUSE, NEAR WATERINGBURY, KENT.

ON Saturday last the fifth summer visit of the Architectural Association took place to the Earl of Falmouth's mansion, Mereworth House, near Wateringbury, Kent.

This celebrated mansion and estate are extremely interesting, not only in an historical sense, but from the architectural and the archæological standpoint. The house is a very fine specimen of Renaissance design of the early eighteenth century, and fitly succeeds the illustrious castle erected in the twelfth century by the celebrated Robert de Mereworth: of this building nothing apparently exists above ground at the present time, though its foundations appear to be very extensive, and in some places their positions can be traced by the configuration of the surface of the land, distinctly suggesting buried ruins. The castle was entirely demolished about 1730 by John Mildmay Fane, eighth Earl of Westmoreland, who employed the fashionable architect of the day, Colin Campbell, to adapt the designs and plans of Palladio's villa at Vicenza for the purposes of the new mansion. This scheme was completely carried out, except that a larger dome was substituted for the shallow one in the Italian original. The dome at Mereworth is a very ingenious construction, and consists of an outer and an inner shell, between which are carried up all the flues of the house. There is a section of it shown by Mr. Blomfield in his very admirable book on the Renaissance, and a complete set of drawings, or nearly so, are in Vitruvius. In its planning the building is a complete square, with a portico in the Ionic style on each face, built of stone that has weathered to the beauty of old marble: the Ionic capitals to the pillars, five in number to each portico, are of beautiful design and workmanship. Grand flights of steps lead from the porticos to the ground floor, which is built upon a raised basement. The building is surmounted by an extremely awkward, if not clumsily designed, roof, giving

to the whole an unstudied and unfinished appearance. The principal front remains to-day as it was originally built, with the mansion in the centre flanked by two large buildings, used respectively as the stables and a park house. This aspect possesses a very dignified appearance, one that is much enhanced by two immense masses of yew trees—one on either side—that give great scale and beauty of colour to the house. The principal entrance leading from the portico on this side opens into a comparatively small vestibule richly decorated with fine detail and figure sculpture, together with a panelled and coffered ceiling. From this vestibule direct entrance is obtained to the great central hall, an immense circular apartment of a great height, with a gallery, the whole surmounted by a beautifully designed coffered dome, in which are four circular lunettes lighting the hall, admirably decorated with floriated plaster work, the whole being distempered pure white; above the gallery are finely designed doors giving access to various apartments and the staircase. Below, on the four sides, are the large arches that once led to the various vestibules, two of which have been abolished. The tile floor was not only out of place amongst the fine architectural embellishment, but seemed in contrast almost execrable. From this place, reaching the entire length of the garden front, and opening upon another portico, is the great drawing-room or saloon, 100ft. by 30ft. by 25ft. The room is hung with very handsome old light-russet velvet, with two finely designed white marble fireplaces of large size, surmounted by elaborately carved painted and gilded overmantels. The great doorway, richly painted and gilded, is supposed to be a later insertion by Colin Campbell: it certainly does not seem to be coeval with the remainder. Above the velvet hanging of the walls is a fine frieze and cornice, highly gilded and richly ornamented, supporting a very deep and elaborately painted coved ceiling. The walls are hung with large and finely coloured ancient family portraits in large black and gold frames, and the whole room is furnished handsomely. Opening from it on one side is the tapestry room, one again possessing a finely panelled, painted and gilded ceiling, the walls being hung with tapestry representing pastoral scenes in the style of the French painters of the eighteenth century, like Watteau. The angle fireplace is very gorgeous, and possesses some remarkable detail. The dining room, leading from this room and opening into the principal vestibule, is very similar: it is hung with tapestry and painted. The interesting planning by which the square rooms are worked into complete conjunction with the circular hall in the centre of the building is very noteworthy. Crossing the vestibule we see the large dining room, now used as a library. It apparently was never decorated. The white marble fireplace here is of a very unusual design and detail. Returning to the circular hall, the staircase to the first floor is perhaps one of the most meagre and poorly designed one could inspect. It is so steep, narrow, and in places so dark as to be almost dangerous. It was formed by erecting a circular stair in a space left between the junction of the straight walls and the circular wall of the hall. The bedrooms are of great size, and possess the usual large bed recess or alcove, architecturally treated by having an elegantly designed plaster vault for a ceiling. The fireplaces in these rooms are excellent; many of them were discovered to be built up and have been reopened and renovated with great taste—in fact, the design of the whole house is so full of the finest architectural design, with such excellent suggestion in its planning for the treatment of a modern country mansion, that it is a matter of regret that time did not permit a more detailed examination. The basement is entirely vaulted in a very severe and characteristic manner. After we had inspected this portion, we saw the pavilions and returned to London.

H. D. W.

The Bust of Lord Brampton presented to the City of London Corporation by Lady Brampton has been temporarily placed in the Guildhall Art Gallery, pending its eventual removal to the new Sessions House.

Correspondence.

Architects' Assistants' Salaries.

To the Editor of THE BUILDERS' JOURNAL.

LONDON, N.W.

SIR,—The opinions generally expressed by your correspondents on this subject seem fairly unanimous in favour of improving the salary and status of the architect's assistant. I quite agree with "Junius," "Reform," "Advance," and others who seem in earnest in this matter; but the gentleman who signs himself "Ambitious" seems to hold strange views for benefiting his less fortunate brethren. He cites cases of assistants of three years' experience who are earning between £2 and £2 15s. per week. Now, in reply, I will undertake to cite fifty or a hundred cases to his one in which fairly capable assistants of that experience are not receiving anything like such salaries. "Ambitious" may be an employer himself: if so, let us hope that he carries out the principle; but if he is an assistant, well, I cannot congratulate him. He says: "In my experience the profession is comparatively just in regard to remuneration." Now, one would really like to know how far his experience extends. Has he travelled much, or has he been located in one office where assistants are fairly treated? Then, again, he says: "Men are paid for what they can do, not as workmen at a standard wage, irrespective of their degree of intelligence"!

I would ask "Ambitious" if we are not all workmen in a sense. But I have yet to learn that *workmen* receive a standard wage irrespective of their degree of intelligence. And this he says is conducive to a healthy competition which to a great extent would be wanting if all received the same salaries immediately articles were completed! But I would ask "Ambitious" who suggested such folly? What sane man would ever propose such a state of things? What we do contend is that architects' assistants are receiving a "wretched pittance," and that every junior who has diligently completed his articles and has a fair knowledge of the profession should receive a salary of not less than 30s. a week. If he is not qualified depend upon it his employer will seek the services of others. On the other hand, if he were a prodigy such as "Ambitious" cites, he would naturally be qualified for the higher standard and receive better remuneration accordingly.

So long as assistants are content to jog along their employers as a body will keep the same pace; but there are occasions when the spur is absolutely necessary, and I maintain that the only solution is by steady combination and an association formed by assistants themselves to further their own interests. By so doing they will be promoting a far healthier competition than that suggested by "Ambitious." Every pupil and every assistant would thus have an inducement to do his best in order to bring himself to the standard required, knowing that he would receive at least a fair and honest salary in return for his labour and study.

In conclusion, I think that every architect's assistant in the Kingdom should support the BUILDERS' JOURNAL, if only in return for facilities given to air this real and patent grievance.—Yours truly,

VIGILANS.

Piece Work and Housing.

To the Editor of THE BUILDERS' JOURNAL.

LONDON.

SIR,—On page 33 of your issue for last week the above title has been given to an evergreen and vexed question, namely, "How many bricks can a bricklayer lay per day, and does he now do so much work as in past years?"

To a practical man this question is indefinite, only worthy of this answer—that it depends upon the man who is watching him. A fair average would be between 20 and 2,300. In no other trade does the amount of work done vary so much. A man can work hard and not lay more than the number first stated, while on another class of work he can set 1,200 bricks a day with ease: therefore in future it will be well for correspondents to state exactly under what circumstances their men work. Looking at buildings which were erected years ago, it is evident that artistic designs were the exception rather than the rule, therefore it is ridiculous to compare modern intricate work with that which could be done with a line, trowel and plumb-rule only; besides, of late years clerks of works have been engaged, and when they do their duty work is not scamped. It is impossible to lay more than 500 to 600 bricks a day on a wall 18in. thick which has no plumbing places and can be worked entirely with a line.

It is amusing to hear builders say what they used to do. Our Yankee friends say 3,500 bricks are laid per day in New York, but, strange to say, when in this country they fail to do so much. The old proverb, "Give a dog a bad name and hang him," is true in respect to bricklayers. Unfortunately, some characters will not stand examination; but does the public ever seek to find the cause of the trouble? It is simply this—the trade is entirely a dry weather occupation: should rain fall the men stand about idle, and they often visit a public house; after having a few glasses of beer they do not feel fit for more work, and as this occurs frequently it has a slow but certain evil effect.

A common fallacy is that we receive large wages. I have been fully employed by London builders, but can only say that though for the past four years I have worked every available hour, after deducting loss through stress of weather, unavoidable holidays, short winter time, and frost, my weekly average earnings have been only 33s. per week, out of which 2½ per cent. goes to a trade society. Considering the cost of living in London, no reasonable person will think this too much.—Yours tru'y,

AN HONEST BRICKLAYER.

Sloping Pavements.

To the Editor of the BUILDERS' JOURNAL.

ASHSTEAD.

SIR,—I note on p. 39 of last week's issue an abridged specification for a sloping footway—patent No. 17,794 of 1899. I may state from personal observation that brick pavements have been in use for many years at Brighton, constructed on the principle named by the patentee. I would instance the footway in Trafalgar Street, within one minute of the railway station: it is situated on a very steep grade and in its position seems very suitable.—Yours truly,

C. D. COLLINS.

The Architectural Association.

To the Editor of THE BUILDERS' JOURNAL.

LONDON, W.

SIR,—Allow me to lay the following facts before you, hoping that, in the interests of the art of architecture, you will kindly bring them before the notice of your readers, some of whom may not be aware of the great advantages the Architectural Association offers, or may not, for various reasons, have yet seen their way to join its membership.

The aim of the Association is *to help students to fit themselves for their work as architects* by providing courses of instruction by which they may supplement the training acquired in the offices where they are engaged as pupils or assistants. These courses are wholly arranged and supervised by architects who know by experience what the training of an architect should be. While arranging a curriculum giving a broad and general training, embracing as it does the various branches of knowledge essential to architects, the Association's highest aim is to inspire its students with an enthusiastic love of the art side of architecture.

The membership consists of gentlemen who are training to be bona-fide architects, in addition to a large number of architects in practice: the students naturally form friendships among their own class, which are very stimulating to them during their pupilage and invaluable in their subsequent career.

The Architectural Association is the largest and oldest purely architectural school in the United Kingdom, and its staff of instructors is a highly qualified one.

The courses of study prepare for the examinations of the Royal Institute of British Architects. Courses are also arranged for those not

entering for these examinations. The School of Design and Handicraft is visited by specially chosen and eminent architects, who set the subjects for the designs and attend the class to criticise each student's work.

Further information can be obtained from the printed curriculum for session 1900-1901, just issued, a copy of which can be obtained by applying to the secretary at 56 Great Marlborough Street, London, W.

W. HOWARD SETH-SMITH,
President.

DEFECTS OF GLAZES.

TO one who knows the almost endless number of defects to which glazes are heir, the exhibits which museums afford of various specimens of what was accomplished in centuries past, and of brick and earthenware which are claimed to have been made a few thousand years ago, cause wonder and admiration. To those who have produced an occasional freak specimen the explanation of certain phenomena attending the glaze resulting from the treatment to which the particular ware has been subjected frequently proves a very perplexing problem, and often requires much arduous labour to probe to the bottom of the real cause. No one more fully appreciates the troubles which the question of glazes involves than do those who almost daily are confronted by new problems due to a change of conditions in some part of the manipulation, or a change of materials varying in composition to those previously used, either in the glaze or enamel, or perhaps due to a difference in the composition of the body owing to a change of some of the ingredients.

To enumerate in general the defects to which glazes are subject is not a difficult matter, for, generally speaking, we think of glazes as defective mainly in regard to crazing and shivering—purely a matter of difference of coefficient of expansion between the body and glaze, which, in most cases, with suitable and properly-fired biscuit, is capable of adjustment by attaining the proper acidity of the glaze. If the body and glaze tend to expand and contract at an unequal rate for each degree of rise and fall of temperature a rupture is bound to ensue, provided these conditions are carried far enough, and either shivering or crazing will be produced, according to which has the greater coefficient of expansion.

The simplest kind of glaze is, perhaps, the salt glaze, which is the only one used by sewer-pipe manufacturers, and very largely used by the stoneware potter. The manner of glazing consists mainly of throwing salt on the fires just previous to finishing a kiln, which results in a chemical decomposition, the elements composing the salt—sodium and chlorine—breaking up in the heat, the sodium uniting with the silica of the clay as it is carried into the kiln proper by the gases and comes in direct contact with the ware in its passage through the kiln, forming silicate of soda, which constitutes a glaze of the simplest type. If the salting is carried on properly the defects which the ware would be likely to show could be traced mainly to the body. No attempt to outline the kind of clay best suited for the manufacture of this kind of ware is here considered, more than it has to do with the glaze. In the manufacture of ware of this kind the clay must have certain requisites to make it most suitable to taking a glaze well. The proportion of the silica to the alumina must lie within certain limits to obtain the most satisfactory results, and should be such that the body will take a clear salt glaze. When deduced to a formula the typical stoneware clay is about as follows:—

$$\left.\begin{matrix}.56\ \text{Alkalies}\\ .44\text{CaO}\end{matrix}\right\} .525Al_2O_3 \left.\begin{matrix}\\ .150Fe_2O_3\end{matrix}\right\} 25SiO_2$$

The formula below is given by Seger as the most fusible porcelain mixture, and is taken as the basis on which the Seger cone series are founded:—

$$\left.\begin{matrix}.3K_2O\\ .7CaO\end{matrix}\right\} .5Al_2O_3 4SiO_2$$

The best salt glaze has about the following formula, which, by comparison, we find corresponds very nearly to the one above:—

$$1Na_2O\ .5Al_2O_3\ 4SiO_2$$

That is, the most satisfactory results are obtained if the proportion of alumina to silica is in the ratio of 1 to 8. Where there is not enough free silica, and the composition of the clay varies too greatly from the proportions named and does not take a salt glaze well, we find on trials drawn immediately after the salting process a glaze which meets approval, though only fairly well, but still looks promising; but once the kiln is cooled and the ware drawn we discover that, instead of bright glazed pieces, dull looking ones confront us, with scarcely a trace of what might be called even a semi-glaze. This is due to no fault of the burner. We must look to the clay for the trouble. Clays high in iron pyrites, and more particularly in sulphate of lime, most often prove troublesome, and from the presence of the nodules of calcium sulphate may be traced certain other defects. Where these nodules, though reduced in size by the dry pan, come to the surface they fail to take the glaze well, and defects appear on the surface about these spots in consequence.

With the white-ware potter or a potter using a standard body and in many cases a standard transparent, colourless glaze, where the question of colour decoration does not come into effect, the troubles which arise from defects attributed to the glaze are comparatively few. This is equally true, and applies more emphatically, to the red-ware manufacturer or to the manufacturer of roofing tiles, where the greater percentage of the glaze consists of lead in one form or another.

With the manufacturer of mantel tiles and the under-glaze decorative art potter, whose object is chiefly to impart great brilliancy and richness to the glaze and to bring out bright, rich colour effects, the troubles which are encountered are of a different nature. Here we have a properly prepared body which has been lawned through a fine mesh and freed of all objectionable matter. The defects commonly encountered are shivering, crazing and bubbling, and difficulties arising from the use of too fluid a glaze, causing flowing of colours and other irregularities.

With the manufacture of enamelled bricks which are burned in an open kiln we meet attending obstacles which are not encountered in making a pottery article, which we place in a sagger and carefully lute to exclude the kiln gases and draughts. Here with certain glazes we have the defect of "crawling," as commonly termed, as well as many others. But space will not permit an attempt to discuss these defects in detail and point out their causes and remedies.

In the handling and glazing of bath tubs and of variously sized and shaped pieces weighing several hundred pounds, where the glaze is applied to the green body and the finished product undergoes but a single firing, many difficulties arise, as might be imagined, which are not encountered in the manufacture of a teacup and saucer or a small vase. And so mention might be made of the various industries using glazes, and, after having given a rough *résumé* of the defects incident to each individual branch of ceramic manufacture, it really would convey but little to any but to him who has been in the harness and wrestled with these problems and their remedies.

Improvements at Chilcompton Church.—Last week various improvements to the interior of the parish church of St. John, Chilcompton, were dedicated. About three years ago a new chancel was added to the church, and since then the remainder of the scheme has been carried out. The work has been done under the superintendence of Mr. F. Bligh Bond, architect, of Bristol, the builder being Mr. John Sperring, of Midsomer Norton. The work in question consists of the entire reseating of the church, the removal of the gallery from the tower, a new west window added and the font removed to the tower. The whole work has involved an outlay of about £1,600.

Surveying and Sanitary Notes.

Breachfield Drainage Scheme.—The tender (amounting to £1,891) of Mr. Henry Ash, of Devizes, has been accepted for carrying out this scheme.

Messrs. Robert Boyle and Son, Ltd., the well-known ventilating engineers, inform us that the "Boyle" system of ventilation (natural) and Boyle's patent air-pump ventilators have been awarded two gold medals and one silver medal at the Paris Exhibition.

Institute of Sanitary Engineers.—At a meeting of the Election Committee held on August 15th the following gentlemen were elected:—As members: G. W. Allen (London); H. W. Gladwell (Walton-on-Naze); J. New (Italy); and T. S. Venkateswariah (Madras). As associates: R. Blythe (Durham); M. J. H. Lawrence (Pontypridd); W. G. Truscott (Southend-on-Sea); and H. Willard (Tunbridge Wells).

Improvements at Dublin.—A Local Government Board enquiry was held at Dublin last week into the application of the Corporation to borrow £6,800 for the purchase of a site for and the erection of a new morgue; £300 for the acquisition of property in Blessington Court; £950 for the construction of an underground public convenience in James's Street; £780 for the construction of an underground convenience in New Street; and £2,206 supplementary loan in connection with various improvement works.

R.H.S. Gardens at Chiswick: Some Proposals.—The Royal Horticultural Society have appointed a sub-committee to visit and inspect various sites that have been suggested or offered for their new gardens in place of Chiswick. It is probable that at no very distant date a selection will be made, and the old garden will be surrendered to the ground owner, the Duke of Devonshire. What will become of it is, of course, at present undecided. The builders have got their eyes on it, and it is said that an important London club propose to acquire it as the site for a new club building. The Chiswick local authorities have also set their hearts upon it for an open space for the public. It is true that Turnham Green and Kew Gardens are not far distant. But the Green is not much of a public pleasure ground and Kew is not a playground.

The Historic Bells of East Bergholt, Suffolk, are in need of repair. The vicar wants £100 to put the bells of the village church right. The fine tenor bell is cracked, the clapper having in the course of three centuries beaten its way almost through the metal. It is one of five, which are the only rolling bells in existence. The ringers swing them by handling the headstock. The bell cage in which they are hung is also unique. Moss-grown and quaintly latticed in oak, tradition says it was far back in the fifteenth century first erected in another corner of the churchyard, but the squire was so annoyed at the sound of the chimes that he had the curious building removed, so that the intervening church might deaden the sound.

Workmen's Dwellings at Tunbridge Wells.—At Tunbridge Wells the need of small dwellings for artisans, mechanics and the working classes generally has become very pronounced, and in consequence of their inability to secure houses in the town hundreds of workmen have been compelled to take up residence in the surrounding hamlets. For nearly five years the Corporation has been endeavouring to formulate a scheme for the erection of municipal dwellings, but has been obliged to abandon operations on account of the great cost of land, materials and labour in the district. Objection has been taken to any scheme which will involve a charge upon the rates, and as the Corporation has failed to arrange for the erection of dwellings which will pay their way it has been decided to appeal to the Local Government Board in the matter.

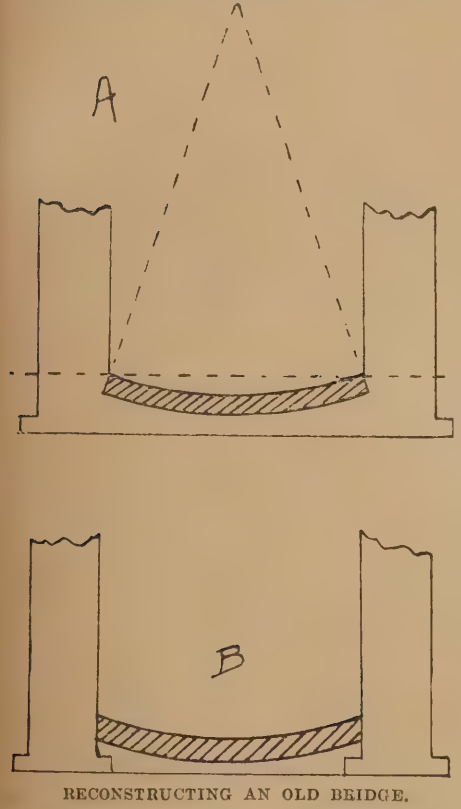
Enquiries Answered.

The services of a large staff of experts, including all those engaged on "Specification," are at the disposal of readers who require information on architectural, constructional, or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Reconstructing an Old Bridge.

Clevedon.—H. T. writes: "At a recent meeting of the Local Urban District Council the subject of reconstructing an old and very dilapidated bridge over a tidal stream was discussed. The local surveyor had very properly shown an invert (see A on accompanying illustration). One of the gentlemen present argued that the usual practice was to build the abutments first and put the invert in afterwards. I had said that the invert should be built before the abutments were built up higher than the dotted line; their face portions would then be built upon the inverted skewbacks, which would radiate to the centre of the curve. He said such skewbacks should not exist, but that the invert should be put in between the walls as shown at B, so that no portion of the abutments would rest upon the invert. This theory of his is quite new to me. Please say what you think of it."

Given a small invert to be constructed on ordinary ground and under ordinary conditions



RECONSTRUCTING AN OLD BRIDGE.

we would certainly proceed as indicated at A. Of course, it is easy to imagine circumstances under which an engineer would prefer to build his abutments first, as, for instance, when he expected an uneven settlement, but the usual practice is shown at A.

STORY AND HULME.

Architectural Text-books.

Sunderland.—Enquirer writes: "Please say what text-book I could use for a class in architecture as laid down by the Science and Art syllabus; also for architectural design."

We do not quite understand what our correspondent means by "a text-book for a class in architecture." For historical architecture we should suggest Fletcher's "History of Architecture" (10s.), or Roger Smith's "Classic and Gothic Architecture," 2 vols, 4s. each. For the Orders of architecture we should recommend Mr. Spiers' book "Orders of Architecture," price 8s. 6d., and for building construction Mitchell's or Rivington's books. The foregoing books can all be obtained from Mr. B. T. Batsford, 94 High Holborn, W.C.

St. Benit's Abbey, Horning.

London, N.E.—T. R. T writes: "Do you know of any book or books giving information about the ruined abbey of St. Benit, Horning, Norfolk, near the mouth of the river Thurn?"

We do not know anything of the Abbey of St. Benit, Horning, and are afraid that all our correspondent will be able to get will be a chance illustration in some big book on Gothic architecture. We would suggest that the best thing he can do is to obtain some local guide giving perhaps a description of the building.

Engineering Notes.

Bradford Railway Extension.—The Bradford Master Builders' Association has expressed regret at the action of the directors of the Midland Railway Company in shelving the Royston to Bradford main line scheme, and hopes that the delay may not be of long duration.

A new Electric Light Generating Station at Battersea is in course of erection; the foundation stone was laid last Saturday. The site in Lombard Road has cost about £22,000, and another £50,000 will be the cost of the buildings when completed. Mr. Stanley Peach is the architect, and Professor Alexander Kennedy has devised the scheme.

New Railway in Oxfordshire.—The Banbury branch of the Great Central Railway was opened last week for passenger traffic. The new line is nine miles long, and leaves the main line at Culworth, joining the Great Western at Banbury. The journey from Oxford to Leicester can now be accomplished in an hour and a half.

National Harbour at Dover: Ingenuity of the Contractors.—In order to expedite the works in connection with the construction of the National Harbour at Dover, the contractors have fixed some very ingenious electrical machinery, which, amongst other purposes, will be employed in the making of the 40-ton blocks used in the deep-sea work. There has been recently erected on the eastern section a 60-ton Goliath for employment in connection with the diving bells and a 20-ton derrick with 70ft. radius for use in continuing the eastern arm works. A 40-ton Goliath is being erected on the reclaimed land at East Cliff and four more similar machines are to follow at once. Of the new sea wall at East Cliff about 3,800ft. are completed except for the coping. At present the contractors are devoting attention to the protective stone apron at the foot, and about one-third of this work has been completed. A novel time-saving device is employed in connection with the blockmaking. The ballast required is run from Sandwich over the contractors' light railway, and is tipped into a store or "bin" excavated in the chalk at the top of East Cliff. In the bottom of this bin are outlets, from which small waggons are filled. They are then run down an incline and deliver their load to the electrical mixers, which travel at once to the block-boxes, mixing the concrete as they travel and depositing it straight into the boxes, after which the mixers return to be recharged.

London Tramways: Last Session's Work.—Mr. Benn, chairman of the Highways Committee of the London County Council, calculates that if London is to be as well served as, say, Glasgow, it would be necessary to add immediately 156 miles of tramways to the London systems. The County Council have not been idle. During the past session of Parliament they promoted successfully two Bills which are of distinct value, as they give power to the Council to convert all their existing tramways to electric traction, and, secondly, authorise the construction of various sections in North London, which, unimportant in themselves, are necessary to connect and develop the lines already being worked. But the Council have found it necessary to withdraw two schemes which were particularly promising. One provided for an extension from the Streatham terminus, near the Tate Library, to the Croydon boundary, there to meet and connect with the tramways passing through the borough; and the other to double the line, now worked singly, with passing places, between Vauxhall and, by way of the Oval, Camberwell Green. Both were withdrawn on account of the opposition of local bodies, but neither has been abandoned, as further negotiations may result in agreement. The London County Council have also obtained power to convert the tramways between Westminster and Tooting from horse to electric traction.

Law Cases.

Solicitors as Speculative Builders.—At the Birmingham Summer Assizes on Wednesday last, before Mr. Justice Wills and a jury, the case of the *Wolverhampton Corporation* v. *Emmons* was heard. In this action the mayor, aldermen, and burgesses of Wolverhampton sued Samuel Emmons, of Wolverhampton, solicitor, to compel him to fulfil a contract with regard to building on certain land in Canal Street, Wolverhampton, or in the alternative to pay damages for breach of the contract. Mr. A. T. Lawrence (plaintiffs' counsel) explained that in 1877, under an Act of Parliament, the Wolverhampton Corporation set on foot an improvement scheme, under which at various times they sold land in different parts of the town. Some land in Canal Street was acquired by the defendant from a person who bought it from the Corporation, under a covenant to build upon it within a specified time. Defendant, who, of course, took over this obligation with the land, submitted a plan for the erection of seven houses, but though the plans were accepted the houses were not built. Fresh plans were submitted subsequently, and received the approval of the Council, subject to certain conditions. The time allowed for building on the land elapsed ten months ago, but no steps had been taken to fulfil the undertaking. The result was that the owners of neighbouring properties had suffered from the incomplete state of the street, as well as the Corporation. Evidence was given by Mr. Bradley, the borough surveyor, whose opinion was that the street was one in which shops and houses would let readily. Mr. T. J. Barnett, auctioneer and valuer, estimated the loss to the Corporation at about £90 a year. In cross-examination the witness stated that he had tried to sell the land for the defendant, but had failed, and, in reply to the judge, said that there was no doubt the speculation was a bad one. Mr. Jelf, in opening the case for the defence, said that Mr. Emmons's case was an extremely hard one, and the jury, when they had heard the whole of the facts, would in all probability conclude that the defendant ought not to be mulct in damages. Mr. Emmons gave £1,000 for the land and anticipated making some profit out of the bargain by building houses or shops in the street. He entered on the transaction bona fide and with the full intention of carrying out the contract, as was proved by the fact that in preparation for his building scheme he actually pulled down a milk-shop on a site which was bringing him in £25 a year. Mr. Jelf submitted that if any damages were awarded they should be purely nominal. The defendant gave evidence bearing out his counsel's statement, and said that when he advertised for tenders the lowest he received was £6,750. He came to the conclusion that if he spent that amount he would incur a heavy loss, and so he waited to see how things went. He was prepared to build on the land if he saw a reasonable prospect of the shops letting. The Judge: "It comes to this. He is prepared to carry out his covenant when it suits his purpose." His lordship told the jury that it seemed to him there was only one question to be put to them—namely, what damages ought to be paid? They must not assess the damages alone for the ten months during which the contract had so far remained uncompleted, but must consider what length of time might elapse before it was performed. The jury found for the Corporation with £50 damages. With the consent of the defendant's counsel High Court costs in the action were provisionally awarded.

LEAKY WINDOWS.

BY CAMPBELL DOUGLAS, F.R.I.B.A.

WATER being driven in under prolonged wind-pressure at the sides and sills of windows – more especially if with hung sashes —is perhaps the most common annoyance to which anyone is liable whose house is in an exposed situation. The evil is caused by unscientific construction, or ignorance and disregard of natural laws. I was led to reflect on this evil and as to how it might be remedied during personal experience in the building of a country house on the west coast of Scotland exposed sometimes for weeks together to the full fury of Atlantic storms—literally American hurricanes. Rain finds its way in most unerringly by the assistance of capillary attraction. No means that are usually adopted checkmate the inevitable results. Window cases may be as well bedded at sides and sills as intelligent workmen can make them, but through almost microscopic cracks water enters and one's placidity suffers.

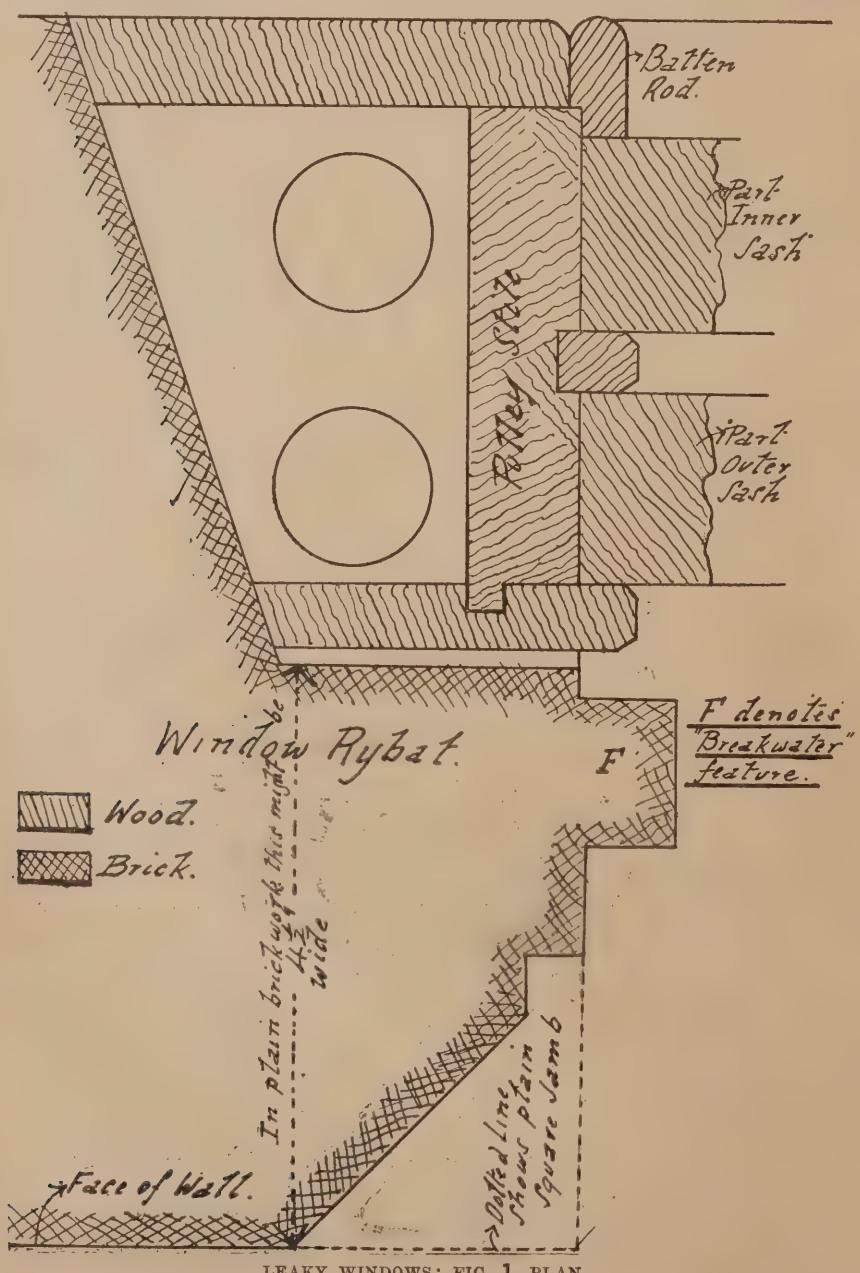
So far as I know, various well-advertised and possibly patent methods for keeping out water break down under the strain of these severe trials, perhaps from want of exact knowledge and its scientific application.

It is almost universally believed that if window cases are well bedded in mortar and painted with white lead or mastic the work will prove efficient. It is not so. If two different materials such as stone (or brick) and wood (or metal) sashes are fitted together in the same plane—even if joined, as I have said, with white lead or mastic—it is impossible but that there should be ultimately developed at the point of contact small, delicate, and almost invisible separations or "hair cracks," on account of the two materials expanding and contracting to a different degree under variations of temperature, providing the required means for the entrance of water under wind-pressure if it be sufficiently strong and prolonged.

Everyone is aware how soon the sills of window cases show signs of decay, which the ordinary building doctor points out to you by prodding it with his knife. His usual remedies we are all too familiar with.

The application of the principle by which water may be prevented from getting in at the junction of window-jamb reveals (or rybat heads, as we Scotchmen call them) and the window case is to introduce on the ingoing a breakwater feature on which the storm may, without doing any harm, spend its force, and will thereafter not have sufficient energy to make rain penetrate the delicate fissures between the inner surface of the rybat head and the outside facing of the window case.

In the much-exposed situation to which I have referred I had no extra trouble or expense in doing so, because, although the native rock of which I had to build the walls was a beautiful and hard gneiss, there was no suitable freestone conveniently obtainable for the dressings, and in such exposure long-continued rain in storm will penetrate freestone; so I executed all dressings with concrete blocks moulded as I desired, building them as if they were made of natural in place of artificial stone. This small square fillet (see F, Fig. 1) is the simple but effective cure so far as the jambs of windows are concerned. Of course the working of this fillet must add something to the cost of stone jambs, but I believe that the extra cost in brick would be trifling—almost inappreciable after the brick-maker has made arrangements for manufacturing his bricks in this way. I need scarcely say that the splay I have shown in my diagram has nothing to do with the cure. The angles may be splayed, moulded, or left plain as in ordinary bricks, but it may be incidentally remarked that the introduction of the fillet adds a slight quality of richness to the baldness of the ordinary reveal, and therefore has a certain architectural value added to its usefulness. So much for my method of keeping water from being forced in at the sides of windows. Now as to my system of constructing the case sill and the stone sill, by which (1) water will be completely—or nearly so—kept out at that part; and (2) the risk of the case sill rotting will be reduced to a minimum.



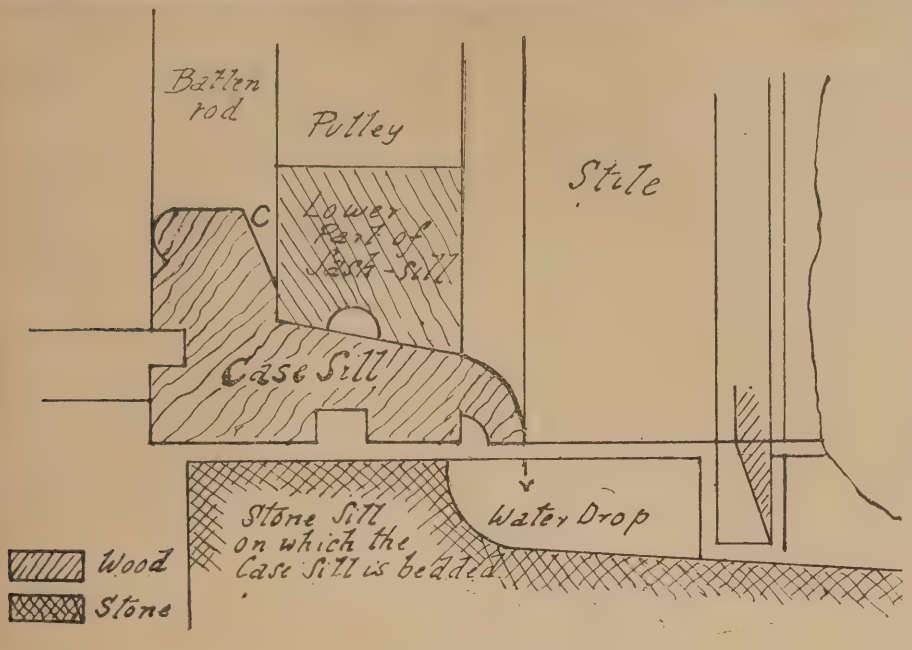
LEAKY WINDOWS: FIG. 1, PLAN.

I shall take the second point first, the prevention of the decay of the case sill with the change required in the stone sill on which it rests. I suppose that case sills have hitherto been made, more or less, in the present way since double-hung sashes were invented, so that their present breadth is just the survival of the original method of making the case in which the sill, top and sides, were all of equal breadth for the due accommodation of the sashes, and that all the parts might have an equal interest in the result with the help of the pulley stile and the beads and batten rod and sash weights. But on account of the sill being so made (that is, the full width of the two sashes and their guiding rods), the outside part, nearly the half, receives the constant drip of rain—in this rainy land—after it has left the sash sill. The water running over it reaches the stone sill on which it was carefully bedded, but here it soon falls in with our old friend the Hair Crack, horizontal now in place of perpendicular as at the jambs, and when wind blows it is then forced inwards below the wood, and gradually the outer part of the case sill decays and the building doctor prods it, shakes his head, rub his hands and tells you what you must do.

The cure is simplicity itself: one only wonders why it was not thought of sooner. Give up the broad case sill—that is, give up its *outer half*. It does not do any good, but it does harm. It is not required in order to make the framing rigid, for the wood of the case sill being thicker than the other part of the case (although the part which forms the pulley stile of the outer sash has no connecting piece of wood in the sill of diminished breadth) the framing is abundantly strong. All that is then required is to carry the slope of the stone sill further in, so that the drop from the throated edge of the case sill may fall on the stone sill, and be then carried away harmlessly. At first I took other means to steady the foot of the pulley stile of the upper sash at the foot, but I found it was not required.

To prevent rain being forced in with the assistance of capillary attraction under the sash sill of the inner sash, an equally simple treatment of this construction will be sufficient. At that part of the case sill where the sash is shut down against it the usual way is to slope the surfaces of the two sills in what is practically one plane to which each is parallel, and the usual end in view is to get the two to fit as closely as possible, or as nearly so as will leave any chance of raising the sash in damp weather. Reverse this system and (as shown in Fig. 2) cut off a sloping slice from the top edge of the case sill, leaving a small bit at the foot for this to fit against. This will form a V-shaped inside channel or air ditch round the sash sill, and the unimpeded free action of atmospheric pressure does the rest; probably most people would expect it to make the entrance of rain easier. The space (here shown a half-round) run out on the under side of the sash is not very new, but I think it is not used so often as it deserves to be.

I do not very well know how to give a mathematical explanation of its usefulness, but it



LEAKY WINDOWS: FIG. 2, SECTION.

may be illustrated, I think, not inaptly, by one's distress in trying to smoke a hastily, and therefore ill-filled, pipe. You began to fill it properly, then in a hurry left the middle part too loose, returned to the correct style of an expert's filling, with the result that you must refill. In each case you deal with a fluid, and the "drawing" of the pipe is the converse of the storm.

BUILDING TRADES' GIFT TO THE NATION.

MATERIALS STILL REQUIRED.

MR. EDWIN O. SACHS announces that, whilst rapid progress is being made with the erection of the Homes for Discharged Soldiers at Bisley, it has been found that they are still short of certain building materials, so that further gifts in kind are now again invited. The gifts which would be most welcome are the following; any communications or offers regarding these gifts should be addressed to the Executive of the Building Trades' Gift, 1 Waterloo Place, Pall Mall, S.W.:—

Bricks: 30,000 red facing bricks (in two batches of 15,000). *Cement and Lime*: 100 tons of Portland cement; 100 yards of lime. *Terra cotta*: 400ft. (run) coping, 9in. by 6in.; 200ft. (run) sills, 10in. by 6in.; 100ft. (run) coping, 2in. by 5in. *Stonework*: 400ft. (run) coping, 9in. by 6in.; 200ft. (run) sills, 10in. by 6in.; 100ft. (run) coping, 2in. by 5in. *Carpenter*: 10,000ft. (run) 2in. by 4in. rafters and ceiling joists; 3,500ft. (run) 2in. by 9in. floor joists (average 15ft. lengths); 5,000ft. (run) 2in. by 5½in. floor joists in short lengths; 1,000ft. (run) 9in. by 3in. timber for trusses (various lengths). *Joiner*: 2,000ft. (run) 10in. or 12in. moulded skirting; 2,000 squares 1in. thick best yellow flooring. *Doors*: 75 four-panelled doors, moulded both sides to detail, average size 6ft. 6in. to 2ft. 6in., with lining complete; 2,000ft. run 1in. by 4½in. architraves. *Casements and Frames*: 24 large windows, frames fitted with three casements and three fanlights, complete off the bench; 24 small windows, frames fitted with two casements, complete off the bench. *Lead*: 25cwt. 4in. lead soil pipe; 200lb. solder; 10cwt. lead pipe for water supply; 500ft. run ¾in. steam barrel. *Sheet Lead*: 10 tons 5-lb. sheet lead for roof work. *Zinc Sheeting*: 1,500ft. 14 gauge zinc. *Rain-water Pipes*: 1,500ft. 5in. by 3in. guttering; 500ft. run 4in. round or square rain-water pipes.

A Gift for Cottage Homes at Northumberland.—Earl Grey has offered 4,000 yds. of land to the Miners' Committee for the purpose of building cottage homes for aged workmen in Northumberland.

Masters and Men.

Trade in July.—The Board of Trade report that during July employment in the building trades has remained good. The percentage of unemployed union members among carpenters and plumbers at the end of July was 1·8, compared with 2·0 in June and 1·1 per cent. in July of last year. In the furnishing trades employment has continued to fall off; the percentage of unemployed union members at the end of July was 2·6, compared with 1·6 in June and 1·9 per cent. in July, 1899. Employment in the engineering and metal trades has remained fairly good in most branches; the percentage of unemployed union members in this group of trades at the end of July was 2·7, compared with 2·5 per cent. in June and also in July of last year. During the month forty-one fresh disputes occurred, involving 10,244 workpeople; of these disputes only 7 occurred in the building trades, and 8 in the metal and engineering trades. Changes in the rates of wages of about 393,471 workpeople were reported during July, of which number 392,771 obtained advances averaging 2s.1¼d. weekly per head, and about 700 sustained decreases averaging 2s. 7¾d. weekly per head. The nett result was an increase of about 2s. 1¼d. per head in the weekly wages of the 393,471 workpeople affected.

The Cheltenham Builders' Labourers' Strike.—The strike of labourers in May and June last ended in the resumption of work by the men on conditions providing for arbitration of the dispute between the parties. The men had served a notice upon the employers for a rise of wages from 5d. to 6d. per hour, and the masters had served a counter notice for a reduction of wages from 5d. to 4½d. Under the "working rules" agreed to some years ago between employers and employed, this process of notice and counter notice, expiring as in this instance on the 1st of May in any year, was the method prescribed as a preliminary to arbitration, but on May 1st the men struck work under the contention that the rules did not cover a vital question like that of wages and that the arbitration clause ceased to operate when a strike or lock-out took place. After much correspondence and a long conference between representatives of the Labourers' Union and the Masters' Association, it was agreed to leave the interpretation of the arbitration clause and the question of its application to the matter in dispute in the hands of an expert, and that then the parties should proceed to arbitration. This preliminary point has been settled by Mr. J. Waghorne, the Clerk to the Magistrates, who has decided that both the notice and the counter notice must be submitted to arbitration. The parties have now agreed to refer the matter to the arbitration of Mr. O. J. Williams, J.P., the District Registrar.

A Dispute with the Bristol Sanitary Committee.—The building section of the sanitary workmen's branch of the Bristol and South-Western District of the National Union of Gas Workers and General Labourers held a special meeting last week to hear reports on and discuss the new regulations issued by the Sanitary Authority to men in the building section. Mr. H. Brabham, the chairman, stated that on January 1st, according to the building trades' rules in the city the whole of the men in the building trade sent applications to employers for an advance in wages of ½d. per hour. At that time an application was also sent to the Sanitary Committee, and he believed to other committees that were employing workmen under the Corporation. Following upon that, the labouring section of the men belonging to their society sent in asking for an advance in wages of the same amount that was to be given to the employees in the building trade on July 1st. This application referred to about 472 men. On August 3rd the Borough Engineer wrote saying that notice would be given to the workmen classed as being in the building trade to terminate their engagements on the 15th inst., after which such workmen might, if they thought fit, be engaged under building trades rate of wages and terms of employment. The speaker thought this was unjust. It was agreed:

"That this mass meeting of the masons, pitchers, carpenters, bricklayers, plumbers, painters, labourers, and others coming under the new regulations on the 15th of this month, enter their strong protest against the way the Sanitary Committee has acted in this matter, and calls upon them, before putting this new regulation into force, to meet the men's representatives to discuss and draft rules and regulations for those sections of workmen not mentioned in the Bristol building trades' rules." And also: "That this meeting strongly protests against the decision of the Sanitary Committee in introducing the hour system to take away the sick pay and holiday pay that the men have hitherto enjoyed."

Trade Union Federation.—The secretary of the General Federation of Trade Unions has issued his first annual report to the societies which go to make up that body. The Federation was started at a special Trade Union Congress held in Manchester in 1899. It was provided in the rules that no society should be able to come into benefit until twelve months after the first annual meeting. That period has now expired, and the Federation may be considered as fairly on its way to work. At the first council meeting fourty-four societies, representing an aggregate membership of 343,000, or rather more than one-fifth of the trade unionists of the country, were enrolled as members. Since then there has been a period of steady growth, and now the Federation is made up of fifty-nine unions, with a membership of 377,729. It is curious that the building trades are almost entirely absent from it. The only union connected with their industry is the Perseverance Carpenters' Union. The Stonemasons, the Operative Bricklayers, and the Amalgamated and General Carpenters' Unions have not joined. The Boilermakers, too, hold aloof. Almost all the textile trades have joined, with the exception of that important body, the Northern Counties Amalgamated Weavers. The Railway Servants' Union has not yet joined. With large unions in membership the funds of the Federation have grown steadily during the first year of its existence. The expenditure of all kinds only amounted to £672, so that there is now a balance in hand of £21,891. It is especially provided in the rules that the Management Committee shall do all in its power to bring about a settlement of labour disputes by conciliation and arbitration before granting any assistance from its funds.

The New Guard-room at the Tower is now completed, and will be handed over to the military authorities there in a few days. It is situated to the west of the White Tower and is of light terra-cotta coloured brick, having nothing in common, architecturally, with its surroundings. In addition to the quarters set apart for the purposes of the main guard, the block also provides schoolrooms for the soldiers and for the children of the garrison, quartermaster's stores, sergeants' mess, recreation rooms and other offices.

XIX. CENTURY ARCHITECTURE.

RUSKIN'S INFLUENCE.

IN the course of a University Extension lecture on this subject at Cambridge last week, the Rev. D. H. S. Cranage spoke first of the Gothic work in England—its rise, growth, decline, and fall. He then described St. George's Hall, Liverpool, as the greatest building of the Classic revival. Fashion, he said, was the bane of architecture, as it was of many another art, and at one time the fashion was to have in England Grecian temples and huge porticos, the latter of which, during the greater part of the year, were useless and a mistake. As a result they had all over the country noblemen's mansions in the Classic style, and now people found what a wretched thing it was to live in those places when the fashion for them had passed away. Whether they liked them or not, the Gothic revival had produced some of the finest buildings of the century; it was without doubt a national movement, and not one merely amongst architects, and though by some it was said to be dead, he asserted that it showed wonderful signs of life. In dealing with the influence of John Ruskin upon the architecture of the nineteenth century, the lecturer made a passing allusion to some of Ruskin's hostile critics, one of whom, he said, had spoken of Ruskin not as an architect at all, but as a rhetorician. Another anti-Ruskinian asserted that Ruskin's influence upon architecture was very small indeed. But all architects would admit that it was extremely difficult to get the public to take an interest in architecture, and Ruskin was the first to break down that apathy and ignorance. Men of culture were shown that they were ignorant unless they knew something about architecture. Of course, there were limitations to be put upon Ruskin's writings, and they would not go to him for the grammar of architecture. But one thing they might get from Ruskin that neither his critics nor a whole library of architectural books could give them, and that was inspiration. Though it must be admitted that Ruskin's influence was likely to be to some extent ephemeral, it would also be permanent as regarded the inspiration he would always have after his small-minded critics were dead and buried. The lecturer then referred to the restoration of ancient buildings. Restoration, he said, had been as much a work of the nineteenth century as the erection of new buildings. A century ago there was more destruction than restoration. His advice was in the treatment of old buildings to let a church, as far as possible, tell its own tale; to keep everything in it, unless it seriously interfered with the purposes of the church. Nor would he take galleries away simply because they were galleries. He admitted there were sometimes things in a church that were intolerably ugly, and it was quite justifiable to take away anything that hid away interesting features. When a new window was wanted, let it be as much as possible in harmony with the old, but by all means let there be some clear sign about it that was modern. They should always keep a careful record of what they did in this direction, because failure to do this had often caused great mischief. Lastly, let them do everything with common sense, and not run into extremes in the matter of restoration, either one way or the other. Restlessness was the word that summed up the present condition of architecture. Everyone was dissatisfied with modern architecture; fashions changed almost every year, and the architects themselves were thoroughly dissatisfied. Was there, then, no cure for this unrest? The two great styles of architecture—Classic and Gothic—depended upon principles of structure, and was it not possible to have a school of architecture founded on principles that produced the Forth Bridge? He contended for the Gothic style in its main principles. The lecturer, by means of pictures of buildings thrown upon the screen, indicated the lines on which he thought progress in this direction might even now be made.

Sunderland Electric Tramways.—The official ceremony of opening these tramways took place last week; it was preceded by a banquet.

Bricks and Mortar.

APHORISM FOR THE WEEK.

Architectural study—or rich arabesque,
Allegorical dream—or a view picturesque,
Near to Naples, or Venice, Florence,
Or "as harmless as lambs and gentle as doves,"
A sweet family of plump little Loves
Like the Children by Reynolds or Lawrence.
TOM HOOD.

Our Inset Sheets. THE house at Windermere by Mr. Robert Walker, F.R.I.B.A., architect and surveyor, of Windermere, has been built in a central situation for Dr. Mason. The stone of the district has been used for walling, with red freestone dressings, the upper parts being finished with cement rough-cast, and the roofs covered with green Westmoreland slates. It contains—in addition to the accommodation shown on the plans—four bedrooms and a boxroom on the second floor, and larder, store cellar, coal and wood places and heating cell in the basement. The principal rooms and passages are heated by hot water—in addition to the fireplaces—and a lift is provided from the basement to the first floor. The work has been carried out by local contractors under the superintendence of the architect.—Plans and particulars of the new workhouse at Ladywell (Messrs. Newman and Newman, architects and surveyors, London, S.E.) were given in our issue for July 18th last.—The Berkshire County Cricket Pavilion has been erected on the county ground at Elm Park, Reading, one of the finest and fastest grounds in England, being more than twelve acres in extent. The plan explains the general arrangement. Outside staircases lead to the balcony, scorers' room, general workshop for ground staff, &c. The materials are half timber for the external portions, filled in with dark red bricks laid in various patterns. Dark red tiles are used for the roof. The luncheon hall has an open timber roof. The architect was Mr. Geo. W. Webb, F.R.I.B.A., of Market Place Chambers, Reading, and the contractors were Messrs. G. Lewis and Brother, of Reading.

Workmen's Cottages: Big Scheme Begun at Tooting. THE London County Council has just begun to carry out at Lower Tooting quite the largest experiment in municipal dwellings ever made in this country, though there have been some larger schemes on the Continent. Plans have been prepared, and in the course of the next five or six years about 8,200 persons will be living in nearly 1,100 houses on what is now vacant land—Totterdown Fields. The site is half a mile long and about a furlong wide. Great care and thought have been spent on the laying out of the building plots and streets. The principal thoroughfare will be 45ft. wide, beginning from the main Upper Tooting Road and running straight through the centre of the estate for about a third of its length. Here a street of the same width crosses it; and from the cross-street two other streets, still 45ft. wide, run parallel through the middle third of the site. In their turn these two streets are traversed by a second cross street, from which, at a point midway between their terminations, another 45ft. avenue runs to the far end of the estate and opens into Church Lane. Subsidiary streets 40ft. wide run in a network from these main streets at intervals varying from 100ft to 180ft. Four classes of houses are to be built—all of the two-storey cottage type. The plots vary from 15ft. by 80ft. to 12ft. by 45ft. A few of the houses will be built as two-storey flats to accommodate separate families; but these will number only about 160. The idea of the Council has been all through that each family in this new town shall have its own little house quite to itself, and at such a rent as just to pay expenses and leave no charge upon the rates.

Some Figures about the Bradford Plans. AT Bradford recently plans were approved by the Building Committee of the City Council for workmen's dwellings. Of these the "Bradford Observer" says:—"In drawing up the plans everything possible has been done to save expense, but in the estimates a liberal allowance has been made. Six shillings per week should be the outside figure demanded, and it is possible that the rent may be much less. In the estimate 5s. per yard was taken as the cost of the land, but suitable land can be obtained considerably cheaper than this. A capitalist who is content with a modest return for his money could well afford to let the cottages at 5s. per week, even if the cost comes fully up to the estimate of £225 each. Four per cent. on £225 is £9, and at an assessment of £8 the rates would be about £2 12s., making a nett annual cost of £11 12s. Let at 5s. per week the cottages would produce £13, which would provide a small margin for repairs and standing empty. If the capitalist desired £5 per cent. interest he would have to charge £13 17s. per annum to cover the rates as well, and 5s. 3d. per week would bring him in £13 13s. per annum. It must also be borne in mind that the estimates allow for the making of a road 14yds. wide and also a back road. What the capitalist can do the Corporation can do equally well."

Leicester's Sad Experience. ABOUT four years ago Leicester matured a scheme for providing comfortable and cheap dwellings for the poverty-stricken. Their blocks are now nearing completion, but the Council discover that the "poorest of the poor" will never be able to afford the rentals. The tenants who were to have been accommodated are operatives and workpeople, who are already amply catered for by private enterprise. The Corporation originally believed that they could erect three-roomed tenements to let at 2s. 3d. to 2s. 9d. per week, and four-roomed dwellings at 3s 3d. to 3s. 9d., without making any charge on the rates. It has now been found that the lowest rentals must be 3s. to 4s. 1½d., and the higher 4s. to 5s. 1½d. And even then the blocks will entail a small charge on the rates. As there are now hundreds of six-roomed cottages empty in the town, though offered at 4s., 4s. 6d., and 5s. weekly, the municipality in its guise as the "poor man's landlord" has received a very grave shock. Mr. Councillor Walters states that 6d. of the extra shilling in rental has been made necessary by the red-tape exactions of the Local Government Board. No sooner were the original plans submitted to the Board than they insisted upon walls being erected "thick enough to resist an invasion"—a mandate that is not laid upon private speculators. The other 6d. was due to the advance since the inception of the scheme in the cost of land, building material, and the raising of loan interest from 2¾ per cent. to 3¼. Now the Leicester Corporation desire to obtain a longer period than thirty years to repay the principal and to be freed from the shackles of the Local Government Board and the Housing Act. Meanwhile Mr. Walters has undertaken to carry into effect at his own expense a housing scheme of his own for the benefit of Leicester's poor.

In Reply to Professor Church. SOME time ago a committee of experts was appointed by the Dean and Chapter of Westminster Abbey to report on the effect produced on the building by the fumes from the Lambeth potteries. Professor Church, as the mouthpiece of this committee, said that the fumes acted most injuriously on the stonework and, unless stopped, "in the course of not very many years the Abbey will be a ruin." In reply to this indictment the manager of Messrs. J. Stiff and Sons, the well-known potters, said recently to a member of the Press:—"There used to be a great outcry against what were called the 'white salt fumes,' the theory being that they contained a large quantity of hydrochloric acid, which was supposed to be detrimental to stone buildings. As a matter of fact that is practically untrue, and the only other thing that can possibly do any damage is sulphur. There is a certain amount of sulphur in the kilns, and that passes off in the form of sulphuric acid. But in the case of these and of the salt fumes they only pass off for about twenty minutes two days in the week, and you may take it that we do our best to consume them. My point is this, that by comparison

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PROPOSED SEASIDE RESIDENCE, HUNSTANTON, NORFOLK. CHARLES T. SKIPPER, Architect.

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Supplement to
THE BUILDERS' JOURNAL AND ARCHITECTURAL RECORD,
Wednesday, August 22nd, 1900.





GROUND PLAN.

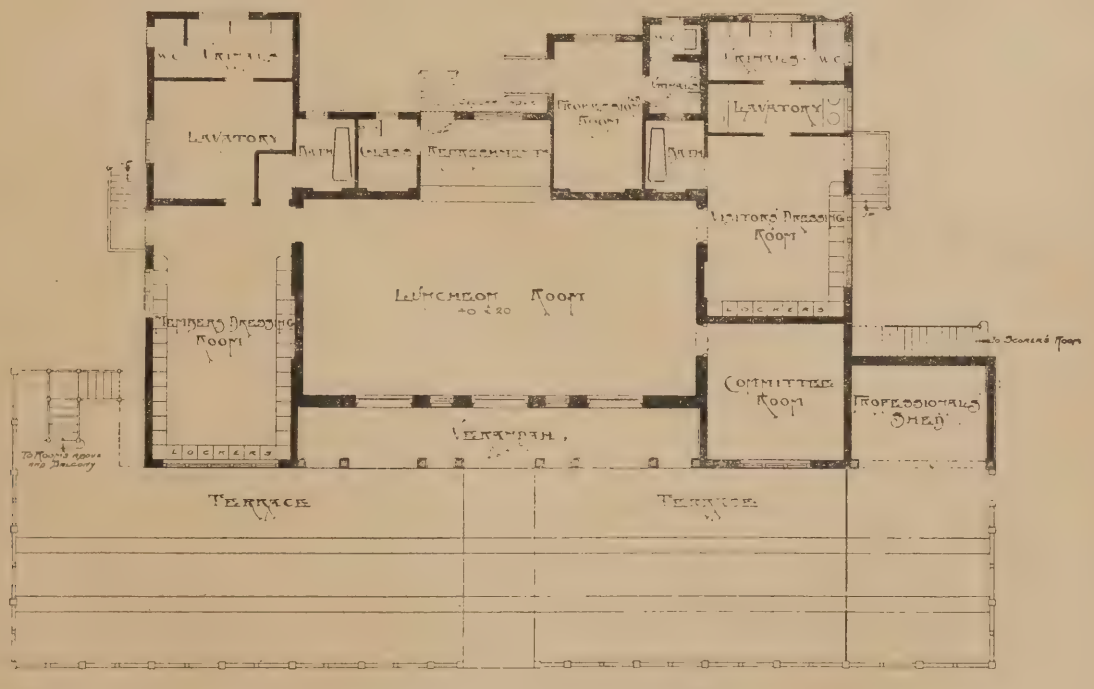


FIRST FLOOR PLAN.

HOUSE FOR DR. MASON, WINDERMERE. ROBERT WALKER, F.R.I.B.A., Architect.



FRONT ELEVATION



GROUND FLOOR PLAN

SCALE OF FEET

BERKSHIRE COUNTY CRICKET CLUB PAVILION, READING. GEORGE W. WEBB, F.R.I.B.A., Architect.

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S^t Olave's Union.

Accommodation for the Aged and Infirm Poor

Ladywell

Newman & Newman, Architects.
31 Tooley St S.E



Reference.

A	Wards	H	Administrat^n Block
B	Day R^m's Wards	K	Water Tower
C	Small Wards	L	Receiving Block
D	Isolation Wards	M	Mortuary
E	Married Couples	N	Porter's Lodge
F	Chapels	O	Stable
G	Laundry	P	Corridor

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with the smoke from domestic chimneys the fumes from potteries are trifling in extent. It may, of course, be answered that they are much more deleterious, but we have had some of our own terra-cotta on the top of our pipe-making factory, which is the source of the salt fumes, for over thirty years, and it does not show the least softening. Terra-cotta is, of course, harder than Bath stone, but it is not harder than good stone, and you must remember that the Abbey is built of very cheap soft stone."

An Old Inn. THE "Coach and Horses," an old wayside inn facing the Chiswick Road, near Turnham Green, is now being demolished, and with it and the laying out of the adjoining market gardens for building purposes, goes the last vestige of the rural road from London to Gunnersbury. Until quite recent years hedgerows and barns occupied the sites of the adjacent shops by the junction of the Goldhawk Road with the Chiswick Road at the spot called "Young's Corner"; but the district has now been altered so greatly that it is nothing more than an extension of London. Old times and new are in sharp contrast in the pulling down of the humble old roadside inn and the building of a palatial new one behind it, operations going forward simultaneously. It was never a house famed in story or legend, but with the drivers of the market carts and the hay waggons pulling up at the roadside water-trough beneath the swinging sign to give their horses a drink it greatly resembled one of Morland's characteristic old pictures of rural life.

Not Usual. IT is not often that the foundation stone of an important public building is laid by a gentleman who, in addition to working daily as a stonemason, acts as chairman of the local vestry, and officiates from time to time as a magistrate. Such a combination was, however, seen at Battersea on Saturday last, when Mr. William Matthews, J.P., chairman of the vestry, laid the chief stone of the big generating station from which the "municipal Mecca" will in course of time receive its supply of the municipal electric light.

Slate Roofs. PEOPLE living in houses with slate roofs, says the "Globe," have learned this summer, if the sun never taught them to realise it before, that the slate is about the most intolerable form of roofing for hot weather ever devised by mortal man. "It is, we fear, too late to plead for the abolition of the inexpensive slate and the re-introduction of the more costly tile; therefore the question is to find out some way whereby the effects of the heat on slate roofs may be at least minimised. One such way is the whitewashing of the slates. This is simple and economical, and it may even be said that it is artistic. For of all ugly things in the suburbs, more ugly even than the unbroken line of flat-faced stucco villas, are the two long and depressing parallel lines of monotonous slates. 'Slate-coloured' is a term synonymous with all that is melancholy, and to cover this leaden hue with a coat of gleaming white is certainly to add a touch of gaiety (even though it be a poor one) to our long unlovely streets. But we could wish that architects in their plans for modern villas would adopt that style of architecture which so raises the façade of the house as to hide the roof altogether. That is one way to lessen the hideousness of the ubiquitous slate, and one way of making the summer business of whitewashing the roof something less dangerous to life and limb. Short of a return to tiles, the most beautiful of all forms of roofing, we can think of nothing so likely to mitigate the ugliness of our streets."

St. Dunstan's-in-the-West. IN consequence of the faculty granted by Chancellor Tristram for the building over of the fore-courts of St. Dunstan's Church it has become necessary to consider the advisability of removing three of the interesting features for which the Fleet Street church is noted. To the east of the entrance and standing on a ledge between 15ft. and 20ft. from the ground is the only statue of Queen Elizabeth to be seen in London by the street sight-seer. It formerly occupied a niche in Lud Gate. In closing in for the new buildings this statue must either be removed or blocked out of sight, and the necessary steps are to be taken to remove the statue of the maiden Queen to a spot where her monument will be seen. On the west side of the church front is also a tablet placed to the memory of Izaak Walton, but this is already hidden behind the new Law Life offices now being constructed. It is probable that the tablet will be removed and placed in a conspicuous place inside the church. The third monument is the famous St. Dunstan's fountain, the only one in Fleet Street, and the only one in the City with a thermometer and barometer attached; it was presented to the church by the late Alderman Sir Francis Duke, Knt., a one time Lord Mayor of London and alderman of the ward. At present it is not quite certain what will be done with the fountain, but already the weather indicators have been removed.

Lead Poisoning. THE Home Secretary just before the close of the Session prepared a draft of amended special rules for china and earthenware manufacturers, and these rules have since been submitted to the employers for consideration prior to a formal service. The first of them requires that the lead must, after January 1st next, in every case be "fritted"—a process that renders it much less injurious and which the general body of manufacturers agree can be done without any serious detriment or inconvenience. Rule 2, if worded as intended to be applied, strikes a deadly blow at the English manufacturer, and gives an enormous advantage to the foreign competitor. It reads:—"After July 1st, 1902, no material containing lead which yields to a dilute solution of hydrochloric acid more than 2 per cent. of its dry weight of a soluble lead compound calculated as lead monoxide when determined in the manner described below shall be used in any place or process included in rule 1." The objectionable part of this rule is found in the restriction to 2 per cent. of lead. The processes scheduled in rule 1 include colour-dusting, colour-blowing and ground-laying, and none of the colours used (with the exception of four) can be made with so low a percentage of lead as that prescribed. In fact, some of the colours contain as much as 60 per cent. of lead, and are absolutely useless with a lower proportion. These colours are exported in considerable quantities by English colour-makers to Germany, France, America, and even to the Antipodes, and are used by our competitors without any restrictive Government regulations; so that the foreign manufacturers will flood our markets with ware decorated in colours our home manufacturers cannot touch.

Paris Exhibition Awards: Successful Architects. OF the twenty-seven grand prizes awarded in the Art Section of the Paris Exhibition, Great Britain obtains two—Sir L. Alma Tadema and Mr. Orchardson. No foreign country has secured more than two grand prizes, and the United States, Germany, and Belgium are the only foreign countries that have done as well as Great Britain. Mr. Sargent and Mr. Whistler are the American grand medallists. The lion's share of the grand prizes—ten, to wit—go, of course, to French artists, to Benjamin-Constant, Cazin, Dagnan-Bouvert, Harpignies, Hébert, Henner, Henri Martin, Marot, Roll, and Vollon. Great Britain obtains six gold medals out of a hundred and seventeen awarded. Germany and Italy receive the same number, and the United States one more. France accounts for forty-seven of the gold medals. As regards the silver medals, Great Britain has done exceptionally well, having obtained twenty-six, a number considerably larger than that of any other foreign country. In architecture gold medals have been awarded to Mr. John Belcher, A.R.A., Mr. T. E. Collcutt, Mr. William Emerson, P.R.I.B.A., Mr. E. L. Lutyens, and Mr. Aston Webb, A.R.A. (Rappel). Silver medals were granted to Messrs. Austin and Paley, Mr. J. J. Burnett, A.R.S.A. (Rappel), Mr. W. D. Caröe, Mr. C. Clowes, Mr. H. Field, Mr. W. Leiper, R.S.A., Mr. E. J. May, Mr. E. W. Mountford, and Mr. L. Stokes. Bronze medals were gained by Mr. Basil Champneys, Messrs. Lanchester, Stewart and Rickards, Mr. A. Mitchell, and Mr. A. Beresford Pite. In the section devoted to sculpture, Mr. T. Brock, R.A., Mr. G. Frampton, A.R.A., and Mr. H. Thornycroft, R.A., were each awarded a grand prix; gold medals went to Mr. C. J. Allen, Mr. A. Drury, A.R.A., Mr. W. Goscombe John, A.R.A., Mr. A. C. Lucchesi and Mr. J. M. Swan, A.R.A.; silver medals to Mr. F. Bowcher, Mr. W. R. Cotton, Mr. H. C. Fehr, Mr. Herbert (Canada), Mr. F. L. Jenkins, Mr. E. R. Mullins (Rappel), Mr. H. A. Pegram and Mr. F. W. Pomeroy; bronze medals to Mrs. Bruce (Canada), Countess Gleichen, and Mr. A. Toft; while Mr. G. Bayes, Mr. D. B. McGill, Mr. P. Macgillivray, A.R.S.A., Mr. G. K. Mahatre (India) and Miss Wallis (Canada) were honourably mentioned.

Running Solomon Close. THERE are few buildings in the world which have been erected without a single blow from a hammer. The honour of building a temple without the sound of a hammer has hitherto been held by Solomon, but the architect who designed the vitrified clay church in Chicago competes pretty closely with the learned king. There is not an inch of lumber or a nail in the whole structure. The entire ceiling is of brick and tile vaulting, the key-stones being of terra-cotta, and the ribs of the arches and groins of moulded brick.

A Generous Offer. AT the recent Wirral and Birkenhead Agricultural Show the president, Mr. W. H. Lever, in the course of his address remarked that although the landowners and farmers were paying every attention to machinery and the production of crops very little had been done towards providing the agricultural labourer with a proper house. To show what could be done in this direction he was prepared to hand over to the Committee a sum of £50 a year for three years to be offered as prizes for the best plans or models of cottages suitable for that purpose. It is hoped that the Committee will accept his generous offer, and that particulars of the competition will be published in due course. The condition of the agricultural labourer is not so bad as it used to be, but it is still bad enough, and only those who have personal knowledge of the rural housing question know the wretched condition of the houses in which the mass of the "sons of the soil" exist.

Moorish Architecture. IN the course of a series of articles which Mr. Ellis Ashley is contributing to the "Manchester Guardian" on Barbary, he remarks: "We see in Fez a capital of Barbary in activity. In Mekinez and Morocco City we have Moorish capitals in repose. The highways of commerce have left them; the cities are mere sleepy relics of the past. . . . If you would see Moorish architecture at its best you must see it where the Christians have preserved it intact in Spain. But if barbarous grandeur and suggestion of bygone greatness inspire you it is necessary to see Mekinez itself. Everything has been on a scale of magnificence and immensity in the city of old, and even in Mekinez of to-day the inhabitants live in better circumstances than the people elsewhere in this strange land. Wherever one steps in Mekinez there is a legend or a history, a tragedy or a marvel of the past to inspire us. Great vaulted subterraneous cellars extend—how far no one knows—which once were the receptacles of the riches of Sultans, and the tombs of countless wretches who met with those Sultans' displeasure. Above the immense gateways we may still see heads of rebels stuck on poles, reminders for the ill-disposed that the Sultan has a short way with erring tribesmen. You detect pillars and stone slabs which it is certain were never wrought by Moorish craftsmen, and you learn with horror that these vandals had brought them ready made from the ancient Volubilis, twenty miles away—the workmanship of Rome's architects and builders pulled down in order to save the Moors trouble. Roads there are none, and the caravan tracks pass through heavy sand over hill and dale."

Builders' Notes.

Building at Ayr.—Plans for the following have been passed:—Four dwelling-houses, Prestwick Road; four dwelling-houses, Green Street; two dwelling-houses, Craigie Road, Green Street; dwelling-houses, Whitletts Road; dwelling-house, Ashgrove Street.

Improved Dwellings for Government Workmen in Prussia.—A sum of £250,000 is to be disposed of by the Prussian Government to provide improved dwellings for workmen and subordinate officials in Government employ. A similar sum was granted for this purpose in 1895.

Ratable Property.—The Local Government Board have issued a return on ratable property in England and Wales, according to which the ratable value of "lands" was in 1899 less by £8,522 746, or 21 4 per cent., than it was in 1870, and the ratable value of—

	£	Per cent.
Buildings was	61,278,638,	or 111·1 more in 1899 than in 1870
Railways was	10,726,953,	or 220·2 „ „ „
All other kinds of ratable property was	7,269,579,	or 145·2 „ „ „

Dear Coal and the Brick Trade.—The increase in the price of coal has seriously affected all branches of the brick trade in the Black Country. Some manufacturers state they are unable to obtain remunerative prices, and rather than make bricks for stock they will temporarily close the brickyards. The week before last the majority of the brickmakers were employed only about two days, and others have been thrown out of employment altogether.

Uniform By-laws.—At the last meeting of the Cleckheaton District Council the General Purposes Committee reported that they had instructed the clerk to call the attention of the Local Government Board to the disadvantage suffered by the town owing to the variation of building by-laws as between their own district and those adjoining, with special reference to the building of back-to-back houses, and to suggest that the by-laws of the several districts should be identical. The resolution embodying this instruction was duly confirmed by the Council.

The Building Trade in Bowness and district has of late received a considerable impetus. In North Street the Police Commissioners have just completed the erection of a three-storey tenement, while another large block of buildings is in course of erection in South Street. In the Corbiehall district extensive building operations are also being carried on, while a large five-storey structure is nearing completion near Kinneil, to be used by the Distillery Company, being an extension to the present works. It is anticipated that a number of the older tenements in the centre of the town will shortly be demolished and more modern structures erected instead. There is a growing demand for dwelling-houses of a good class, and there is a probability that a number of these will be erected in the Braehead district. The Burgh Commissioners are encouraging local builders in the upper parts of the burgh.

Fire Prevention Tests.—With the close of the British Fire Prevention Committee's summer session, Mr. Edwin O. Sachs, as chairman, makes the following announcement regarding the fire tests carried out under the auspices of that body, which will give some idea of the amount of work done in the form of investigations, quite irrespective of the general duties of the Committee. Since the Committee's incorporation, namely, during a period of eighteen months, there have been twelve tests with fire-resisting floors and two with ceilings; and there have been nine tests with fire-resisting partitions. There have been no less than twenty-three tests with different forms of wood and iron doors and eight with various forms of glazing. Besides this, there have been several odd tests with treated wood, with fire curtains, fire blinds, girder coverings, and safes. Altogether, the tests number sixty-three. The reports on these sixty-three tests are embodied in forty-four publications, many of which are extensively illustrated. An analysis of the attendance at tests shows that, including the representatives of the Council, executive, the various sub-committees and the deputies of the general body of members, the attendance averaged about forty. The working members of the Council were, primarily, Sir John Taylor, K.C.B. (H.M. Office of Works), Mr. Arthur Cates (lately Crown Surveyor) and Major-General Festing, F.R.S. (South Kensington Museum). Speaking generally, the testing station required the attendance of the executive or its sub-committees practically once a week throughout the year, and the heaviest work fell on the shoulders of Messrs. Max Clarke, Hammond, Marsland and Goad; whilst Mr. F. R. Farrow assisted on behalf of the commercial section on almost every occasion. Throughout the work, the executive has been most energetically and ably assisted by their superintendent, Mr. Thomas Kissack, and by Mr. Taylor, their assistant secretary. As has already been announced, the committee has, however, met with the ill-fortune of having to move its plant to new premises owing to the site on which they are now located at Regent's Park being taken up for railway purposes.

Professional Practice.

Dublin.—The new district fire brigade station in Buckingham Street was opened recently. The area of the ground on which the station stands is 2,120 yards and cost £2,250. The station has a frontage of 78ft. on Lower Buckingham Street, is three storeys high, and contains a working department and living accommodation for an officer, seven married firemen with their families and several unmarried men. The officer's quarters are situated to the right of the entrance door, while, enclosed by a glazed screen on the left, is the watchroom, containing the telephone and fire-alarm switchboard and apparatus for controlling the entire working of the station, including lighting, heating and water supply. Opening off the passage is the engine room, 40ft. by 28ft., with steamer and new aërial fire ladder, ready for running, with the suspended quick-hitching harness. At the rear is the stable, 28ft. by 20ft., for four horses. The engine room and stables, which are 16ft. high to pitch-pine ceilings, are lined with glazed bricks and are furnished with patent folding doors. There is also a polished sliding pole from the dormitories above, by which the firemen can slip down to the basement without using the stairway. On the first floor is a dormitory, 28ft. by 25ft., and a recreation room, 21ft. by 12ft., both of which are reached by spiral stairs from the entrance passage below. Quarters for two drivers on the extension of the same floor at the rear are approached from the station yard by an external stairs and balcony. On the upper floor residences for five families are provided in a similar manner. Another sliding pole placed in a recess off the top balcony gives ready access down to the engine room. All the dwellings are isolated. The officer has five apartments, bath room and scullery; and, with two exceptions, the men have three rooms, every family having separate bath room, scullery, and sanitary arrangements. A hose-drying tower, 60ft. high, heated by steam and hot air; a small steam laundry, 24ft. by 12ft.; a workshop, 28ft. by 11ft., with engine repairing and testing pit; a harness room, 12ft. by 11ft.; and forage loft, 40ft. by 11ft., are all entered from the yard, which is also used for drilling purposes. Against the boundary wall in the yard are coal lockers, sanitary accommodation and an open-fronted shelter shed. In the basement under the watch room a small steam boiler, automatically controlled, furnishes hot water for the whole station, steam for the laundry, and will heat the drying tower and portions of the station by means of radiators. The frontage is of red pressed Portmarnock bricks, with moulded granite bases to the piers. All the building is of fire-resisting construction and the drainage is all on the accessible principle. The building was erected from the plans of Mr. M'Carthy, city architect, by Messrs. Pemberton and Son, Charlemont Street, at a cost of £8,000.

Glasgow.—The new washhouse, which has been erected by the Corporation of Glasgow at Bain Square was formally opened last week. The building, which is the fourth of a similar type in Glasgow, has been built at a cost of about £5,000 from the designs of Mr. M'Donald, the city engineer, and under the superintendence of Mr. Thomson, superintendent of the Baths Department. The building contains 44 stalls, each of which gives accommodation for one woman to wash clothes. Washers pay 2d. per hour for the use of a stall, and this contribution also entitles them to facilities for wringing and drying the articles they have cleansed. The wringing is done by means of six water-driven hydro-extractors. The City Improvement Trust, in the course of their operations at Bain Square, found that they had a large amount of space behind their tenements; and instead of utilising it as a back green, and erecting several little washhouses, they so constructed this washhouse that the roof, which is flat and of concrete, forms the back court for the tenements. The tenants of the Improvement Trust property had the use of the washhouse at half rates, as they had no wash-houses of their own. These small establishments are more remunerative than the large washhouses, and the committee desire to multiply these small washhouses in the industrial wards.

Kingseat, Newmachar.—Mr. A. Marshall Mackenzie, A.R.S.A., has prepared plans for the new asylum at Kingseat, Newmachar, to be erected by the Aberdeen City District Lunacy Board. The plans have been unofficially approved by the General Board of Lunacy. A deputation from the Aberdeen Lunacy Board visited the newer and more important asylums on the Continent, with the view of obtaining information which might be of service in dealing with the present important project, and reported in favour of the adoption of the segregation system of lunatic asylum, which was found in high perfection at the Alt Scherbitz Asylum, belonging to Prussian Saxony and situated about six miles from Leipzig, and where the object of the whole scheme of construction and administration is to make, as far as possible, the condition of the patients similar to that of sane people living in an ordinary rural community. The favour with which the Alt Scherbitz plan of asylum is regarded is steadily increasing in Germany. It is also gaining in favour in the United States, and even in our own country the design of Alt Scherbitz has been largely followed in the construction of private asylums. From their detached character, the new buildings at Kingseat do not afford the scope for architectural effect which is obtained by the erection of one large, massive structure. The asylum will be erected on two fields on the farm of Nether Kingseat, on the south-east side of the road which divides the estate. The site lies to the sun, and has a gentle slope to the south, and the range of buildings will cover upwards of fifty acres. The hospital will provide for about 700 inmates and stands in front of the administrative block, with a recreation hall separating the two buildings. There will be observation wards for male and female patients, convalescent wards, and what are described as closed villas, where patients will be kept under observation until in a condition to be transferred to the open villas and afterwards to the working "colony," which is a feature of the Alt Scherbitz system. The administrative block will consist of three storeys. On the ground floor there will be the medical superintendent's room, board room, waiting room, bath rooms, &c.; on the first floor, bedrooms and smoking and billiard room for the male attendants; while the second floor will be wholly given up to bedroom accommodation. The female attendants and nurses will be accommodated in quarters erected to the west of the administration block and provided with an amusement hall, tennis court and other means of recreation. The medical superintendent's residence, the gardener's house and the steward's lodge will be built facing the public road. This new building scheme involves an expenditure variously estimated at from £60,000 to £100,000.

Lynton.—The new Town Hall, presented by Sir George Newnes at a cost of £20,000 in commemoration of the Queen's Jubilee, was opened last week. The building has been in

course of erection for two years. The style is a mingling of the Tudor and Elizabethan, and it is built with local Shambleway stone and Ham Hill stone dressings. The woodwork is entirely of oak, elaborately carved. The front is half timbered in oak in the upper part, with a surrounding balcony, having oak balusters and balustrade, stone-mullioned windows and red-tiled roof. In the centre of the balustrade of the speech gallery there is to be a handsomely carved panel, which is also intended to ultimately contain a representation of the Lynton arms. The building has a frontage of 80ft. and a depth of 75ft. and is built exactly due east and west. A sun-dial is placed over the main gable of the highly ornate semi-elliptical porch entrance, from which a few broad steps lead to the vestibule in the front centre of the building. From the entrance hall a grand oak staircase, 12ft. wide, afterwards dividing into two sections, leads to the music hall on the first floor. The ceiling over the staircase is elliptical-shaped, with heavy moulded oak beams and cornice and carved corbels. At the head of the staircase are two large entrances into the main hall. Panelled in oak throughout, with richly ornamented and elaborately carved girders, this hall extends the whole length of the building, measures 72ft. by 34ft., and will seat over 500 persons. A platform with oak front is erected at the east end, with retiring room. The roof is an elaborately carved open-timbered one, with cornices and wainscot panelling in oak. The five oak trusses, with curves throughout their length, add to the appearance. A spring floor for dancing is added. There are six exits from this main hall, with a special exit leading to the balcony, which runs round the building to the east end and has an external staircase, so that the room can be emptied in three minutes in case of fire. A gallery extends from the front of the balcony immediately above the main entrance. The interiors of the turrets form octagonal bays or ante-rooms (with ribbed oak carved ceilings) leading out from the hall, and are specially designed to give access to the speech gallery and the outside staircase. Leading into the hall near the top entrance is a reception or supper-room, with an irregularly-shaped lobby finished in oak—a very difficult piece of work. Extending across the room at one end is a fine "entertainment" platform, connected with which is a retiring room, lavatory, &c., and private staircase. The various fireplaces will be supplemented by radiators, which (connected with an extensive hot-water arrangement) will heat the various parts of the building. On the left of the vestibule on the ground floor is the Council chamber, surveyor's room, clerk's office, together with cloak room, &c. On the right are the caretaker's rooms and also the recreation and reading rooms for the Working Men's Institute. The floors are fireproof and doors open outwards. The building is electrically lighted throughout. To prevent damp or rain from driving through, the external walls are doubled throughout. The main chimney shaft is carried through independent of the outer walls, and ventilation is effected by hidden electric fans. Almost throughout the flooring is of oak blocks, while most of the doors are in oak. The various doors possess specially-made locks and a number have brass lever handles. At the rear of the property are located police offices and cells. The grounds will probably be laid out with fountains, &c. The architects of the building are Messrs. Reed and Macdonald, of Bond Street, London. The erection has been carried out by Mr. Bob Jones, of the local firm of Messrs. Jones Brothers.

Saltney.—The foundation stone of the new Primitive Methodist Schools at Saltney was laid last week. The site is in Hawarden Road. It is not intended at present to proceed with the chapel, although the foundations have been put in, and the plans show a building 60ft. by 40ft., which will be capable of accommodating 400 worshippers. For the present, however, the erection of a new schoolroom 45ft. by 30ft., with five class rooms, which together will accommodate 300 children, is being proceeded with. The school is estimated to cost £750, and the site has cost £103. The architect for the new buildings is Mr. Hallam, of London, and the contractor Mr. Joseph Challinor, of Saltney.

Trowbridge.—The design illustrated on this page was submitted in a recent competition for Technical Schools at Trowbridge. The materials proposed to be used were coursed rubble with ashlar dressings for the walls and green Westmoreland slates for the roof. Mr. M. Starmer Hack, of London, W.C., was the architect.



DESIGN FOR TECHNICAL SCHOOLS AT TROWBRIDGE. M. STARMER HACK, ARCHITECT.

Keystones.

Three stained-glass windows and a memorial brass have been erected in the chancel of Clonfert Cathedral.

An Infectious Diseases Hospital at Dewsbury is being erected at an estimated cost of £23,000. Mr. G. A. Fox is the architect.

A new Church House at Hungerford, the gift of Sir W. G. Pearce, was opened recently. The building is to be used for lectures, concerts, &c., and there is a club-room for men of the town. Mr. Blomfield is the architect.

A new Church at Elland is being erected. It is to be in the Early English style, in accordance with plans prepared by Mr. G. H. Fellowes Prynne. It will, when complete, afford seating accommodation for 800 adults, and it is expected to cost £14,000, but the execution of the full scheme is not contemplated for some years. The part now to be proceeded with will accommodate about 400 persons, entailing an outlay of between £7,000 and £8,000. Toward this amount £4,000 has already been raised.

A Discovery of Early Remains in London.—The City authorities lately determined that excavations should be made under the old wall at the rear of St. Giles's Church, Cripplegate, to determine whether the old mediæval bastion there existing covered any remains of the old Roman bastion supposed to have existed thereabouts. The first excavation has brought to light about 7ft. of a wall of bastion that probably dates from 1648, about 5ft. below the level of the churchyard, which is about 16ft. below the street level. The average height of the early wall was from 25ft. to 30ft. An old brick drain shows that the whole ground has been previously disturbed.

The new Church of St. Gabriel, Willesden Green, was struck by lightning during the severe thunderstorm of July 27th. The roof was set fire to and damage done to the extent of £2,000, which is fortunately covered by the insurance. The church was not complete when opened, and as the present accommodation is not sufficient, while the new roof and new floor are being provided it would be a favourable opportunity to effect the contemplated enlargement. The present accommodation is for 600 persons, and the enlargement will provide for a thousand. About £5,000 is needed to complete the church.

The Cambrian Archæological Association last Tuesday week visited Morlais Castle ruins, where the foundations of a Roman camp have been excavated, and Llancaiach House. Mr. William Morgan (Dowlais) read a paper on Morlais Castle, and Mr. T. H. Thomas (Cardiff) read a paper by Mr. C. H. James on the Roman station at Gelligaer. The various points of interests were described by Mr. J. Ward, Cardiff. The foundations of the Roman station now exposed at Gelligaer were looked upon as those of one of the earliest Roman stations in Britain. In the same neighbourhood a cup stone was visited in a field. The stone is a large one, filled with curious hollows. The address prepared by Mr. Charles Wilkins upon Llancaiach House set forth that this mansion of the Tudor era was stated by Mr. George Clark to be one of the most complete and curious domestic remains in the county. On Wednesday visits were paid to St. Tydvil's Church, Merthyr; Llantrisant Castle ruins and church. On Thursday the following places of interest in Llantrisant and neighbourhood were visited:—Beddygwyddel, an ancient cross formed in turf; Vedw Hir; Ystradfellte, and Castell Coch, a paper on which was read by Colonel W. L. Morgan; and Aberpergwm House. On Friday visits were paid to Cardiff, where the castle, the remains of a Roman camp, Black Friars Monasteries and St. John's Church were viewed. Caerphilly Castle, Merthyr, was also visited, while another portion of the party went over Llandaff Cathedral. The Rev. G. Hartwell Jones gave an address on "Some Parallels between Celtic and Indian Institutions."

The death is announced of Mr. W. J. Wilson, Director-General of Reservoirs in Egypt.

An Izaak Walton Memorial is to be placed in Winchester Cathedral. It will take the form of a stained-glass window, overlooking Walton's grave in Prior Silkstede's Chapel.

New Schools at Bridlington.—The Bridlington United District School Board have instructed Mr. J. Earnshaw, M.S.A., of Bridlington Quay, to prepare designs for Central Schools to accommodate a thousand children.

The Spire of Great Marlow Parish Church has been restored at a cost of between £2,000 and £3,000. The work was carried out in consequence of it being struck by lightning and additionally damaged by a violent whirlwind.

A Memorial Window has been fixed at the east end of the morning chapel in Marsden Church. The window has been made by Messrs. Burlison and Grylls, of London. A Southwell brass lectern has also been added to the church.

Whitgift Hospital, Croydon, is again threatened with demolition in order to widen George Street. This venerable institution, founded by Archbishop Whitgift in the reign of Queen Elizabeth, was established for the maintenance of a warden, a schoolmaster and 28 men and women, or as many more, under 40, as the revenue will admit. The matter was referred to in our issues for October 5th, 1898, and June 21st, 1899. Illustrations also appeared in the former number.

A New Temperance Institute at Newcastle.—The North of England Temperance League, Newcastle-on-Tyne, are endeavouring to raise £6,000 to enable a Temperance Institute and Memorial Hall to be erected at the corner of Rutherford Street and Westgate Road. The site is 779 square yards in area. Mr. Guy Wilfred Hayler, architect, has prepared plans for a three-storey building containing offices, a small hall and a large hall capable of holding 1,000 persons.

Glasgow and West of Scotland Technical College.—The main objects of this college are to afford a suitable education to those who wish to qualify themselves for following an industrial profession or trade and to train teachers for technical schools. The institution was founded in 1886. We have lately received a copy of the Calendar for the 1900-1901 session, comprising more than 300 pages of information about the college.

The Improvement of Ludgate Hill Station.—The L.C.C. recently asked the City Corporation for their views on an application for the erection of a kiosk and a block of sixteen shops, with rooms over, in the forecourt of Ludgate Hill Station. The Corporation, however, are pressing the joint railway companies to enlarge and better their station accommodation at Ludgate Hill, and they feared the proposed buildings might hinder these improvements; they have, therefore, declined to consent to the application.

Extensions at Woolwich.—The war in South Africa has suggested the desirability of enlarging the Royal Arsenal and Dockyard at Woolwich. The ancient building slips are now being demolished to meet the demand for increased storage of war material, while the Royal Arsenal is extending its proportions eastward, where additional powder magazines and danger buildings are being erected. On land in Plumstead Marshes, next to the Government works, Messrs. Greenwood and Batley, ammunition manufacturers, of Leeds, contractors for the supply of ball cartridge to Government, are erecting an extensive factory.

The Competition for Improvements at East Bay, Dunoon.—The premiums—£100, £50, and £25—have been given to (first) Messrs. Wardlow and Millar, 109 Bath Street, Glasgow, (second) Mr. James More, junr., 13 Drummond Place, Edinburgh, and (third, divided) Mr. C. J. M. Mackintosh, burgh surveyor, Dunoon, and Messrs. Wylie and Blake, 134 St. Vincent Street, Glasgow. The twenty-three designs sent in will be on view to the public on the 24th and 25th inst. in the Burgh Hall.

Mr. Arthur Tooth died last week at the age of 72. He was the founder of the firm of Tooth and Sons, dealers in works of modern artists.

The Competition for a new Central Railway Station at Melbourne, Victoria, has been decided in favour of Messrs. James Fawcett and H. P. Ashworth, who have taken the £500 prize.

St. James's Church, Northampton, has been extended by the addition of two bays to the nave, north aisle, baptistery, and vestries, giving accommodation for 300 persons, at a cost of £2,100.

The Temple Church suffered in the recent gales: the only stained glass window left in the ancient round tower of the church was loosened, with the result that the upper part of the glass fell out and was destroyed. Its restoration will be carried out as soon as possible.

The Banister Fletcher Bursary has been awarded to Mr. Arthur Stratton, A.R.I.B.A. The bursary has been founded in memory of the late Professor Banister Fletcher to promote the study of seventeenth and eighteenth century architecture in London. Mr. Stratton has made a special study of work of this period, one of these studies being the work of Wren, published in article form in THE BUILDERS' JOURNAL for November 18th, 25th, and December 2nd, 1896.

St. Margaret's Church, Sotterley, has been renovated. The church is chiefly famous for its ancient chancel screen of carved oak, which is said to be 500 years old, but the church itself can scarcely be of that age, though Domesday Book records the existence of a flourishing village with a church in the eleventh century. The work of repair has been proceeding during the past two years. A new oak roof and pulpit and two stained windows have been erected.

The Electric Lighting of St. Paul's Cathedral—Although progress is being made with the work of installing the electric light at St. Paul's Cathedral several months must elapse before the public will have the opportunity of seeing the interior lit by electricity, for the laying of the large number of wires required is a business which takes a long time. Although St. Paul's will be the largest ecclesiastical building illuminated by electricity in this country, St. Matthew's, Brixton, claims the distinction of being the first place of worship so lighted in England. The installation there took place in 1882.

Electricity for Melbourne.—The Victoria Light, Heat and Power Company is the name of a company just formed in Melbourne, Australia, for the purpose of supplying electric current for lighting, traction and power in the suburbs of Melbourne within a radius of ten miles. It is estimated that a capital of £1,400,000 will be required for the undertaking. It is proposed to supply power for driving the factories in the metropolitan area. The tramway project includes a tunnel under the Yarra to cost nearly a hundred thousand pounds, and the electric lines are to be taken across the Williamstown railway line.

A new Die for Society of Arts' Medals.—In the last council report of the Society of Arts it was mentioned that it had been found necessary to prepare a new die for the society's medals, a slight flaw having developed itself in the die which has been used for striking the medals since the year 1863, when the Prince of Wales became president. His Royal Highness's head appears on the new medal, and is a likeness of himself at the present time. In accordance with his desire the execution of the new die was entrusted to Mr. Emil Fuchs, who had previously been very successful in the preparation of a medallion portrait of the Prince. Mr. Fuchs has now prepared the die which will be used in future for the society's medals. No change has been made in the reverse. The first medals to be struck from the new die will be those awarded for papers during the past session, which will be presented to the recipients by the chairman at the opening meeting of the next session in November.

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ARCHITECT'S ASSISTANT REQUIRED, with good general knowledge of building construction. Salary 2½ to 3 guineas.—Apply, by letter, to C. J., 32 Bedford Row, W.C.

BUILDER'S ESTIMATING CLERK WANTED; measuring up, assist general routine; must be thoroughly reliable, early riser; permanency.—Apply, stating age, wages required, references, &c., to BUILDER, Box 1,451, BUILDERS' JOURNAL Office.

BOROUGH of HARROGATE.—ENGINEERING ASSISTANT.—The Harrogate Corporation require the services of an energetic Engineering Assistant; salary £90 per annum. Applicants must be accurate surveyors and levellers and good draughtsmen, and possess a knowledge of building construction. Experience of the work of a municipal surveyor's office is also desirable. Applications, stating age and qualifications, together with copies of two testimonials (which will not be returned), to be sent to me, endorsed "Engineering Assistant," not later than Friday, August 31st. Canvassing will disqualify.

F. BAGSHAW, Borough Engineer.

Municipal Offices, Harrogate,
August 15th, 1900.

JUNIOR CLERK (good) WANTED at once for Builder's Office, well up in all office routine. Shorthand and typewriter preferred. — Apply, stating age, abilities, and wages required, to LAURANCE SEAGER, Contractor, Sittingbourne.

APPOINTMENTS WANTED.

AN EXPERIENCED YOUNG MAN aged 24 requires SITUATION as Clerk and Bookkeeper. Highest references.—W. F. P., 30 Corrinne Road, Tufnell Park, N.

ADVERTISER seeks EMPLOYMENT in any Business where a knowledge of Drawing and Photography would prove useful. Moderate salary.—Address, E. D., 83 Albany Street, N.W.

ARCHITECT'S ASSISTANT (25 years), just out of articles, seeks ENGAGEMENT; good draughtsman, surveying, and levelling. — Box 1,452, BUILDERS' JOURNAL Office.

FOREMAN, DISENGAGED; thoroughly practical and experienced in the management of large sawing, moulding and joinery works, buying, conversion of timber and general office work. First-class references.—Box 1,442, Office of THE BUILDERS' JOURNAL.

GENERAL FOREMAN seeks RE-ENGAGEMENT. Good and varied experience. Sober and trustworthy. Good manager of men. Carpenter and joiner by trade. Excellent references.—Apply to T. W., 50 Ingelow Road, Queen's Road, Battersea.

GENERAL FOREMAN seeks RE-ENGAGEMENT. Thoroughly practical in all branches. Good manager of men. Trade, carpenter and joiner. Good references and testimonials.—E. H., 18 Linden Road, Littlehampton, Sussex.

GENERAL FOREMAN, disengaged on 26th August, WANTS JOB; age 34 years; thoroughly practical in all trades; 10 years' London experience as General Foreman; almost an abstainer; carpenter and joiner; references from employers; would take job, new or alterations, piecework labour only, in all trades.—Box 1,463, BUILDERS' JOURNAL Office.

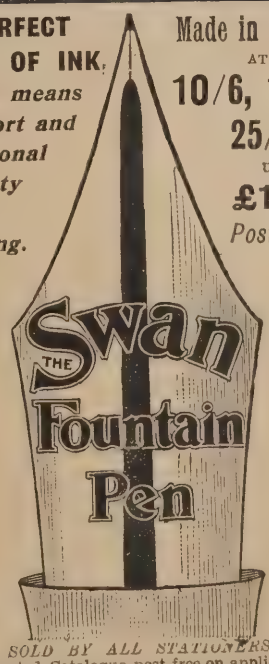
JUNIOR ASSISTANT wants a SITUATION in Architect's office. Recently completed four years' apprenticeship.—T. B. WAIN, The Limes, Heather, Ashby-de-la-Zouch.

PAPERHANGER requires a Builder's or Decorator's work (piecework). — G. W. HARRIS, 43 Leopold Road, Willesden, N.W.

TO BUILDERS. — WORKING FOREMAN (Bricklayer). Experienced in all branches, good references, seeks RE-ENGAGEMENT.—Address, A. HALL, 14 Fairlawn Park, North Terrace, Sydenham.

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3. That notice of the accident be given to the Corporation guaranteeing this insurance within seven days of its occurrence.
4. That death result within one month from the date of the accident.
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Trade and Craft.

Stable and Farm Fittings.

Messrs. Oates and Green, Limited, of Halifax, send us a copy of their new catalogue of stable and farm fittings. These are notable for their sanitary nature and cheapness, being made in highly-glazed "Nalethric" fireclay. Horses and cattle nearly always contract disease from infected water or food, or from contact with an infected manger or utensil. "Nalethric" ware being so highly glazed is one of the best materials to use, as it gives no lodgment for germs and can be easily washed down. Messrs. Oates and Green also supply brackets and fasteners for mangers. One of these fasteners, the "Give and Take," is specially ingenious: it consists of a leather belt working on two pulleys, with a weight attached, so that when the horse draws at the chain the weight gives and he can move off to some distance, while as he approaches the manger the weight draws up the chain, preventing his legs becoming entangled. The combined water channel and feeding trough supplied by the firm ensures a constant supply of good water, and prevents any deposit of slime or dirt; there are no spaces for food to collect and become sour or for vermin to harbour, and no projections to injure the cattle. The pump troughs and cisterns made in "Nalethric" fireclay, although primarily intended for farmyards or pastures, are now largely used for feed cisterns to baths in place of the old insanitary wooden lead-lined cisterns. In the catalogue illustrations and particulars are also given of corner mangers; niches for water supply; stable and paving bricks; cattle troughs, cake troughs, continuous feeding troughs, pig and poultry troughs; a pig-feeding shoot specially shaped to prevent the food falling beyond the trough or becoming stuck fast; a patent ventilator for roofs of stables, cow-houses and farm buildings; and an economiser fire-grate and chimney-piece in glazed ware. The London office of this well-known firm is at 27 Chancery Lane, W.C.

Sanitary Fittings for Hospitals.

Messrs. Doulton and Company, Ltd., of Lambeth, have just issued a new edition of their catalogue of sanitary specialities for hospitals, &c. In this branch of sanitation fresh improvements are constantly being made and anyone called upon to specify this class of work should make a point of obtaining a copy of this catalogue. The best water-closet for hospital and lunatic asylum use is undoubtedly one fixed above the floor, to allow it to be kept clean, and this form is almost as necessary for workhouses and offices. The specimens of such closets illustrated in this catalogue are carried on strong iron supports, which are covered by the pottery instead of being built into the wall. This latter method is a common defect, for in case of breakage a new closet cannot be fixed without damaging the wall. In regard to baths, it was for many years the practice to treat cast-iron baths with metallic enamel, burnt on at a high temperature. To avoid the defects of enamelling, porcelain baths were largely in demand, but they were open to objections on the score of weight, clumsy appearance and chill to the bather through the material taking some time to warm. Messrs. Doulton have, with the object of remedying these defects, introduced a vitreous enamel coating for iron baths. The enamel is applied at a great heat and stands wear. It has also been found possible lately to enamel the baths both inside and out. An anti-splash rim is a good thing to have on a bath: this rim is not an overhanging piece fixed on a flanged edge, which would necessitate a joint and space difficult to keep clean, but the roll is cast on the bath. The baths on wheels are especially commendable for bedridden patients. The lavatories and sinks for operating rooms are arranged with treadles for working both valves and wastes. The catalogue also contains illustrations and particulars of sinks, cast-iron wash tubs, steeping tubs and mortuary and post-mortem tables: it is extremely well got up, is well printed, and has a pleasing green wrapper.

The Statue of Balzac, on which Falguière was engaged at the time of his death, is being completed under the supervision of M. Bouillot, one of the sculptor's most talented pupils. The statue was already in an advanced state when Falguière died. The work that remains to be done is slight, and the statue will be ready to occupy the place allotted to it in the Palais Royal before the end of the year. The erection of the statue is due to the initiation of the Société des Gens de Lettres, which gave the commission to Falguière after refusing to accept the endlessly-discussed Balzac executed by Rodin.

TENDERS.

Information from accredited sources should be sent to "The Editor." Results of tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the Work.

CHATHAM.—For alterations and additions to St. Bartholomew's Hospital, Chatham. Mr. Edwin T. Hall, F.R.I.B.A., architect, 57 Moorgate Street, London, E.C.:—

Holland & Hannen	£14,908	J. H. Harris	£12,929
E. Lawrence & Sons	14,695	C. E. Skinner	12,598
Holloway Bros.	13,950	G. E. Wallis & Sons	12,520
Foster & Dicksee	12,945	West Bros.	12,249

Plumbing Work, &c.

Doulton & Co., Ltd.	£1,177	Dent & Hellyer	£1,074
G. Jennings	1,148		

FETCHAM PARK, LEATHERHEAD (Surrey).—For drainage works, for Mr. J. Barnard Hankey. Mr. A. J. Hardwick, surveyor, Eagle Chambers, Kingston-on-Thames. Quantities by Mr. Ernest R. Babbs, 48 Bishopsgate Street Within, E.C.:—

	Sewage disposal works.	Sewers.	Total.
Steven Kavanagh	£502 11 0	£791 7 6	£1,298 18 6
Ross, Wilks, and Crabtree, Shipley, Yorks*	427 12 6	678 19 0	1,101 12 6

* Accepted.

HULL.—For the erection of three blocks of dwellings, Great Passage Street, for the Corporation. Mr. J. H. Hirst, City Architect, Town Hall, Hull:—

Jackson & Sons	£11,858	F. Beilby	£10,800
H. Kaye	10,767	G. Houlton	9,960
C. Greenwood	10,694	M. Harper	9,874
H. Moody	10,118	T. Goates*	9,750

* Accepted. [All of Hull.]

LONDON.—For repairs and decorations at "The Albion" Public House, Stoke Newington, London, N. Messrs. Fordisham and Herbert Riches, architects, 3 Crooked Lane, King William Street, E.C., and Bromley-by-Bow, E.:—

J. & W. Inkpen	£645	Sheffield Bros.	£540
Fisher, Finn & Co.	607	T. Dartnall	530

* Accepted.

LEICESTER.—For the erection of a chimney-shaft and refuse-destructor buildings, West Humberstone, for the Corporation. Mr. E. G. Mawbey, C.E., Town Hall, Leicester:—

Contract No. 1.—Chimney Shaft.

Needham Bros.	£2,899 5 0	Moss & Son, Ltd.	£1,814 13 4
Bradshaw Bros.	2,380 4 6	Thomas Herbert	1,756 0 0
Myles & Warner	2,173 6 1	Leicester Builders, Ltd.	1,746 0 0
A. & W. Chambers	2,000 0 0	Johnson & Son	1,649 0 0
Williamson & Co.	1,876 11 11	Thos. Smart, Nottingham*	1,500 0 0
Herbert & Sons	1,850 16 10		
Main, Kendall & Main	1,823 10 0		

Contract No. 2.—Destructor Buildings.

Geo. Duxbury	£5,353 10 3	Johnson & Son	£4,726 11 4
Bradshaw Bros.	4,961 0 0	Needham Bros.	4,609 11 0
Leicester Builders, Ltd.	4,951 0 0	Herbert & Sons	4,549 15 8
A. E. Tilley	4,914 17 8	Williamson & Co.	4,463 13 9
Thos. Herbert	4,900 0 0	Moss & Son, Ltd.	
Main, Kendall & Main	4,895 7 0	Loughborough*	4,440 15 11

* Accepted.

ROEHAMPTON.—For residence. Mr. A. J. Hardwick, architect. Quantities by Mr. E. R. Babbs, 48 Bishopsgate Street Within, E.C.:—

Marriage & Witherington	£1,475	W. H. Lorden	£1,288
Gaze & Son	1,386	Kelsey & Sons, Chessington*	1,146

* Accepted.

SOUTHBOROUGH.—For the erection of school buildings, High Brooms. Messrs. H. H. & E. Cronk, architects, 4 Mount Ephraim Road, Tunbridge Wells:—

Bowman & Sons	£1,920 0 0	Strange & Sons	£1,720 18 0
J. Jarvis	1,821 14 0	J. N. Jeffery	1,692 0 0
Martin & Co.	1,805 0 0		

ST. ALBANS.—For the erection of a detached residence, Manor Road, St. Albans, for Mr. A. E. Hancock. Mr. S. Doddimeade Edmunds, architect, 28 Victoria Street, St. Albans, and London.

Miskin & Sons	£1,450	J. T. Bushell	£1,060
Goodchild & Sons	1,450	E. Dunham*	1,055
Boff Bros.	1,002	[All of St. Albans.]	

* Accepted.

WEST HARTLEPOOL.—For the erection of banking premises, Church and Lynn Streets, for the Yorkshire Penny Bank. Mr. J. Garry, architect, 47 Church Street, West Hartlepool. Quantities by Mr. Geo. Bell, 13 Westgate Road, Newcastle:—

Leeder & Son	£6,223	Watt Bros., West Howe & Co.	£4,896
	5,089	Hartlepool*	

* Accepted, exclusive of fittings, which are of polished teak.

NORTHFLEET.—For the erection of new schools at Old Dover Road, Northfleet, for the Northfleet School Board. Mr. S. I. Adams, F.I.S.E., architect, Weston Chambers, Southend-on-Sea:—

	Schools.	Pavings, &c.	Caretaker's house.	Total.
Foster	£10,158 0 0	£4,760 0 0	£947 0 0	£15,855 0 0
Beal & Hubbard	8,242 5 4	3,692 2 3	728 19 3	12,573 6 10
Davis & Leaney	8,100 0 0†	3,700 0 0	—	11,800 0 0
Davey Bros.	8,075 0 0†	2,955 0 0	—	11,030 0 0
Dupont & Co.	7,263 10 0	2,802 0 0	661 10 0	10,787 0 0
Multon & Wallis*	7,321 0 0	2,840 0 0	634 0 0	10,795 0 0

* Multon & Wallis's tender has been accepted for schools, £7,321; boundary walls, £931; latrines, £329; drainage and filtering tanks, £554); total, £9,135. † This includes caretaker's house.

CURRENT PRICES.

FORAGE.

		£	s.	d.	£	s.	d.
Hay, best	per load	4	0	0	4	7	6
Sainfoin mixture	do.	3	10	0	4	10	0
Clover, best	do.	4	5	0	5	0	0
Beans	per qr.	1	3	6	—		
Straw	per load	1	8	0	1	13	0

OILS AND PAINTS.

Castor Oil, French	per cwt.	1	12	1	—		
Colza Oil, English	do.	1	10	3	—		
Copperas	per ton	2	0	0	—		
Lard Oil	per cwt.	1	16	6	—		
Lead, white, ground, carbonate	do.	1	2	10	—		
Do. red	do.	1	0	4½	—		
Linseed Oil	do.	1	13	6	—		
Petroleum, American	per gal.	0	0	6⅜	0	0	6¾
Do. Russian	do.	0	0	6½	0	0	6¾
Pitch	per barrel	0	8	6	—		
Shellac, orange	per cwt.	2	19	0	3	0	0
Soda crystals	per ton	3	0	0	3	2	6
Tallow, Town	per cwt.	1	4	3	1	8	0
Tar, Stockholm	per barrel	1	6	0	—		
Turpentine	per cwt.	1	7	9	—		

METALS.

Copper, sheet, strong	per ton	86	0	0	—		
Iron, Staffs., bar	do.	10	0	0	11	10	0
Do Galvanised Corrugated sheet	do.	13	0	0	—		
Lead, pig, Spanish	do.	17	15	0	—		
Do. do. English common brands	do.	18	2	6	—		
Do. sheet, English, 3lb. per sq. ft. and upwards	do.	20	0	0	21	0	0
Do. pipe	do.	22	0	0	—		
Nails, cut clasp, 3in. to 6in.	do.	12	0	0	13	0	0
Do. floor brads	do.	11	15	0	12	15	0
Steel, Staffs., Girders and Angles	do.	8	10	0	9	0	0
Do. Mild Bars	do.	9	7	6	9	15	0
Tin, Foreign	do.	141	10	0	142	0	0
Do. English ingots	do.	144	10	0	145	0	0
Zinc, sheets, Silesian	do.	23	10	0	—		
Do. do. Vieille Montaigne	do.	24	5	0	—		
Do. Spelter	do.	19	10	0	19	17	6

TIMBER.

SOFT WOODS.

		£	s.	£.	£	s.	d.
Fir, Dantzic and Memel	per load	3	0	0	4	0	0
Pine, Quebec Yellow	do.	4	7	6	6	0	0
Do. Pitch	do.	3	6	0	3	11	0
Laths, log, Dantzic	per fath.	4	10	0	5	10	0
Do. Petersburg	per bundle	0	1	1½	—		
Deals, Archangel 2nd & 1st	per P. Std.	12	15	0	18	0	0
Do. do. 4th & 3rd	do.	13	5	0	—		
Do. do. unsorted	do.	11	0	0	12	10	0
Do. Riga	do.	6	15	0	8	10	0
Do. Petersburg 1st Yellow	do.	12	15	0	15	5	0
Do. do. 2nd „	do.	10	15	0	13	15	0
Do. do. Unsorted „	do.	8	15	0	13	0	0
Do. do. White	do.	11	5	0	—		
Do. Swedish	do.	13	5	0	16	15	0
Do. White Sea	do.	13	5	0	17	15	0
Do. Quebec Pine, 1st	do.	13	15	0	23	15	0
Do. do. 2nd	do.	18	15	0	—		
Do. do. 3rd &c.	do.	9	0	0	9	15	0
Do. Canadian Spruce, 1st	do.	10	10	0	11	15	0
Do. do. 3rd & 2nd	do.	7	5	0	9	10	0
Do. New Brunswick	do.	7	5	0	8	0	0
Battens, all kinds	do.	8	10	0	11	0	0
Flooring Boards, 1in. prepared, 1st	per square	0	12	6	0	13	0
Do. 2nd	do.	0	8	0	0	9	3
Do. 3rd &c.	do.	0	9	6	—		

HARD WOODS.

Ash, Quebec	per load	3	17	6	4	10	0
Birch, Quebec	do.	3	12	6	3	17	6
Box, Turkey	per ton	7	0	0	15	0	0
Cedar, 1in., Cuba	per ft. sup.	0	0	3	0	0	3½
Do. Honduras	do.	0	0	3⅜	—		
Do. Tobasco	do.	0	0	3½	—		
Elm, Quebec	per load	0	12	6	5	10	0
Mahogany, Average Price for Cargo, Honduras	per ft. sup.	0	0	4⅛	—		
Do. African	do.	0	0	4⅞	—		
Do. St. Domingo	do.	0	0	6⅞	—		
Do. Tobasco	do.	0	0	4⅜	—		
Do. Cuba	do.	0	0	4⅞	—		
Oak, Dantzic and Memel	per load	3	15	0	5	7	6
Do. Quebec	do.	4	12	6	5	0	0
Teak, Rangoon, planks	do.	8	10	0	14	10	0
Wainscot, Riga (Baulk)	do.	3	15	0	5	15	0
Do. Odessa Crown	do.	3	15	0	5	15	0
Walnut, American	per cub. ft.	0	1	8	0	3	2

Building Construction Classes in Glasgow.—The evening classes in building construction and drawing at the High School, promoted by the School Board of Glasgow, open on Monday, September 3rd. The courses of lectures are given by Mr. D. Bennett Dobson, architect, on Tuesday, Wednesday and Thursday between 7 and 9 p.m., and instruction in drawing between 6.45 and 9 p.m. A special feature of the session will be monthly visits to inspect the principal buildings of note in course of erection, and works in progress showing the manufacture of material in and around Glasgow. The conditional fee for the session of eight months is 7s. 6d.

New Patents.

These patents are open to opposition until September 25th.

1899.—Artificial Stone.—14,612. W. OWEN, Pontsarn, Woking, Surrey. This process for the manufacture of artificial stone consists in slaking the mixed materials (say, lime and sand or marble dust) with hot water, moulding them under pressure, and hardening and drying the moulded mass simultaneously by superheated steam.

Tiles, Slabs, &c.—15,102. J. C. SELLARS, 63 Bridge Street, Birkenhead. According to this invention tiles, slabs, &c., are made from slate waste (such as exists in slate quarries), which is powdered, mixed with silicate of soda, moulded and dried. Or Portland cement or lime may be added to the mixture for use as a fireproof cement.

Venetian Blinds.—16,913. S. SMITH, 16 Higher Chatham Street, Chorlton-on-Medlock, Manchester. The slots in the laths are cut longitudinally and not transversely and a tape runs through them instead of a cord. The tapes (one at each side) wind on a spring roller fixed at the top of the window. A cord is wound round one end of this roller and when it is pulled the blind is lowered, whilst on releasing it the blind is drawn up by the spring.

Water-cocks and Hydrants.—21,929. W. R. SAGE, 48 Blackhorse Lane, Ipswich. This invention consists of an ordinary plug cock with a top chamber fitted with a semi-plug that is fixed to the plug proper. By this means all the water that remains in the stand or supply pipe is drained away and the chances of the water becoming frozen are reduced.

1900.—Door Openers.—5,838. E. CONSENTIUS, 36 Grassistrasse, Leipzig, Germany. By this invention a door may be opened with the foot; its use, for example, may be when a person has his hands full and wants to go from one room to another without putting down what he is carrying. Attached to the side rail of the door is a rod which works up and down between guides and has a projecting portion or pedal at its lower end. Its top end is connected with the door handle by a chain. On pressing down the rod with the foot the latch is opened or the bolt pulled back. The rod is returned to its original position by a spring.

Feeding Apparatus for Brick-making Machines.—10,490. H. ALEXANDER, Queen's Works, Water Lane, Leeds. The object of this invention is to so regulate the material as it passes into the pug-mill or hopper that a steady supply is maintained; also to cheapen cost by not requiring a man to feed the machine, this being done from an elevator direct. The special feature of the invention is that a cylinder containing a number of moulds in its periphery is revolved transversely across, and in contact with, the open end of the pug-mill, or in front of a ram working in a suitable hopper, which fills the mould as it passes with a dense clot of clay under considerable pressure.

The following specifications were published on Saturday last, and are open to opposition until October 1st. A summary of the more important of them will be given next week. The names in italics within parentheses are those of communicators of inventions.

1899.—15,117, MILLER, dust bins. 15,263, BRITISH THOMSON-HOUSTON CO., LD. (*Rice*), electric lamps. 16,939, ESCH, plates or sheets for ceilings. 16,986, FIELDING AND SMITH, means for securing or staying lead and other pipes. 17,244, VON REINOLTS, preparation or compound to be used as a substitute for white lead in the preparation of paints. 17,272, WEBER, detachable window frame for saving life in case of fire. 18,226, GILMOUR, steam, water and other valves. 18,747, BRITISH URALITE COMPANY, LIMITED (*Imschenetzky*), manufacture of fire-resisting materials. 18,971, LUCAS, gas lamps. 19,089 ROBERTS, ventilating window blind. 19,123, STUART AND EDMUND, machinery for cutting, carving, engraving, rubbing and polishing stone, metal, wood and other materials. 19,134, PORTER AND BISHOP, door hinge. 19,177 BING, grinding, crushing or pulverising machines. 19,318, CHISHOLM, devices for joining together screwed metal pipes. 19,387, HOLT, SEELEY AND KERSHAW, valves. 20,650, PORTWAY AND GRAHAM, jacks or lifting mechanism. 23,525, RUSSELL, metal weather band for the purpose of keeping doors wind and weather tight.

1900.—5,727, TRUDEAU, electric heating and apparatus therefor. 6,576, SCHOU, method of joining up tubes and closing their ends. 7,925, DUCLOUX, process and apparatus for forming the foundations of structures. 9,342, STUMP AND BRUCKER, double-acting spring hinges. 9,633, PICKHARDT, means for connecting stove pipes to chimney and other flues. 10,049, TALBOT, gas producers. 10,244, ROBINSON, air-grate ventilators. 10,297, BEVIER, process of preserving wood. 10,999, LYNGAAS, automatic fire alarm apparatus. 11,118, OLIVER, mitre-cutting machines. 11,193, SKILLMAN, combination sliding and pivoted window sashes. 11,326, BIRTWISTLE, elevators and conveyors. 11,385, BRAY, acetylene gas burners. 11,614, JACOBS, acetylene gas apparatus.

New Companies.

Kent Land Company, Limited.

This company was registered on August 9th with a capital of £2,000 in £1 shares. The first directors are F. G. P. Neve, G. J. Kimmins and F. C. Neve. Registered office: 1 Bank Street, Tonbridge.

Broughton Estate Company, Limited.

This company was registered on August 7th with a capital of £15,000 in £1 shares to acquire and deal with real and personal property and to carry on the business of builders, &c. Registered office: 1 Delahay Street, Westminster.

Cook and Ddol Slate Quarries Company, Ltd.

This company was registered on August 8th with a capital of £12,000 in £1 shares to carry on the business of quarry owners, slate and stone merchants, &c. The first directors are R. Thomas (chairman), J. O. Hughes, G. J. Hughes, O. I. Jones, W. Griffith, S. T. Dixon and E. A. Spencer.

National Solid Peat Fuel Company, Limited.

This company was registered on August 7th with a capital of £5,000 in £1 shares to acquire the business of the Fuel and Brick Drying Syndicate, Limited, including the patents assigned to the said company by A. B. Lennox, and to manufacture and deal in solid peat fuel and other peat products. Registered office: 7 Victoria Buildings, Lowther Street, Carlisle.

British Pure Acetylene Gas Company, Ltd.

This company was registered on August 9th with a capital of £5,000 in £1 shares to carry on the business of manufacturers of and dealers in acetylene gas and other inflammable gas or artificial light, gas, water and general engineers, &c. The first directors (to number not less than three nor more than seven) are R. Ainscough, H. C. Leigh-Bennett and H. L. Smyth.

Crafnant Slate Quarries, Limited.

This company was registered on August 7th with a capital of £10,000 in £1 shares to adopt an agreement with V. Groom, trading as the Crafnant Slate Quarries, and to carry on the business of quarry and mine owners, slate and stone merchants, &c. The first directors (to number not less than three nor more than seven) are to be appointed by the subscribers.

British Silica and Granite Company, Limited.

This company was registered on August 7th with a capital of £7,500 in £1 shares to acquire certain leasehold mines and premises specified in an agreement with W. De Wolf, to crush, win, get, quarry and prepare for market oil, metal, silica, granite, &c. The first directors (to number not less than three nor more than seven) are to be appointed by the subscribers. Registered office: 22 St. Mary's Gate, Manchester.

Bishpool Brick and Tile Company, Limited.

This company was registered on August 11 h with a capital of £15,000 in £10 shares to carry on at Bishpool (Mon.) or elsewhere the business of brick, tile and pipe makers, terra-cotta manufacturers, &c. The first directors (to number not less than three nor more than seven) are T. Ponsford, W. A. Jenkins and J. Davis. Registered office: 30 Stow Hill, Newport (Mon.).

Art Pavements and Decorations, Limited.

This company was registered on August 8th with a capital of £25,000 in £1 shares to acquire the business now carried on by De Grelle, Houdret & Co., and to carry on the business of manufacturers of and dealers in mosaics, marbles and parqueterie, &c. The first directors (to number not less than three nor more than five) are J. Houdret, H. de Grelle-Rogier, C. de Grelle-Rogier and H. E. Carter.

Gallow Hill Glue and Chemical Company, Ltd.

This company was registered on August 11th with a capital of £40,000 in £1 shares to acquire the business of the Gallow Hill Glue and Chemical Company, Limited (incorporated in 1896) and to carry on the business of glue and chemical manufacturers, &c. The first directors (to number not less than three nor more than four) are S. Symington, J. Clark, J. B. Meggitt and H. A. Meggitt.

Millard Brothers, Limited.

This company was registered on July 26th with a capital of £35,000 in £1 shares to acquire the business carried on by O. L. Millard and S. E. Millard, at 123 Houndsditch and at Cutler Street and White Hart Street, Houndsditch, E., as Millard Brothers, and to carry on the business of hardware merchants, &c. O. L. Millard and S. E. Millard are permanent directors, with £750 each per annum. Registered office, 123 Houndsditch, E.C.

Furness Vale Silica and Firebrick Co., Ltd.

This company was registered on August 2nd with a capital of £10,000 in £1 shares to acquire the business carried on at Furness Vale, near Disley, Cheshire, as W. J. Hall and Co., and to carry on the business of quarry owners, miners, lime and stone merchants, &c. The first directors (to number not less than two nor more than five) are H. Harley and W. J. Hall (managing directors). Registered office: Furness Vale, Cheshire.

Priestman Brothers, Limited.

This company was registered on August 9th with a capital of £13,000 in £1 shares to acquire the business of Priestman Brothers, Limited (incorporated in 1889), and to carry on the business of electrical, hydraulic, heat, motive power, water-supply and general engineers, motor-car manufacturers, &c. The first directors (to number not less than two nor more than six) are Sir J. Reckitt, Bart., I. Milner, C. Wardlow, G. V. Maxted, E. Hanger and J. R. Whamond.

Jetley's Wood Structures, Limited.

This company was registered on July 31st with a capital of £100,000 in £1 shares to carry on the businesses of wood merchants and workers, joiners, &c., as constructors of wood pavements, flooring, stairs, and wooden and other structures or buildings; to acquire for that purpose the business, manufactory and property of Messrs. V. and G. Jetley. The first directors (of whom there shall be not less than two nor more than five) are to be elected by the signatories to the memorandum of association—H. Williams, V. Jetley, G. Jetley, M. Griffith, A. G. Schiffs, W. Brett and A. Tibbits.

COMPLETE LIST OF CONTRACTS OPEN.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
	BUILDING.		
Aug. 24	Brighton—Concrete Groyne	County Council	Borough Engineer, Town Hall, Brighton.
„ 24	Carlisle—Houses		G. Armstrong, 24 Bank Street, Carlisle.
„ 24	Southmoor—Offices	Colliery Co., Ltd.	J. W. Rounthwaite, 13 Mosley Street, Newcastle-on-Tyne.
„ 24	Tidworth—Houses	War Department	Royal Engineer, Tidworth House, Tidworth, Andover.
„ 25	Armagh—Floor		Macan Asylum, Armagh.
„ 25	Belfast—House		S. G. Hunter, Surveyor, Belfast.
„ 25	Bingham, Notts.—Additions	School Board	J. P. Dixon, Wheeler Gate, Nottingham.
„ 25	Linlithgow—Academy	School Board	J. G. Fairley, 1 India Buildings, Edinburgh.
„ 25	Lymm, Warrington—Vestries		Wright and Sons, Surveyors, Lancaster.
„ 25	Wakefield—Arcade		G. E. Bolshaw, 189 Lord Street, Southport.
„ 25	West Bromwich—Repairing	Guardians	T. Rollason, Architect, High Street, West Bromwich.
„ 27	Bristol—Cottage	Barton Regis Rural District Council	A. P. J. Cotterell, 28 Baldwin Street, Bristol.
„ 27	Basford, Notts.—Alterations	Guardians	W. V. Betts, Architect, Radford Road, Old Basford.
„ 27	Cardiff—Warehouse	Messrs. T. Owen & Co., Ltd.	J. W. Rodger, 14 High Street, Cardiff.
„ 27	Ford, Devonport—Houses	Mr. Robertshaw	H. G. Luff, 64 Chapel Street, Devonport.
„ 27	London, E.—Public Library	Commissioners of Limehouse Public Library	Messrs. Clarkson, 136 High Street, Poplar.
„ 27	Worksop—Electricity Supply Works	Urban District Council	Surveyor, Town Hall, Worksop.
„ 28	Gravelly Hill, near Birmingham—Building	Guardians of Aston Union	J. North, Union Offices, Vauxhall Road, Birmingham.
„ 28	London, E.—Waiting Room	Shoreditch Vestry	Clerk, Vestry Hall, Old Street, E.C.
„ 28	Devonport—Dwellings	Town Council	Borough Surveyor, 30 Ker Street, Devonport.
„ 28	Rochdale—Windows	Health Committee	Borough Surveyor, Town Hall, Rochdale.
„ 28	Witton, near Birmingham—Machine Shop	Messrs. Byng, Hirst and Byng	T. W. Willard, Architect, Rugby.
„ 29	Clown, Derbyshire—Lock Up	Standing Joint Committee	J. S. Story, County Offices, St. Mary's Gate, Derby.
„ 29	Grimsby—Latrines	School Board	H. G. Scaping, Court Chambers, Grimsby.
„ 29	Teddington—Converting	Urban District Council	M. Hainsworth, Elmfield House, Teddington.
„ 30	London, S.E.—Alterations and Repairs to Workhouse	St. Saviour's Union Guardians	G. D. Stevenson, 13 King Street, E.C.
„ 30	Bridgend, Glamorgan—Ward		Clerk of Works, Angelton Asylum, Bridgend.
„ 30	Bury, Lancs.—Shop Fittings	Co-operative Provision Society, Ltd.	The Society, Knowsley Street, Bury, Lancs.
„ 30	Walker, Northumberland—Culvert	Urban District Council	Council Offices, Church Street, Walker.
„ 31	Belfast—Hospital		W. H. Stephens and Sons, 13 Donegall Square, North, Belfast.
„ 31	Lincoln—Boiler House		W. Watkins and Son, St. Edmond's Chambers, Silver Street, Lincoln.
„ 31	Witton-le-Wear—Church Restoration		Borcham and Morton, 24 John Street, Sunderland.
„ 31	Aldershot—Post Office	H.M. Office of Works	Postmaster, Aldershot.
„ 31	Grangetown, Yorks—House		County Surveyor, Northallerton.
Sept. 1	Donington, Lincs.—Reconstructing Bridge	Holland County Council	L. Starkie, Wellington House, Skirbeck.
„ 4	Marlborough, Wilts—Hall	Corporation	C. E. Ponting, Architect, Marlborough, Wilts
„ 4	Bristol—Foundations	County Council	H. Williams, 24 Clare Street, Bristol.
„ 6	London, S.E.—Public Baths	Lambeth Vestry	A. H. Tiltman, 51 Russell Square, W.C.
„ 6	Camberwell—Offices, Stables, &c.	Vestry	Surveyor, Vestry Hall, Camberwell.
„ 10	Walsall—House	School Board	Bailey and McConnal, Bridge Street, Walsall.
„ 11	Worcester—Engine House	Corporation	T. Caink, Guildhall, Worcester.
„ 17	Cardiff—Law Courts	Corporation	Town Clerk, Town Hall, Cardiff.
„ 17	Richmond, Surrey—Infirmary and Nurses' Home	Guardians	A. J. Wood, 17 The Green, Richmond, Surrey.
	ENGINEERING.		
Aug. 24	London, S.W.—Wiring	Fulham Vestry	C. Botterill, Town Hall, Fulham.
„ 24	Glasgow—Tramways	Corporation	J. Young, 83 Renfield Street, Glasgow.
„ 25	Hanley, Staffs—Boilers	Electric Lighting Committee	J. Lobley, Town Hall, Hanley.
„ 27	Taunton—Reservoir	Town Council	F. W. Roberts, Engineer, Taunton.
„ 27	Axminster, Devon—Cooking Apparatus	Rural District Council	E. A. Pryer, Architect and Surveyor, Axminster.
„ 28	Nottingham—Engines	Water Committee	O. Moore, St. Peter's Square, Nottingham.
„ 28	Warsaw—Telephone Service	Russian Government	Commercial Department, Foreign Office, S.W.
„ 28	Church Stretton, Salop—Reservoir	Water Committee	J. Taylor, Sons and Crimp, 27 Gt. George Street, Westminster, S.W.
„ 31	Stockport—Tramcars	Tramways Committee	J. Atkinson, Borough Surveyor, Stockport.
Sept. 1	Fenton, Staffs—Railway	Leek and Manifold Valley Light Rlwy. Co.	J. Forsyth, Heron's Cross, Fenton, Staffs.
„ 1	East Retford—Sinking Well	Water Committee	J. B. Fenwick, Gas and Water Offices, Retford.
„ 3	Salford—Switchboards	Corporation	Lacey, Clirehugh and Sillar, 78 King Street, Manchester.
„ 3	Worthing—Electric Lighting Plant	Corporation	Burstall and Monkhouse, 14 Old Queen Street, Westminster, S.W.
„ 3	Whitby—Electric Lighting	Urban District Council	Preece and Cardew, 13 Queen Anne's Gate, S.W.
„ 4	Portsmouth—Electric Tramways	Corporation	E. Rotter, Town Hall, Portsmouth.
„ 5	Lisbon—Iron Bridge		Public Works Department, Lisbon.
„ 5	Newtown, Montgomery—Laying Main	Urban District Council	R. W. Davies, Surveyor, Newtown.
„ 7	Madron, Cornwall—Sewerage and Water Supply Works	Urban District Council	F. Latham, Engineer, Penzance.
„ 8	Bradford—Refuse Destructors	Corporation	Mr. McTaggart, Corporation Depôt, Hammerton Street, Bradford.
	IRON AND STEEL.		
Aug. 24	Aberdeen—Rails	Town Council	W. Dyack, Town House, Aberdeen.
„ 25	Aberdeen—Steel Poles	Tramways Committee	J. A. Bell, Cotton Street, Aberdeen.
„ 25	Manchester—Bases	Tramways Committee	J. M. McElroy, Town Hall, Manchester.
Sept. 26	The Hague, Holland—Socket Pipes		M. Nydoff, Noblestreet 18, The Hague, Holland.
	PAINTING AND PLUMBING.		
Aug. 24	Hull—Painting	Corporation	J. H. Hirst, Town Hall, Hull.
„ 27	Leeds—Painting	Corporation	City Engineer, Municipal Buildings, Leeds.
„ 28	Whittingham, Lancs.—Painting	Asylum Committee	Clerk, Asylum, Whittingham.
	ROADS.		
Aug. 24	Aberporth, Wales—Road	Cardigan Rural District Council	D. Davies, Clerk, Quay Street, Cardigan.
„ 26	Alnwick—Materials	Rural District Council	J. Short, District Surveyor, Alnwick.
„ 27	Barnet—Granite and Gravel	Urban District Council	H. W. Poole, Council Offices, Barnet.
„ 27	Stockton-on-Tees—Flagging	Rural District Council	W. Burton, Highway Surveyor, Billingham.
„ 30	Brightlingsea, Essex—Making-up	Urban District Council	Clerk, Council Offices, Brightlingsea.
„ 30	Leamington—Tar Pavement	Corporation	W. de Normanville, Town Hall, Leamington.
Sept. 5	Clacton-on-Sea—Making-up	Urban District Council	A. R. Robinson, Town Hall, Clacton-on-Sea.
„ 6	Clacton-on-Sea—Flints	Urban District Council	A. R. Robinson, Town Hall, Clacton-on-Sea.
„ 11	Egremont, Cheshire—Asphalte Paving	Wallasey Urban District Council	W. H. Travers, Public Offices, Egremont.
	SANITARY.		
Aug. 24	Durham—Sewer	Rural District Council	G. Gregson, Eastwood, Western Hill, Durham.
„ 27	London, E.—Sewers	West Ham County Council	Borough Engineer, Town Hall, West Ham, E.
„ 28	Rochdale—Sewer	Paving Committee	T. T. Platt, Town Hall, Rochdale.
„ 29	Tanfield, Durham—Sewers	Urban District Council	R. Heslop, Surveyor, Burnopfield, R.S.O.
„ 30	Edinburgh—Drains	Magistrates and Council	Borough Engineer, Edinburgh.
Sept. 1	Carrickfergus, Ireland—Sewers	Urban District Council	W. F. Stephens and Son, 13 Donegall Square, North Belfast.
„ 3	Llandaff, Wales—Sewers	Rural District Council	W. Fraser, Council Offices, 35 St. Mary Street, Cardiff.
„ 3	Lower Bebington, Cheshire—Sewerage System	Urban District Council	Belve and Priest, 13 Harrington Street, Liverpool.
„ 5	Leicester—Sewers	Highway and Sewerage Committee	E. G. Mawbey, Town Hall, Leicester.
„ 8	Andenshaw, Lancs—Sewers	Urban District Council	J. P. Wilkinson, 47 Arcade Chambers, St. Mary's Gate, Manchester.
	TIMBER.		
Sept. 1	Hoylake, Cheshire—Timber	Urban District Council	T. Foster, Council Offices, Hoylake.
„ 21	Hull—Timber	Corporation	A. E. White, Town Hall, Hull.

COMPETITIONS OPEN.

DATE OF DELIVERY.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	BY WHOM ADVERTISED.
Sept. 15	Cardiff—Asylum	£105	Borough Engineer, Town Hall, Cardiff.
„ 27	Willington Quay—Store	£10	Secretary, Industrial Society, Limited, Wellington Quay.
„ 30	Devizes—Hospital	£20, £10	O. Sheppard, Clerk to Joint Committee, Devizes.
„ 30	Musselburgh—Town Hall	£26 5s. and £15 15s.	Town Clerk, Council Offices, Musselburgh.
Oct. 30	South Shields—Municipal Buildings	£200, £100, £50	J. M. Hayton, Town Clerk, Court Buildings, South Shields.
No date.	Riviera—Villa for Sir William Ingram	£78 15s., £26 5s., £5 5s.	"Architectural Review."

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August 29, 1900.
No. CCXC.

Effingham House,
Arundel Street,
Strand, W.C.

An Architectural Causerie.

Yatton Church.

Much has been heard of late for and against the restoration of Yatton Church, of plans for completing its ancient spire, and of protests against any such course being taken. To West Countrymen in especial any proposal that would make for the alteration of this characteristic landmark along the Great Western's line to the West of England is hateful, and to those who, not being natives of Somersetshire, are yet familiar with its odd-looking truncated spire, looming weirdly across the meadows a quarter of a mile away as the "Cornishman" express dashes through Yatton Station down the straight line at the speed of sixty miles an hour, the completing of it would so alter the appearance of the church that it would never again seem the same building. The loss of the old aspect of Yatton Church would be as the loss of an old friend to many thousands of travellers, and, if only for their sake and for the sake of keeping unaltered an edifice which has preserved the same "unfinished" appearance for centuries, we should not allow this thing to be done. Doubtless an incomplete spire makes to some good folk an eloquent appeal to be finished; but they are those who suffer from that obsession of orderliness, of balance and completeness, which is rather of the housewifely than intellectual nature. Nothing is to be gained and much is to be lost in any such proposed completion. Much injury was done to the quaint aspect of Cologne Cathedral when, after the lapse of many centuries, its unfinished western tower was completed, about ten years since, to harmonise with the other, and at the same time the picturesquely terrible legend accounting for that long-unfinished tower was shattered. Again, the "matching" of the two western towers of Canterbury Cathedral—a feat accomplished by the destruction of an early Norman tower and the replacing of it by a modern imitation of Perpendicular—is an example of what not to do which might make the Yatton proposals impossible.

The church of St. Mary, Yatton, is of the Decorated and Perpendicular periods, and is a noble specimen of ecclesiastical architecture in that county of noble churches—Somerset. It possesses—for the parish church of a rural village—the unusual feature of transepts. Besides the exquisite details of its architecture, it is interesting to archæologists as containing the altar-tomb of Sir Richard Cradock Newton, Chief Justice of the Common Pleas, who died in 1448, his red-robed effigy showing the Collar of SS., said to be the earliest instance of that knightly decoration known. The spire, the proposed completion of which forms so offensive a feature of the restoration scheme, was, for some unknown reason, never completed, and the cresting which marks its sky-line is contemporary with the rest of the work. The justly-admired south porch is seen in the illustration on this page. C. G. H.

Courts and Courtyards.

A very noble feature in a great building is a fine court or, as it is popularly called, courtyard. Once it was general in England, but its use has gradually dwindled and it is now rare; if introduced it is seldom of much architectural importance. The great pressure upon the ground space of London has driven it away altogether, or reduced it to a mere "well," overshadowed by immensely high walls pierced with the monotonous windows of "flats." Here and there an old inn preserves its "yard"; in the Borough there are still a few examples of this once characteristic English feature left, with open wooden galleries running round—upon these the bedroom doors open. In the yards in ancient times plays were acted; at a later period they were busy and full, and the institution of stage coaches made them scenes of great activity. The architectural effect of galleries enclosing an open court is exceedingly effective, even when nothing more pretentious than painted wood is used; it is far better in more ambitious material, but for this we must go to Italy and Spain. Coeval with the great inns, we have the colleges at Oxford and Cambridge built upon a plan which is wholly dependent for its effect upon the quadrangle; "courts" at Cambridge, "quads" at Oxford, in local parlance, these wide smoothly-turfed spaces are surrounded by buildings mostly of the later Gothic or the earlier Renaissance type; there are no buildings in our country more thoroughly English and racy of the soil. The structure is generally of very moderate elevation; this has the effect of throwing into greater prominence the college hall and chapel, both lofty and very boldly designed; a square tower often covers the porter's lodge and gateway; occasionally a fountain, a statue or other object occupies the centre. The effect of a court is pleasant; it shuts out noise, allows air and light to reach every window and door in fuller measure than would otherwise be possible, and it gives a sense of cheerful seclusion.



YATTON CHURCH. DRAWN BY C. G. HARPER.

In London, however, we are confronted by such difficulties in the matter of height and space that an effective relation between the two is almost impossible, and it is doubtful if this generation will witness the construction of another fine court. Of those that have been spared to us Somerset House contains the finest. The building is very stately when seen from the Thames; the court is entered from the Strand front by a fine triple arch, vaulted; the comparative darkness of this entrance emphasises the light airy spacious-

ness of the quadrangle; the whole structure possesses the great merit moreover of immediately suggesting its purpose to the spectator —that it is a Government office. Here, again, though not so low as at Oxford or Cambridge, the surrounding elevation is of moderate height; the whole is Palladian and built of white stone. It is much to be regretted that its architect, Sir William Chambers, is virtually forgotten; but England does not honour her architects.

In the City, the Royal Exchange is built upon the quadrangular plan and the architectural effect of the court is enhanced by a recessed and arcaded lower storey, under which the walls are being enriched by a series of mural paintings illustrating the history of London.

The Houses of Parliament—or more correctly the Palace of Westminster—include no less than seven courts, one of which contains a valuable relic of the previous building, burnt down in 1834—to wit, a fine Tudor cloister with elaborately vaulted roof. The height of the buildings, however, somewhat detracts from the effect of these courts; a great space within or low buildings running round it is necessary if a quadrangle is to be a cheerful one, and a certain amount of greenery in the shape of turf is indispensable.

A very effective approach court is often formed by enclosing three sides only; sometimes the advancing wings are lower than the main building; examples of this are found in late Tudor and Elizabethan houses, such as Blickling, Charlecote, and Hatfield. Unfortunately they are unknown in London; an opportunity for this form of court was lost when building the Charing Cross Hotel.

The fine court of University College, in Gower Street, designed by Wilkins, was long in this condition; latterly a beginning has been made of a fourth side; time will show if it is to be effective; but the street in any case will be the loser. It seems indeed that, in spite of many improvements, the London of the future will be wanting in some important elements of convenience and beauty, and of these the courtyard is the chief. J. C. P.

The Aim of the Architect.

THE primary aim of the architect should not be to make money, but to produce good buildings; not to make architecture pay at any cost, but to make it pay whilst being beautiful—in short, artistic excellence and not commercial success is the first consideration. Cases are numerous of architects with extensive practices whose work is almost devoid of merit, whilst many of their professional brethren with much smaller practices —perhaps with no practice to speak of—are capable of producing the most praiseworthy designs. It is generally the old fault of the poet and the inventor—the want of practical foresight or everyday adaptability. Themistocles the Athenian said, "I cannot fiddle, yet I can make a small town a great city;" to which Bacon adds, in his sagacious way, that "there may be found those which can make a small State great and yet cannot fiddle; as on the other side there will be found a great many that can fiddle very cunningly, but yet as so far from being able to make a small State great as their gift lies the other way." It needs little ingenuity to apply this to architects. The most successful men are not necessarily the most worthy, yet often the most worthy foolishly neglect to observe and practise the methods that lead to success, then zealously rave at the fickleness of fortune. Therefore let the architect first study and practise his art as an art and afterwards make it as successful a means as he can for obtaining the much-despised, though very necessary, "worldly emolument."

R.

On Reflection.

A Word about Memorials.

AFTER a great man has died and we have read his obituary notices it is pretty certain that someone will promote a scheme for commemorating him with brick or stone. The feeling is a right one—we wish to perpetuate an excellence, a virtue or a standard of attainment; but the danger lies in choosing the wrong memorial or in doing something not in accord with the dead man's principles. We have a case of this sort in the scheme now being put forward for erecting a portrait medallion of John Ruskin in Westminster Abbey, at a cost of £500. With such a proposal we cannot sympathise, because, in the first place, it is contrary to Ruskin's views, and, secondly, because it will only add one more to the number of unsuitable monuments in the grand old Abbey. These monuments disfigure the place; they are excrescences; their white marble is in total discord with the solemn colour of the columns and the walls; and they spoil the lines of the building. Ruskin himself thought so, strongly disliking these "incoherent fillings," and, after his own extreme manner, he for this reason said very little about Westminster Abbey in his writings. If anyone wishes to see the difference between a building filled with inappropriate monuments and statuary and a building where the choice of material has been better considered, producing a more harmonious result, he has only to visit the Abbey and then to go on to St. Paul's Cathedral, for, whatever may be said of individual monuments in the latter building, the total effect is much better than that at Westminster. Mr. Sydney C. Cockerell suggests that the most suitable memorial to Ruskin would be the purchase of a beautiful cliff or hill-top, secure against the encroachments of the jerry builder. "The chain once broken memorials of this kind might become the fashion, and, greatly to the public gain, might take the place of the costly modern tombs and discordant windows at which we are so often made to shudder." As the dead master thought these were the most complete and special ways of wasting money, and that "respect for the dead is not really shown by laying great stones on them to tell us where they are laid, but by remembering where they are laid without a stone to help us," Mr. Cockerell's suggestion, or something like it, is a good one in this particular case, though we have not any wholesale objection to all monuments; rather we favour them, provided they are worthy and are in perfect harmony with their surroundings. But, putting this question aside, we certainly disagree with the proposal for erecting a memorial to Ruskin which would be in absolute contradiction to the principles he held and in a building already spoiled to him by such erections.

The Joyners' Seal.

AFTER a succession of curious adventures the seal of the Joyners', or Joiners' Company has once more passed into the possession of its rightful owners. There seems to be a spice of frivolity in the composition of this emblem which leads it to disappear from the circle of its friends for protracted holidays. The one that has just ended began in 1819, and has therefore lasted eighty-one years, and there is reason to believe that the seal has had other vacations of a similar nature before that date, since it was first manufactured in 1571. We would recommend the Livery and Court to closely attend its future comings and goings. Possibly the seal's return has accomplished some benefit by directing attention to the Joiners' Company and its work. We suppose that comparatively few persons were aware (before the little paragraphs anent the seal appeared last week in the daily press) of the existence of this City Company, though the Carpenters' Company has long been known for its philanthropic work in the matter of technical education. Needless to say, its old powers of controlling the trade have departed, and the Master and Wardens no longer condemn and seize all specimens of bad workmanship. We could wish that the powers that lapsed in 1747 were in force to-day. But the fact that these arbitrary powers have been set aside does not deter the Company from doing useful work, and in conjunction with the Carpenters' Company it has done much good by providing classes and examinations for the benefit of young apprentices to the trade. Carving has been a principal branch of its teaching, and the Company purpose celebrating the return of the prodigal seal by offering a medal and prizes for carving at the Exhibition in June next year, particulars of which will be found on another page.

London's Latest Idea.

FROM time to time Londoners are startled by the projection of gigantic schemes to relieve the congestion of their crowded streets. Sir John Wolfe Barry, whose paper was read at the Society of Arts last November, advocated the cutting of a wide street from east to west, with all the principal north-to-south streets bridged over or tunnelled under it, in order to avoid the unending block system that now prevails. The advent of the City and South London, the Waterloo and City and the Central London Railways has suggested indefinite possibilities for relieving the difficulties of crossing London, and a great deal more may be done in this direction. In fact, if the scheme of Messrs. Smith and Fox (see page 79) were put forward in the interests of the passenger traffic we think a great deal might be said for it. But these engineers include market produce in their calculations, and consequently we are not so ready to follow them. The bulk of the market traffic takes place in the early hours of the morning, when the street traffic is lightest, and the markets are over before the day traffic has commenced. The bulk of the vegetable produce is loaded from the field direct into the carts, and it is thus cheaper to send by road than rail. Further the congestion, if any, in the market traffic is due to the carts of the retailers, and no system of railways, however good, can obviate this difficulty. As matters stand now a wholesale merchant can choose his own hour to place his goods on the market, but if he is to be subject to the delays or exigencies of railway traffic he may only get his goods delivered as the market closes, and will thus be a heavy loser. If the idea were carried out, the siding accommodation to be adequate would be simply colossal, and would undermine London to a dangerous extent. Besides, the promoters of the scheme do not seem very clear as to the composition of the traffic that passes through the streets. The Strand Board of Works took a census of the vehicular traffic in the Strand by Wellington Street in 1890, and found that from 6 a.m. to midnight 14,924 vehicles passed the fixed point, travelling east and west. Out of the above total, 11,831 vehicles consisted of cabs, omnibuses, carriages, cycles, &c.—that is, vehicles used for the purposes of travel. Only the remaining 3,093 were carts or vans for the carriage of goods. Since this census, omnibus traffic alone had increased 40 per cent. by the year 1893. Thus we see that the congestion is due to the vehicles conveying passengers, and any scheme that will diminish the number of omnibuses, cabs, and trams is greatly to be welcomed. But while the new scheme is loaded with the market-produce idea we fear it will never receive the support which it otherwise deserves.



HADDON HALL: SOUTH FRONT FROM THE TERRACE.

HADDON HALL.

BY ARTHUR J. PENTY.

FEW of the old halls of England have the attractions of Haddon, few can boast of more remote antiquity, and fewer still the same beauty. Its memory has long been cherished in the hearts of the antiquary, the painter and the architect, and it stands almost unparalleled as an example of English mediæval architecture.

Haddon stands on a natural elevated platform on the eastern bank of the Wye. It is approached from the main road between Bakewell and Rowsley by a drive which crosses a very elegant and venerable old bridge, passing over which we are immediately in front of the charming cottage which is the lodge of the custodian. In the garden of this cottage we make our first acquaintance with the boar's head and the peacock—the crests of the houses of Vernon and Manners—shaped in the growing yew trees.

In many respects Haddon bears a close resemblance to other English mediæval houses. The general plan is that of an oblong. The buildings are built round two irregular courtyards, the greater part of which is two storeys high. The earliest of the existing portions are undoubtedly of Norman origin, and it is not improbable that they were grafted on a Saxon erection. Additions were made from time to time until 1624, when the building was completed. The ancient workmen, when making additions, appear to have removed only so much of their predecessors' work as was found to be in the way, and left the old and the new in untidy juxtaposition: for instance, there is an old circular staircase under the ball-room which stops short underneath the joists, and below the ante-rooms (opening out of the drawing-room) and ball-room there are many apartments which have been rendered useless by reason of later additions.

The entrance tower, of the late Perpendicular period, is very picturesque, though in detail rather clumsy. The feature, however, of the north front is the fine old fourteenth-century kitchen chimney-stack, which is undoubtedly the cleverest bit of work in the whole place. It consists of a complicated series of wonderful weatherings, little lights and irregularities which impress the beholder with their surpassing beauty.

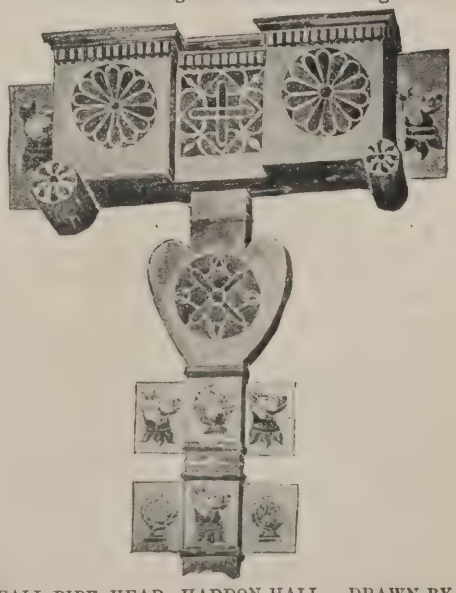
The lower courtyard is the one which is usually entered by visitors first, and possesses a greater claim to architectural dignity than the upper courtyard. The very picturesque effect is enhanced by the ground, which rises rapidly from the north-west entrance. Immediately in front of us is the banqueting hall with its simple though rather coarse fourteenth-century windows; there is also an immense fireplace, the treatment of the chimney of which is not to be recommended. It does not explain its purpose in the same manner as the beautiful kitchen chimney-stack, but is hid behind the parapet. The south-west corner of the courtyard is occupied by the chapel, a building approaching the dignity of a church. It is of Perpendicular character, and contains some excellent seventeenth-century woodwork. Some fragments of stained glass and some remnants of mural decoration still exist.

Leaving the chapel the visitor notices a flight of stone steps leading from the lower courtyard to the State apartments. These were placed so that the family were able to attend the chapel services without passing through the hall.

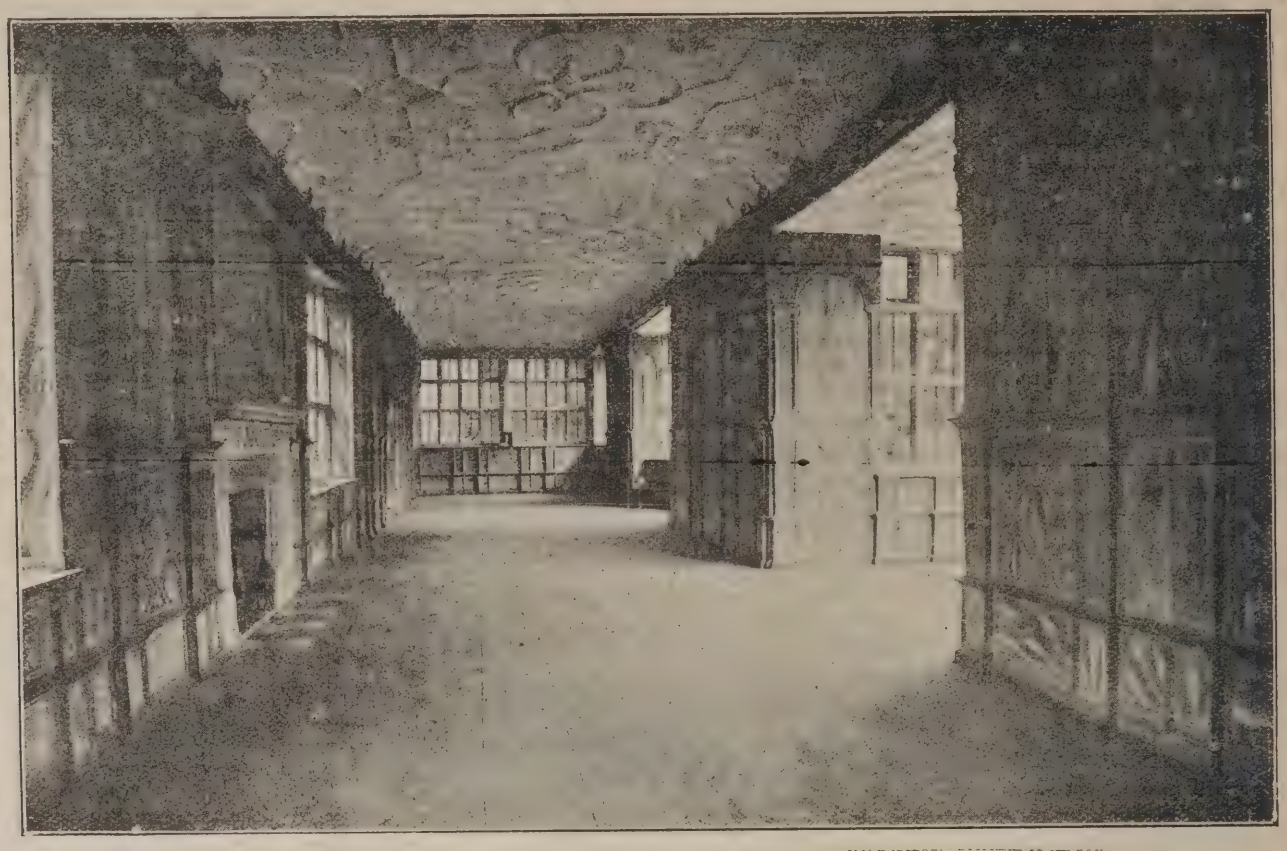
The upper courtyard contains little of interest beyond the Eagle or Peveril tower and the bay window of the State bedroom. These together make a piece of well-proportioned work of good design. Upon entering the banqueting hall the visitor is reminded that the history of Haddon was one of hospitality by a little iron bracket with ring attached high above the level of the head. This, tradition says, was an instrument of punishment for enforcing the laws of conviviality. For it is said that if in the days of feasting and merriment in the "good old times" a man should fail to drink up his quota of liquor he was fastened up by the wrists to this ring and the liquor poured down his sleeve, so as gradually to trickle down him on to the floor; or if guilty of any breach of the laws of decorum at the board he was similarly tied up and compelled so to remain during the carousal, and was not only treated now and then with a stream of cold water poured down his sleeve, but other indignities were also forced upon him. The interest and beauty of this hall are of a very high order. The oak screen across the north end, which forms the front of the minstrels' gallery, is beautifully panelled, each panel being headed with cusping, above which there is other Gothic tracery of elegant design. A ponderous oak table here is worth attention.

Passing out of the banqueting hall the visitor next enters the dining-room. The top panels of the wainscoting of this room contain a succession of shields bearing different arms, together with the crests of Vernon and Manners. The little recessed bay forms one of the most comfortable retirements imaginable. The windows are filled with glass disposed in an elaborate geometric pattern. Some of the lights contain shields in stained glass displaying the arms of Vernon and quarterings with the Avenalls, Pypes, &c. The ceiling is divided into compartments by transverse beams and has been elaborately painted and decorated. It is one of the most charming and certainly one of the most interesting apartments in the whole building.

Above the dining-room is the drawing-room.



FALL-PIPE HEAD, HADDON HALL. DRAWN BY ARTHUR J. PENTY.



THE BALL ROOM, HADDON HALL.

The character of this room is much the same as that of the dining-room. The carpenters of the period were satisfied with simple panelling of exquisite proportions and delicate mouldings. Many of the panels in this room were originally painted and gilded, portions of which still remain. Three rooms opening out of this are chiefly interesting on account of their tapestry.

Across the landing is the long gallery now called the ball room. This is essentially an Elizabethan apartment. The room is 109ft. 6in. long by 18ft. wide, and contains three fine bays, one square and two canted. Nearly the whole of the end is occupied by one large window. The walls are lined entirely with oak and unfortunately elaborated with inferior taste. The richly ornamented ceiling is more successful. The general effect of this room can hardly be surpassed in domestic architecture, although its detail cannot be recommended. From near the upper end of the room a richly ornamented doorway opens into the ante-room or lord's parlour, which two centuries ago was designated the Orange Parlour. It is a small room hung with paintings, and around part of its walls is a cornice embellished with the crests of Vernon and Manners. The interest, however, attached to this apartment rests in the strongly barred door which opens from it on to a flight of stone steps leading down to the terrace and winter garden. This doorway is known far and wide as Dorothy Vernon's door. It is said that through this doorway Dorothy Vernon made her escape when eloping with Sir John Manners, the hand of Dorothy Vernon eventually carrying with it the broad lands of Haddon to the family of Manners, who are not likely to forget the memory of their beautiful though wilful ancestress.

Passing through the ante-room the visitor enters the State bedroom with its beautiful old State bed, draped in green silk and velvet and white satin, exquisitely embroidered and enriched with needlework. The elaborate plaster panel over the chimney-piece, representing Orpheus and the beasts, is worthy of attention. In the window of the bay stands an antique dressing table and a grand old looking-glass. These deserve a careful examination. Beyond this room are the upper range of rooms forming the north front. These are chiefly interesting on account of their panelling, tapestry and furniture.

Returning to the ante-room and through Dorothy Vernon's door we find ourselves on the terrace. The south front, as seen from here, is a view to revel in and not to be forgotten. Everyone will appreciate the telling effect which the series of bays and oriels produces. The south front and the terrace are the glories of Haddon. The latter extends the full width of the upper garden. There a striking effect is obtained by a simple treatment of different levels. Much of the charm of Haddon may be attributed to this simplicity of treatment. The ancient builders never strove after effect, but took advantage of the suggestions offered by their site, and seized upon the opportunities of design in making their building faithfully fulfil its purpose. The garden is an example on a small scale of the charming formal gardens that were once scattered over England. Fortunately, it remains unaltered. The winter garden of the terrace is planted with yew trees many centuries old. Altogether it is one of the most delightful outdoor bits which the artist loves to paint; yet it has not become so familiar as to lose its interest.

In the days when Haddon was built there was a thoroughness of workmanship which is unfortunately often lacking to-day. This is illustrated by the care which was given to minor details. The great variety and beauty of the fall-pipe heads, leaded lights, hinges, casement fasteners, fire-grates and dogs and other metal work indicate a living art. These are characteristic for good design, simplicity in outline and purity in style; they are devoid of any attempt to dazzle or attract attention.

But Haddon has other and broader claims as a monument of architecture. To-day it is seen as it was left by the mediæval builders—undamaged by fire and uninjured by restoration. The history of Haddon, unlike that of most of our ancient baronial halls, was one of peace and hospitality, not of war, feud and oppression. Time has given it that rich harmonious yet sober colouring, as precious as it is impossible to gain without it. No repairs have been done except what were absolutely necessary, hence such a perfect specimen of mediæval art. Another characteristic feature is the great harmony and the unity of effect which prevails, notwithstanding that the buildings were erected and altered during an extended period. The living force of English tradition is accountable for this. The old builders showed a steadfastness of purpose by treating their buildings naturally, each feature explaining the function it fulfilled. Reserve in design was exercised by refusing to use anything for the mere sake of novelty and by employing simplicity in preference to obtrusiveness.

Haddon stands in striking contrast to the commonplaceness and ugliness to which we have accustomed our eyes. It is an environment in which the artist loves to work. It uplifts the architect with its thoroughness, making him regret the day when amateur fancy was substituted for craftsmanship which cut us adrift from the true soul of art and eventually extinguished tradition. We realise to-day how much we have lost when we compare the conditions under which those craftsmen worked with those of the modern builder. The technique has to-day been exalted at the expense of the artistic. Our national architecture cannot improve so long as this continues. The numberless little things over which the architect has no control will never be properly done if the craftsman has neither artistic taste nor the guidance of a tradition. To make every workman artistic is impossible, yet with the help of tradition he always produced work which did not offend.

But, alas! how many visit Haddon, and how few appreciate it. The average Englishman looks for comfort alone in his dwelling, and departs with the idea that, since Haddon's domestic arrangements are out of date so is its beauty. Commercialism to-day has supplanted art, and he leaves it, as Horace Walpole wrote: "An abandoned old castle of the Rutlands."

A Memorial at St. Patrick's, Wapping, is to be placed in the presbytery to the memory of deceased boys of the school attached to the church. The work has been entrusted to Mr. Henry Price, sculptor, of Chelsea, and will consist of a bronze relief with two schoolboys modelled on either side representing Reading and Writing, supported by figures of Grief. The names of the boys are to be cut on a block of Carrara marble, and the whole to be mounted on a slab of Connemara marble, placed in a conspicuous part of the church facing the high altar.

WORKS IN WOOD.

PRIZES OFFERED FOR CARPENTRY, CARVING, AND MODELS OF HOUSES.

AN exhibition of models and specimens of works in wood will be held in June next at the Carpenters' Hall, London Wall, under the auspices of the Carpenters' Company and the Joiners' Company. Prizes are offered for constructive carpentry in which skill in obtaining the greatest amount of strength at the smallest expense of material and labour shall be the object (this section includes roofs, bridges, centering, shoring, gantries, &c.); ornamental carpentry in which skill in obtaining architectural or picturesque effect, combined with strength and economy in material and labour, shall be the object; models or specimens of hand-made joinery; cabinet work; carving (including friezes, panels, capitals, &c.); and models of the following houses, built chiefly of wood:—

A detached labourer's cottage of one storey (first prize £4, second prize £3); a detached labourer's cottage, two storeys high (first prize £4, second prize £3); a small dwelling-house fit for a head gardener or farm bailiff to occupy (first prize £5, second prize £3). Gold and silver medals of the Carpenters' Company are also offered for plans of cottages, one or two storeys high, including working drawings, specifications, and approximate estimate, with or without perspective sketch; drawings to a scale of ¼in. to a foot, with constructive details to a larger scale.

The models are to be constructed to a scale not less than ⅛in. to the foot, or more than ¾in. to the foot. The roof must be capable of being taken off, and if there are two storeys the upper floor must also be removable; fittings such as a dresser or press are to be shown, but not furniture. In all cases there must be a dwarf wall for a foundation not less than 6in. above ground-level, and the fireplaces and chimneys must be in brick or stone. Above the dwarf wall half-timbered or wholly timbered work must be mainly employed. The chief objections raised against houses of wood are (1) danger of fire, (2) liability to harbour vermin (insects), (3) the expense of painting. The attention of competitors is drawn to these, so that they may make provision or suggestions for overcoming them. The main objects are health and economy, but it is desired that the buildings, though simple, shall have a pleasing appearance. They are not for town buildings, but might be erected in country places, and where timber is plentiful. It may be assumed that the water supply will be from a well, and that it is of importance to store rain-water to a moderate extent.

The different objects for competition must be delivered at the Carpenters' Hall during the week ending May 11th next. Further particulars can be obtained from S. W. Preston, Esq., Carpenters' Hall, London Wall, E.C.

BRIGHTON AQUARIUM.

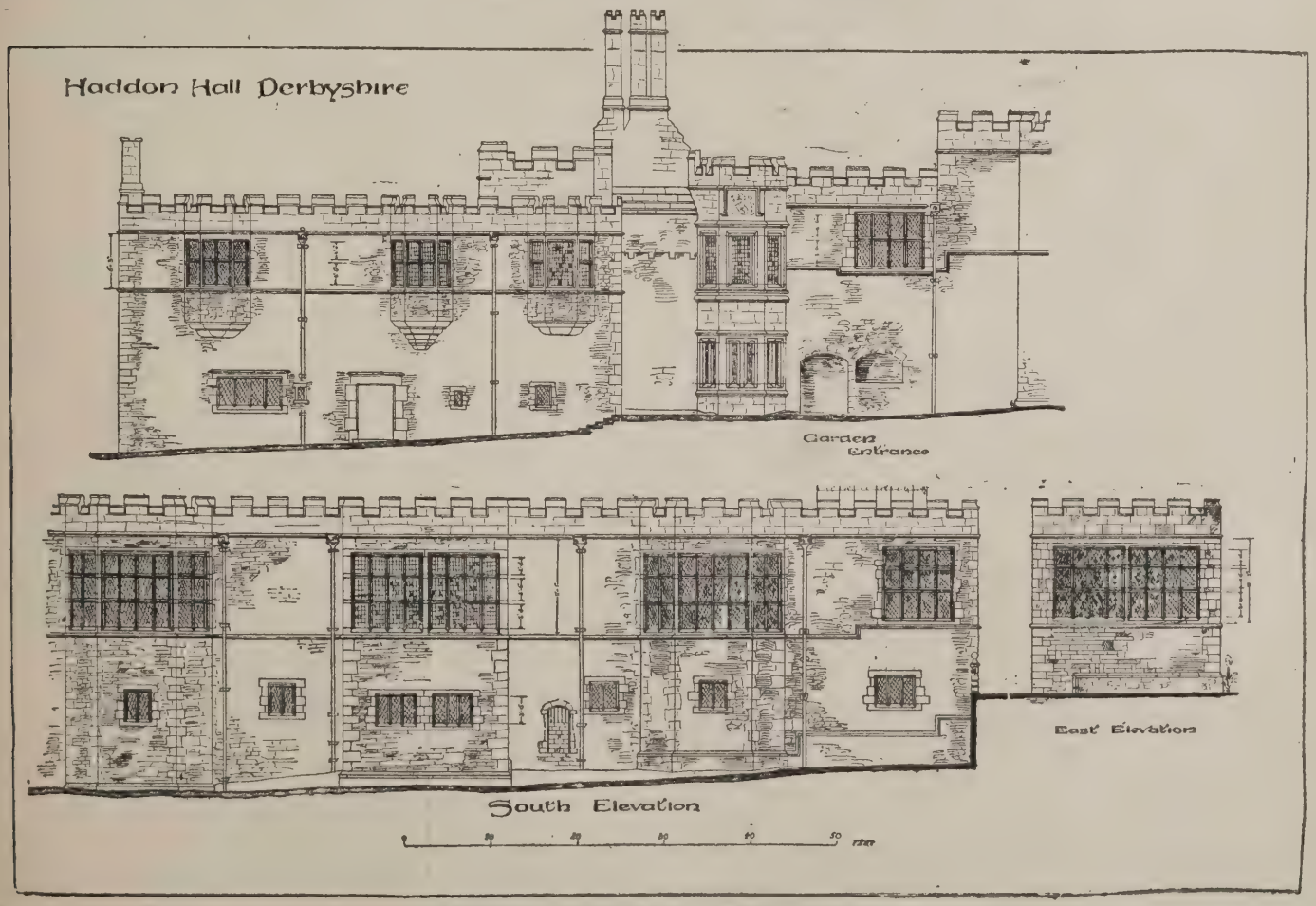
DECISION TO INVITE COMPETITIVE DESIGNS.

ON page 34 of our issue for August 15th some particulars were given of the proposals in connection with the Brighton Aquarium. The matter was before the Town Council some weeks ago, when it was referred back to the General Purposes Committee, principally with the object that swimming and other baths might be included in the plan. This was done, and at the last meeting the scheme in its entirety was brought up. The result was that the main details—the winter garden and concert room, the baths, and the improved terrace—were approved. On the question of the widening of the Marine Parade there was considerable divergence of opinion, but in the end it became evident that the majority of the Council considered the borough surveyor's plans provided for a too extensive widening, and a good deal of talk ended in an amendment to the effect that the pathway should be widened only at the west end. With the proposal to run a tramway from the Aquarium entrance to the east end of the Kemp Town terrace the Council refused to have anything whatever to do.

Alderman Clark moved that competitive designs should be invited for the adaptation and alteration of the buildings, and that premiums of £250, £150, and £100 should be offered for the best three designs.

Councillor Carden moved as an amendment the following proposition, of which he had given notice:—"That before the Council advertise for competitive designs for dealing with the Aquarium, an architect of standing be engaged to prepare a report with plans as to the utilisation of the existing buildings, together with rough estimate of the cost, and that after this report has been submitted to the Council the architect be retained to draw up the terms of conditions upon which competitive designs be invited, and that such architect be retained as assessor to assist the Council in adjudicating upon the designs submitted. The architect's fees not to exceed 200 guineas." He pointed out that nothing was said about cost in the proposal to invite designs, so that they would have schemes sent in based on totally different figures, and there could be no comparison between them. The right thing to do was to call in some competent architect to confer with the General Purposes Committee, go over the buildings, and advise what was the best course to adopt. He could prepare a set of rough designs, and then when the Council had decided how much they would spend they could invite competitive designs. The rough plans would be sufficient to go with the Bill before Parliament, and they could have the competitive designs ready to go before committee. Alderman Sir John Blaker seconded. Councillor Wilson pointed out that Councillor Carden's plan limited them in their choice of designs for dealing with the Aquarium, because the architect who made the sketch plan would naturally expect to be engaged to prepare the final plans. Councillor Carden therefore added the words "and that such assessor be not employed to carry out the work after such a competition." The amendment was put and carried.

Queen Elizabeth's Lodge in Epping Forest has just suffered extensive restoration by the City Corporation. A considerable sum of money has been spent in removing some of the work which concealed the original attractions of the ancient place. The upper floors are used for the purpose of a museum in connection with the Essex Field Club.



MEASURED AND DRAWN BY ARTHUR J. PENTY

Law Cases.

Dispute between Builder and Architect.—The case of *Charles* v. *Palethorpe and Dunn* was recently heard at the Birmingham Summer Assizes before Mr. Justice Wills and a jury. The plaintiff, a builder and contractor, sued the defendant Palethorpe for £581 due upon building works erected by him, and he also claimed damages against a Birmingham architect named Mr. J. G. Dunn for improperly withholding his certificate upon the contract. The defendant Palethorpe counter-claimed for penalty for delay, and for the work being improperly done. Mr. Palethorpe, it seems, declined to pay over a balance of about £600 due on a contract of more than £3,000 for the erection of new works, because the architect would not give his final certificate. With reference to the delay, the plaintiff declared this was occasioned by 700yds. of additional excavations, which meant a month's or five weeks' work. Then there were a lot of "extras," and considerable delay was caused by sub-contractors not under his control. The plaintiff was cross-examined at considerable length, but would not accept the suggestion that Mr. Dunn had great difficulty in keeping him to his contract. He admitted making excavations involving a considerable amount of extra brickwork, the cost of which Mr. Dunn would not allow because he considered the work unnecessary. The plaintiff was convinced it was necessary, but under the contract a question of that kind had to be decided by the architect. He did not accuse Mr. Dunn of fraud in disallowing that. Mr. Dunn had charged him with having built certain piers with mortar instead of cement as provided in the contract, and had taken something off his claim on that account. That was a serious charge against him of trying to scamp the work, and he denied its truth, though he admitted that in some instances his workmen inadvertently used mortar instead of cement. Mr. S. Lowcock, civil engineer, who was employed to test the strength of the piers, thought four ought to come down. It was not true that bad bricks and slates were used in the building. At the conclusion of the case for the plaintiff, his Lordship asked the jury whether they thought any case of fraud had been made out, as had been suggested by plaintiff in his pleadings. The jury replied in the negative. His Lordship: Any ghost of a case of fraud? The Jury: We do not think so, my lord. His Lordship: That will be a verdict for the defendants on the claim.—With reference to the counter-claim, counsel on both sides conferred together, and eventually the parties agreed to the following terms:—Judgment for the defendant (Mr. Palethorpe) on the claim with costs, and judgment for Mr. Charles on the counter-claim, but with the condition that Mr. Palethorpe should relinquish two-ninths of his costs on the claim. With regard to Mr. Dunn, judgment was to be for him with costs. His Lordship agreed to the arrangement.

Fined for not Erecting Hoardings—Thomas Wilkinson and Sons, builders and contractors, of Gleadless Road, Heeley, were summoned recently at the Sheffield Police Court for a breach of the Corporation building by-laws in failing to erect hoardings in front of houses in course of erection in Eccleshall Road. They were fined 20s. on July 20th in connection with the same buildings. It was stated for the defendants that the week subsequent to the date of the order to erect hoardings had been very wet, and work had been impossible. The magistrates imposed a fine of £2, including costs, remarking that it was in their power to inflict a fine of £5, with an additional £2 for every day after the first week had elapsed in which their previous order had not been complied with.

City Building Schemes: An Instructive Case.—At the recent Summer Assizes at Birmingham the case of *Crouch* v. *Roberts* was heard before Mr. Justice Wills and a jury. The plaintiff, a builder, brought an action against the defendant, an estate agent, in connection with an agreement under which the defendant undertook to indemnify the plaintiff against any expenses he might be called upon to bear in respect of certain mortgages and leases. The case arose out of one of those building schemes by which many gentlemen in the city had made large sums. Somebody usually came short of their money—usually the people who supplied the material—or the builder failed: but the master mind who had conceived the scheme belonged to the gentleman who made the money. He covered his land with buildings at no cost to himself, and he had a number of ground-rents which fetched a large price. In this case, said counsel, Crouch was the unfortunate builder, and Roberts was the gentleman who possessed the master mind. In 1896 Roberts became the freeholder of a tract of land at Selly Oak, and on April 17th of that year he entered into a contract with Crouch for the erection of 84 front houses and 22 terrace houses, for the sum of £11,650. In the following July Roberts informed Crouch that he had so many things on hand that he could not afford to find any more money on this particular contract, and what plaintiff's counsel described as a rather curious scheme was agreed to. The original contract was to be dropped, and Roberts, as freeholder, was to grant leases of various plots of the building estate to Crouch, who was to apply for progressive mortgages on these leases. As the buildings proceeded it was arranged that Roberts himself was to give the certificates on which money might safely be advanced to Crouch. Crouch was not to find any capital, and Roberts was to pay him for all the labour and material. The money was to be obtained in this way. Roberts said he would be able to negotiate for the advances of £100 on each house, which Crouch would have, and for the balance he would sell the leases, when the houses were completed, subject to the mortgage. Out of the moneys received from the sale of these equities of redemption, Roberts said he would repay Crouch the money he had spent in building the houses over and above the £100 which was to be obtained upon them on mortgage. It was further arranged that when the buildings were completed and sold Roberts would pay Crouch £1,000. A written document was drawn up, which showed clearly that although nominally these leases were to be in Crouch's name, and although in the mortgages he was to be the person pledging the property and receiving the money, yet as a matter of fact, as between the parties, it was Roberts alone who was to be the owner of everything. In return, Crouch got an indemnity by which Roberts undertook that Crouch would be under no liability for any expense incurred in the matter. But Crouch was spending far more money upon this property than he got either from the mortgages or the sales of the equities of redemption. He got a great deal of material upon credit, and was running into debt. He accordingly pressed Roberts for money, and the latter suggested that he had better raise a second mortgage on some of the houses. Crouch accordingly did so, and every penny of it (£350) was spent by Crouch on the property, though the defendant now alleged that the £350 was not money advanced under the scheme, and had not been spent upon the property. This second mortgage was called in, a writ was issued, and judgment obtained against Crouch. After a time Crouch got together £125, and in consideration of this payment on account was able to get rid of the sheriff. But there was still this judgment hanging over his head for the balance. Crouch had paid for material for these properties out of his own money £1,600, and in addition he had incurred liabilities to persons in the building trade to the extent of another £1,600, so that altogether Roberts, by his connection with Crouch, had benefited to the tune of about £3,000. But the only questions for the jury were whether the agreement was binding upon Roberts and whether the second mortgage was one in connection with which Roberts agreed to indemnify Crouch from all liability. The defendant denied the agreement, and alleged that the original contract was still in existence, and that the plaintiff had not carried it out, and that he had suffered damages which were put down at £1,250. His Lordship, in summing up, put two questions to the jury—Whether there was a rescission of the original contract, and whether the indemnity contract was to apply to the second mortgage as well as to the first or progressive mortgages. The jury answered both questions in the affirmative, and plaintiff's counsel was granted a declaration of indemnity. As to the counter-claim the jury accepted Crouch's version, namely, that the basis of remuneration should be cost, plus £1,000, £100 per house on a mortgage, the proceeds of the equities of redemption, and any advances made by Roberts to be taken on account in final settlement.

Lowering Footways: Successful Claim against an U.D.C.—Mr. Justice Bucknill recently heard at the Birmingham Summer Assizes the case of *Sheldon* v. *Rowley Regis Urban District Council*. The plaintiff, who is the lessee of the Phœnix Brickworks, Tividale, sought to recover damages for injury done to his buildings through the negligence of the defendant Council, of which he is a member. Plaintiff's buildings, which consisted of a cottage and half-a-dozen brick-drying stoves, were said to have been underpinned in a defective manner by the Council when that authority lowered the footway in front, but the defendants contended that the cracks seen in the walls of the buildings were the result of a general subsidence in the neighbourhood, due to intermittent pumping. Mr. Whittaker, a builder in the district, deposed that he found several places in the cottage where the mortar had been chipped off to make the cracks appear new. Others—including Jim Cook, the Council's drain inspector (whose florid countenance caused his Lordship to remark that his occupation seemed to suit his health)—gave evidence to the effect that the subsidence was due to general operations in the district, and that the plaintiff's buildings had been out of the perpendicular for a long time past. His Lordship, summing up, said the workman who did the underpinning on behalf of the Council was to some extent on his trial, and, of course, he added ironically, they had never heard of work being scamped. The jury found a verdict for the plaintiff for the full amount claimed—£138.

BUILDING TRADES' GIFT TO THE NATION.

MR. EDWIN O. SACHS, Chairman of the Executive of the Building Trades' Gift to the Nation, has much pleasure in announcing the following further list of contributions:—

	£	s.	d.
The Birmingham Master Builders' Association (first instalment) (per Mr. W. Sapcote)	200	0	0
Workmen of Messrs. Perry & Co. ..	33	2	7
Mr. Paul Rhodes (Leeds)	9	14	6
Messrs. S. Goodall and Son	5	5	0
Workmen of Messrs. T. and W. Ide (per Mr. J. McMullon)	5	1	0
Workmen of Messrs. Perry and Co. ..	4	8	11
Employees of Messrs. S. Goodall and Son	4	8	0
Messrs. Harrison and Spooner and workmen	3	18	0
Workmen of Messrs. Batley, Sons and Holness	2	16	10
Mr. John Radford and fellow workmen	2	16	0
Mr. J. F. Collinson and workmen (Teddington)	2	12	0
Mr. Henry Child and workmen	2	8	1
Workmen of Messrs. Matthew Brothers (per Mr. J. H. Perkins)..	2	7	6
Workmen of Mr. A. Bothwell	2	2	0
Employees of Messrs. Lancaster and Co.	2	2	0
Mr. S. Spencer and workmen	2	2	0
Messrs. F. Nicholls and Son	1	8	0
Mr. W. H. Quarterman and workmen ..	1	7	6
Workmen of Messrs. Brown and Sweetland (New Southgate)	1	5	6
The Cadogan Ironworks and men ..	1	5	0
Employees of Mr. W. Banks	1	0	0
Mr. Wishey and employees (per Mr. J. M. Hillam)	1	0	0
Mr. J. McLean (Canada)	1	0	0
Mrs. McLean (Canada)	1	0	0
Mr. Arthur Webb and workmen (Stratford)	0	17	0
Workmen of Mr. J. W. Heeps	0	7	0
Mr. W. A. Osborn	0	5	0
Workmen of Mr. T. Jones (Putney) ..	0	4	0
Workmen of Mr. E. Haydn (Ryde) ..	0	3	6

A Memorial Window at Crowhurst Parish Church has been dedicated. The three-light window is placed in the recess on the right of the chancel looking west. It was erected by Messrs. Heaton, Butler and Bayne, of London.

Correspondence.

Stockport Union: New Infirmary.

To the Editor of THE BUILDERS' JOURNAL.

SOUTH SHIELDS.

SIR,—Absence from home has prevented me from at once seeing your issue for August 8th, in which you published a report of the Committee of the above Union. You state that Messrs. Newcombe, Morton and Knowles, architects of the Gateshead Workhouse, are to be invited to compete amongst others for the new infirmary. I beg to state that the Gateshead Workhouse and Infirmary was executed from the designs of Mr. J. H. Morton, F.R.I.B.A., of South Shields, in conjunction with Mr. W. L. Newcombe, of Newcastle, and Mr. W. H. Knowles, of Gateshead. As your notice has caused some confusion I shall be glad if you will insert this correction.—Yours truly, R. H. MORTON.

Mafeking Church.

To the Editor of THE BUILDERS' JOURNAL.

ILE L'OUESSANT, FINISTÈRE.

SIR,—In your issue for August 8th is a note about the above now historical edifice. It was built, not many years ago, almost solely at the expense of the Bechuanaland Mounted Police, whose headquarters are at Mafeking, and, as churches go in South Africa, was not at all a bad looking little place, of Early English character. But, even at the time of my somewhat lengthened visit, two summers ago, it was not nearly large enough for its necessities. The old rectory was one of the earliest in that part of the country; but within the last few years a new one, of wood and iron, has been erected. It stood betwixt and between the east end of the church (dedicated to St. John) and the Boer lines on the eastern side of the town (if so small a village as Mafeking, looked at from English eyes, may be called a town at all), and therefore suffered from the shells of the beleaguerers. The Rev. W. Hayes Weekes, M.A., the gallant rector, has also another little church situated in the compound just outside, in the midst of the native residents, who outnumber the whites by something like ten to one. This little church (which does duty as a native school during the week) is dedicated to the Good Shepherd, and is built of sun-dried bricks, made of a sort of "cob," each brick being about 2ft. by 1ft. by 1ft. After being laid the walls are plastered over with a thin wash of the mixture the bricks are made of, and thus cement covered.

An excellent opportunity now exists for the erection of a really good church, as money will soon begin to come in freely. The South African ecclesiastical buildings generally are of such poor design that something more in accordance with English ideas is very desirable. I may add that the rector (he stands 6ft. 3½in. in his socks!) does not propose to return to his charge until the end of the present year, so that no doubt full opportunity will be afforded for procuring a really good design from some competent architect in England.

Yours truly,
HARRY HEMS.

Architects' Assistants' Salaries.

To the Editor of THE BUILDERS' JOURNAL.

LONDON, S.W.

SIR,—Why are architects so badly paid, and consequently their assistants? The educated public takes no interest in, and has no appreciation for, the work done by the architects of the last three centuries, and the whole reason is that the works of the Italian Renaissance and all that followed were insincere or copied, and therefore lacking architectural interest. It is safe to assert that no architectural work in the past was produced by an "architect," using the word in its present sense as a mere designer on paper. The producer of architecture in the past was always the builder, always the master workman, an artist-tradesman. And the architects' assistants are part of the pernicious system now in vogue. As a preserve for the sons of men with wealth—small though that may be—the profession is a false one, though perhaps its members may not see it in this light. As the proverb says: "A man may be a fool without knowing it."

Again, compare the large payments received by our painters and sculptors, men whose works are of interest, with the miserable payments made to those attempting to produce architecture. The money once spent in obtaining an art work in building is now mostly diverted into other branches of art. We have seen recently furniture and jewellery return into popular appreciation, and it is reasonable to expect the same in regard to architecture, only firstly that will have to be produced.

I am pleased to see the small pittance which the "architectural assistants" are receiving everywhere. May they at last be driven to take up some craft and work at it and become actual builders. The comparison of the assistant's salary with that of the artisan (I use this word advisedly, both being working men) and the false pride in regard to hand labour is contemptible. The assistants do not deserve more; they are no use for producing architecture; they may help in draughtsmanship, but not in building, and architecture is not a thing apart to be added as required. A building can be refined—i.e., become imbued with art—and then rise to be called architecture. Yours faithfully,

UNTRAMMELLED.

HINTS ABOUT THE USE OF PORTLAND CEMENT.

WHEN using Portland cement for foundations in concrete it should be remembered that the best made and best laid concrete will subside and crack unless the bottom be firm and the foundation sound. Upon soft ground, where it is necessary to dig down a considerable depth in order to secure a hard bottom for foundations, a great saving of concrete may be effected by forming concrete piers beneath the points of the greatest weight, placed at distances from one another not exceeding 8ft. Concrete lintels should then be placed across the spaces between the tops of the piers. These lintels should have widths equal to the width of the ordinary foundation under footings, the depths varying with the weight to be carried. The insertion of small steel or iron joists within the lintels adds very considerably to their strength. The concrete should be composed of one measure of Portland cement to six measures of ballast. Allowance must be made for any settlement of the bottom or any subsidence, contraction or expansion of a concrete foundation. Fine concrete is more liable to contraction or expansion than rough concrete, but is not so liable to subsidence. It will, however, take longer in setting than rough concrete. When laying concrete in a trench it is always best to stretch a line from one end to the other and drive stakes into the ground, allowing them to project sufficiently to permit the concrete to be levelled to them; this will save material and labour.

A concrete footing is just as good as brickwork or the best masonry to bring the work up to the surface under ordinary circumstances, but in the case of piers subject to vibration brickwork is decidedly preferable. Foundations of concrete intended to be covered with paving should never be less than 6in. thick. For concrete walls the mixture should consist of two parts of sand, three parts of ballast which has passed through a round mesh 1½in. in diameter, and one part of Portland cement. When concrete is placed on a timber frame the latter should be made strong and rigid to prevent sagging. If the wall is to have an external face, the boarding used as moulds must be planed smooth, but if the wall is to be afterwards rendered this provision may not be necessary.

Courses of concrete should not be laid less than 6in. or more than 12in. at a time, the upper surface of each course being left rough to form a key for the succeeding course. A 12-inch concrete wall is of equal strength to a 1½ brick wall, though some municipal regulations require the concrete wall to be of the same thickness as the wall above. A concrete wall will conduct sound readily. Where concrete covers timber the latter should be well welted before being covered with the mass.

Builders' Notes.

Furniture at the Paris Exhibition.—Waring and Gillow, Limited, have obtained a double "Grand Prix" for furniture and decoration at the Paris Exhibition. This is the first time that the double honour has ever been conferred on an English firm.

Workmen's Dwellings at Morpeth.—With the view of helping to provide houses suitable for working men in Morpeth, the Middle Greens, a piece of market garden ground belonging to the Corporation, was sold for £1,270 10s. last week, subject to such conditions as would secure that no other class of houses could be erected thereon.

Bricks from Plate-glass Refuse.—At the works of Pilkington Brothers, at St. Helens, a million and a half tons of the spent sand and glass resulting from the operation of grinding plate-glass has accumulated, and 1,200 tons are added weekly. Dr. Ormondy has discovered, after much research and experiment, a means of making from this refuse bricks which, it is stated, can be used for building. The difficulty of getting a key for the mortar is one that will be considerable, and we await results from executed work.

To create efficient teachers of plumbing classes throughout the country advanced courses of instruction are carried on at King's College, London. A course is now in progress under the auspices of the Plumbers' Company and the Technical Instruction Committees for Lancashire, the West Riding of Yorkshire and Great Yarmouth. Instruction is given in the branches of physics and chemistry underlying the practice of plumbing, as well as in sanitation and advanced practical plumbing. The classes are held daily for a month in the workshops and laboratories equipped by the Plumbers' Company. The Saturdays throughout the course are devoted to visiting important plumbing and sanitary works in and around London.

A quarrel between the Salop County Council and the Atcham District Council is possible. The Technical Education Committee of the County Council has erected schools at Radbrook, within the Atcham district, without submitting plans as required by the District Council's by-laws, and a letter to the clerk of the Committee asking for plans has not been answered. The District Council's clerk is negotiating. In all probability the elaborate buildings at Radbrook comply with any and every requirement of the Atcham Council's by-laws, but if that Council has the power to require plans of all new buildings the County Technical Education Committee has omitted to perform a legal duty which they should be the last to neglect. Morally, however, the former authority has practically put itself out of court by allowing the matter to go on so long without interfering, the buildings being now practically complete.

Lead Poisoning.—A special meeting, attended by about 140 manufacturers of the china, earthenware, and allied trades, was held at Stoke last week to discuss the amended special rules proposed by the Home Secretary and the further amendments proposed by a joint committee of allied manufacturers, referred to in our issue of last week (page 57). Mr. Rawdon Smith, of Jackfield, Shropshire, who presided, said that, for a long time past the pottery trade had been at the mercy of many people not connected with the trade, but who had interfered simply for their own advertisement. The fritting of lead now proposed had been practised by some of the manufacturers for fifty years. In 1893 they had recommended the Home Office to specify a higher minimum for those employed in lead processes, but it was refused until 1898, when it was embodied. Periodical examination of all workers in lead had been proposed by the manufacturers, but not supported by the Home Office; and in many other items the manufacturers generally had been in advance of the Home Office. He felt they were all willing to do anything to lessen the dangers of the trade. Mr. Burton explained in detail the suggested

alterations to the amended rules that the committee had suggested on the previous day, the most important of which were the following:—The retention of raw lead in certain experiments and trials of a minor character in the hands of adults and in certain extreme cases for the glazes of pottery where lead is required in its most volatile form, and then under such reasonable regulations and restrictions as the Secretary of State may from time to time prescribe. The standard of solubility proposed by rule 2 to come into effect in 1902 was objected to, the committee suggesting that the whole question of solubility, instead of being settled now on insufficient information, should be deferred until the end of the period of two years as now mentioned, when both the manufacturers and the Home Office would have a large amount of practical information to go upon derived from the actual experience of English potters themselves. "Flat knocking" and "flint sifting" were processes in which under rule 10 the Home Secretary would require the introduction of fans, but they were strongly objected to, and they were to form one of the subjects of negotiation with the Home Secretary. Other alterations of a minor character were also suggested. The altered rules were adopted by the meeting. Mr. Burton and Major Moore were appointed a deputation to discuss with the Home Secretary and Dr. Thorpe the manufacturers' position as to the solubility of lead.

THE GLASGOW SCHOOL OF ART.

WE have received a copy of this year's prospectus of the Glasgow School of Art. As this school is an important one for architectural students—as may be judged from the fact that during the session 1899-1900, out of 776 students attending the school 115 were in the architectural division, this number only being exceeded by the 213 designers, draughtsmen and litho artists—it will be well to give a few particulars of the facilities offered for study. The classes that are of especial use to architectural students are those on geometry and perspective, drawing from the life and the antique, architecture, modelling, and design and decorative art. These classes are under well-known masters—Messrs. Alexander M'Gibbon, Walter R. Watson, Emmet Brady, Johan Keller, Alexander Walker, William G. Morton, A. Aston Nicholas, John Guthrie, Colin Kenmure and William Vickers. There is also a strong body of visitors to the classes. The architectural tuition of the school aims at (1) the preparation of students for an architectural career; (2) supplementing the office training of the pupil and assistant; (3) imparting an appreciation and knowledge of architectural form to painters, sculptors and workers in the decorative arts. The classes in design and decorative art are conducted in specially-erected studios, to enable students to learn design in and through the use of material. We strongly recommend all students of either architecture or of design and decorative art to take both courses, for no thoroughly good work will ever be done in the arts that relate to architecture unless the worker has some considerable knowledge of the sister arts. Architectural students learn the elements of construction; the nature of materials and the mechanics of architecture; draw from the cast; study the historical development of architecture in Europe; acquire a knowledge of the principles and growth of ornament; measure and sketch buildings; and receive instruction in architectural design. Concurrently with this, they study drawing and modelling from the antique and life, and attend, as far as possible, the lectures on ornamental design, anatomy and proportion, and figure design and decoration. The school contains a good collection of casts, and it is a commendable feature that these are shown in relation to the styles to which they belong, photographs showing the ornament or figure in its place in the building being given where possible. There is a good reference library and excursions are arranged to buildings for architectural study. There are a number of prizes and scholarships offered to students.

FROM MUD TO BRICK.

MUD, wood, stone—this was about the order in which man began to build his houses: mud because it was handiest and could be most easily worked or manipulated with the hands. How many ages mud shelters were the only habitations for man it is impossible to say. Structures of such a character would be swept away by the elements, leaving no trace behind. Here and there some sudden disaster overwhelmed a portion of the world, and in the ruins have come down to us more or less well-preserved specimens of mud huts, unquestionably the original shelters for human beings.

Next man made some progress. He developed some aptitude for toolmaking, and it became possible to cut down trees and fashion them into some sort of rude lumber, from which more substantial huts were built. The mud hut was liable to dissolve under prolonged precipitation. The wood hut was in danger from exactly the opposite cause. Its greatest enemy was fire. But while some were probably thus destroyed, a larger proportion was saved from any possible destruction and remained indefinitely the homes of the more or less civilised inhabitants.

But man was still progressing and the desire for permanency increased. Not alone did he want habitations which should be as permanent as the hills themselves, but he wanted to build monuments which should perpetuate his memory long after his perishable body had been dissolved into the original elements. He had also progressed in toolmaking, and was capable of fashioning tools which would work stone, though just what they were and how it was done is practically unknown, notwithstanding the innumerable learned essays which have been written upon the subject. All that is really certain is that man was able to work stone and hoist it to great heights, as instanced in the Pyramids of Egypt, built almost before the dawn of history.

For thousands of years wood and stone constituted the bulk of all the buildings erected and all the monuments ever put up. The larger and more elaborate structures were of marble, granite or sandstone, while the lesser and comparatively unimportant structures were of wood. Permanency was sought for in the stone, convenience and low cost in the wood. There appeared to be no method of united convenience of handling or structural manipulation which would permit a reduction of cost while retaining the same characteristics. Stone, to lend itself to the best effects, had to be in large blocks, and that increased cost, because the expense of moving from the original bed and all subsequent handling was made much larger by the great weight.

These structural problems became more serious as civilisation progressed, and it became more and more essential that permanency and cheapness must go together. While there is no historical account of the search for a satisfactory substitute for stone and wood which should combine the main characteristics of each, and yet be comparatively cheap, it is probably certain that such a search was continued through long years of unsuccessful experiments with various substances and combinations of substances, otherwise no adequate substitute would ever have been found. Though an idea may burst upon a genius in an instant, and from it may flow results that practically revolutionise the entire daily life of mankind, yet the sudden burst of light is but the culmination of long years of patient work on the part of numerous individuals.

The same thing occurred when some genius invented brick. The problem of the ages was solved in the completion of that idea. The people of the ancient world had the germ of the idea. But their bricks were baked in the sun and lacked the essential feature of permanency, because the continuous rains and the action of the winds wore them away. The Israelites partially overcame this objection by mixing them with straw, but even that did not accomplish what they undertook. It needed the application of fire, the burning process, to make brick absolutely permanent. When that was done the long search had been rewarded. The building material combining mobility with permanency had been completed, and henceforth architects and builders could construct buildings and monuments of whatever character they chose without the great expense of stone and with all the mobility with which wood could be used.

It is more nearly fireproof than any other material used. Marble melts in a fierce fire. Granite gets red hot, and when a stream of cold water strikes it it explodes with as strong a force as a blast of powder. Brick alone will stand both the fire and the water, and come out of the test as good as when it went in. In the case of recent destruction of brick buildings by fire it has been nearly always the steel frame which has buckled under the intense heat and the great weight, not the bricks themselves giving way.

In a way, then, man has returned to the methods of building adopted by his primitive ancestors. The modification is that modern man subjects his mud to intense heat to harden it and make it practically independent of the elements, while primitive man merely fashioned the blocks and placed them in his walls without trying to make them permanent. It is the return to a mobile substance, however, something which allows endless manipulation and which lends itself to delicate decorative processes and effects. J. K.

CONCRETE ROOFS.

IN discussing the question of roofs formed of concrete a writer who has given the matter no little consideration expresses the opinion that with a good base few roofs are more durable and effective than one made of concrete, finished with a layer of fine Portland cement and sand. The point is made, however, that the work should be kept damp and as cool as possible for several days at least, this being accomplished in a comparatively easy manner by covering it 2in. or 3in. deep with sand and wetting the sand from time to time with water from a spray hose or from an ordinary watering can.

Cracks in concrete roofs are frequently caused by the settling of the buildings, either from natural shrinkage or from defects in the foundations. When cracks do appear they should be filled with a fine mixture of Portland cement and sand. To counteract the expansion in roofs of this kind, compressible linings of wood strips should be used around the works where the flashings are usually placed, and a cement skirting or flashing 6in. high and 1in. thick should be well keyed into the walls with all concrete roofs; and this can be well done by raking out the mortar joints of the brickwork that is to be covered and wetting the whole before the cement is applied. No other flashing will be required.

Where a concrete roof is laid on between the rafters, the timber work should be made strong, and there should be ample wood fillets well nailed to the lower edge of the rafters to hold the cross boarding on which the concrete is laid. When desired, slates or tiles may be either nailed to the concrete or bedded into it while yet in a damp state. The pitch most suitable for a concrete roof is about ⅛in. to the foot. This is ample to carry off the water and not too much to affect the cement while being laid. Once a concrete roof is properly finished and all settling ceased, the roof becomes almost everlasting, or at least it will last as long as the base on which it is constructed.

The Uriconium (Wroxeter) Excavation Committee have, in view of the war in South Africa and other unforeseen circumstances, decided not to ask for the payment of subscriptions promised for the current year, but to suspend the proposed work (of exploring to the floor-line a large room connected with the baths and adjoining the basilica) for a period, until there are fewer claims on the public purse. This patriotic action of the Uriconium Excavation Committee seems one most worthy of adoption in other similar cases, and we may hope that the promoters of several restoration schemes will be persuaded to forego their fell designs, as those of this more worthy scheme have done.

New Patents.

These patents are open to opposition until October 1st.

1899.—Fastening Pipes to Walls.—16,986. J. FIELDING, 46 Manchester Road, Hollinwood, and W. C. SMITH, Melbourne Villa, New Moston, Manchester. The object of this invention is to fix pipes to walls without soldering or brazing being needed. This is accompl shed by using a piece of thick sheet lead stamped or cut to a shape somewhat resembling a Y. The lead is fixed to the wall by means of screws, the pipe is placed on it, and the projecting arms are then folded over.

Substitutes for White Lead.—17,244. G. VON REINOLTS, 2 Streatley Road, Brondesbury, London. The preparation consists of carbonate of lead, sulphate of lead, oxide of zinc, sulphate of lime, and carbonate of lime, mixed together in about equal proportions. It is claimed that this mixture has greater opacity and will cover a larger area than white lead, and is less poisonous.

Valves.—18,226. J. D. GILMOUR, 190 Butterbiggins Road, Glasgow. The face of the valve proper is formed with a ring of soft alloy (lead, 95; antimony, 3½; tin, 1½), instead of asbestos or similar material. This allows the face to be readily trued.

Cutting and Carving Stone, &c.—19,123. P. STUART, Regent Dock, Limehouse, London, E., and A. G. EDMUND, Kesteren Asylum, Ranceby, near Grantham. A horizontal table is mounted on a frame and adapted to move vertically by means of a screw. A jointed tool arm having a tool for working the material is clamped to an adjoining table, and means are provided for operating the tool from a shaft. A device is arranged for blowing away the dust.

Door Hinges.—19,134. C. PORTER, 43 South Hill Road, and F. D. BISHOP, 130 Wrotham Road; both of Gravesend. This hinge consists of an arm projecting from the door and a transversely slotted angle-plate embracing the corner of the jamb, the arm being pivoted within the angle. This renders the full width between the jambs available as a passage way when the door is opened. The invention is particularly applicable to doors in places like passages where they cannot be swung back sufficiently owing to the wall.

Grinding Machines.—19,177. H. BING, jr., Teynham, Sittingbourne. The machine has plates with grinding surfaces having alternate ridges and furrows between which the material is ground by a back and fro motion. The machine is particularly intended for grinding the clinker used in cement manufacture. It is claimed to effect a saving in power and to be simple and inexpensive in construction.

1900.—Forming Foundations.—7,925. A. DUCLOUX, 5 Rue de Laborde, Paris. The usual methods for preparing loose ground for building upon are pile-driving, the formation of framework, excavating and filling with concrete, &c. According to this invention a cast-iron monkey, shaped like an artillery shell, is dropped from a pile-driver into the ground, and the hole made is filled with pebbles, &c. After a sufficient number of holes have been made and filled the surface of the ground is consolidated with a flat monkey.

The following specifications were published on Saturday last, and are open to opposition until October 9th. A summary of the more important of them will be given next week. The names in italics within parentheses are those of communicators of inventions.

1899.—9,273, DAUBENSPECK, refractory incandescent mantles or hoods. 15,391, JONES, door handles. 15,755, BRÉCHOT, apparatus for the destruction of solid sewage and other matters. 16,055, JONES, electric switches. 16,729, MILLS, automatic wheel-locking mechanism or devices for trolleys, hand barrows, &c. 17,243, KELLAWAY, acetylene-gas generator. 18,142, COOKE AND COX, sash windows. 18,556, BRITISH PURE ACETYLENE GAS SYNDICATE, LTD., AND TALBOT, apparatus for generating acetylene gas. 18,661, IRVING, gate or door hangings or hinge devices and catches. 18,698, ROGERS, sink, bath, and similar waste fittings. 18,990, LOCK, BARR AND NADALL, valves. 19,051, GUMMER AND GUMMER, valves, cocks, taps and similar water fittings. 19,562, DARRAH AND JONES, slop-stone or sink fitting, also applicable for other purposes. 19,578, DRAPER, fire bars. 19,587, RHODES AND GAUNT, syphonic flushing apparatus. 19,678, HEDGES, lightning conductors. 19,722, CLEGG AND BROOKE, block for constructing and lining sewers, conduits, wells, arches, &c. 20,058, BAILEY, means for attaching door knobs and cupboard turns to spindles. 20,506, NESBIT, joints for metal pipes and tubes. 21,103, HALL, fire-dogs or supports or rests for fire-irons. 21,303, SHREEVE, chimney top or ventilator. 21,576, VON RITTERSHAUSEN, filtering materials and method of manufacturing them. 22 496, BRITISH LUXFER PRISM SYNDICATE, LTD. (*Basquin*), prism plates suitable for windows. 24,261, DICKINSON AND GARLICK, valve or cock for gas and other fluids. 24,514, BOULT (*Saldaña*), electricity meters.

1900.—3,064, SMITH, means for connecting corrugated sheets at the angles of roofs and other structures. 6,414, COPE, bolts and means of operating them. 6,747, LUNKEN, renewable seat valves. 7,366, PIEPER, construction of double casement windows. 8,349, RENNER, grinding machines. 8,671, SCHULZ, electric switch. 8,712, GORSE, PROBERT AND PEED, cut nails and their manufacture. 9,233, WEINBERGER, bayonet joint attachments for glow lamps, safety fuses, &c. 9 285, WILHELM GERMUTZ AND ALEXANDER MATHIAS BESCHORNER, water meters. 9,879, KRAYN, electric incandescent lamps. 9,892, SACKETT, mills for disintegrating rock and similar substances. 10,039, APPIANI, enamel containing no tin for ceramic ware. 10,191, BOERLAGE, connections or fittings for gas pipes and burners. 10,893, WILLIAMS, valves or taps. 10,993, HADDAN (*Adams and Westlake Co.*), acetylene gas generators. 11,111, BOULT (*Koyl*), apparatus for purifying water. 11,126, SORENSEN, outside window blinds. 11,189, DE LONG AND D'HOMERGUE, linings for cold storage houses, dwellings, buildings, &c. 11,347, SEUMENICHT, cement kilns and drying chambers. 11,594, KISTNER, saw sets. 11,685, MORRIS, refuse or dust bins. 11,876, WIENKE, device for securing and sealing sliding and other doors. 11,916, SAWIN, pipe wrenches. 12,106, HOSSFELD, trolley for carrying iron girders, timber baulks, &c.

Trade and Craft.

Electric Bells.

The new catalogue of electric bell material which Messrs. Julius Sax and Company, Ltd., of Eagle Works, 119 Coldharbour Lane, Camberwell, S E., have just issued is a most complete one, comprising more than one hundred pages—in fact, the firm claims that it is the most complete of its kind ever produced. All goods are guaranteed to be of "best English make," and in support of this statement customers are invited to inspect the works, where special plant has been laid down to compete with foreign manufacturers. Electric bells of every kind are shown—ordinary, continuous, single-stroke, skeleton, bracket, watertight, intermittent action—the remainder of the catalogue dealing with pushes, indicators, cells, switches, fire-alarms, telegraph and telephone instruments, and electricians' tools. Messrs. Sax's indicator movement is a horse-shoe magnet, and has two poles instead of one, and the spring is so arranged that there is an almost entirely closed magnetic current: this, of course, increases the force of attraction. The indcators include some for desk and office use, and a very ingenious one for carriages, marked with "left," "stop," "home" and other directions for the coachman. Some of the designs for pushes are very pleasing, though many of them are too ornamental, and that numbered 1058 is altogether bad. The patent electric guage for determining the height of water in reservoirs, &c., has been supplied to the Watford U. D. C., Teddington Sewage Works, and many other establishments, while on page 97 of the catalogue is illustrated the firm's patent electric billiard marker, which registers up to 100. Owing to misunderstandings which have recently occurred Messrs. Julius Sax and Company, Ltd., wish it to be known that they are the original firm bearing that title, established in 1855, and that they have no connection with firms called by a similar name.

THE PAINTING OF DOORS.

ALTHOUGH the doors are usually the last parts about a house that are finished, they are the first primed. For the treatment of a new door to be finished in paint some prefer a flat priming of umber and white lead, half and half, mixed with raw oil. Use oil enough to bind it secure and no more. This proportion thoroughly fills and works well with sand-paper, giving a fine surface for subsequent coats of paint. Putty nail holes and fill all cavities with a hard putty that dries tolerably quickly. A great deal of trouble caused by putty falling out and getting loose is traceable to filling the holes only partly—bridging from side to side, leaving a cavity under the putty. The putty is likely to be pressed further into the holes when sanding, leaving a hollow which is sometimes not noticed until after the work is varnished. Press the holes so full that when the finger or putty knife is passed over them the putty will bulge up. If the putty is good there will be no further trouble.

After doors have been exposed they generally draw apart at the joinings. Seasoning appears to make little, if any, difference. If these places are filled with putty it is only a matter of time until they become loose again, portions of the putty dropping out, what remains getting loose, and the door looks worse than if it had not been puttied at all. The best thing to do then is to refit.

The painter finds doors in all kinds of conditions, and if he is expected to do a good job on any particular part it is on the front door. Sometimes he finds them so covered with successive coats of paint from time to time as to resemble an alligator's hide. The only way to make a job of such a door is to burn off. Painters have said that they have successfully plastered over doors of this kind and made a permanent job; but this is doubtful. Don't attempt to sand it down level, as it will take longer than to burn off and repaint. Usually such a door is in good shape to repaint after burning off. It has generally been kept well painted or it would not have the alligator-hide appearance. The reason there are so many doors in the country like this is that people buy a can of paint to do a small job. Some of it is left; they do not want to throw it away. If it is near the right colour, and there is enough of it, they tackle the door, thinking they can paint out all discrepancies, with the result that they make them only more pronounced when the paint becomes dry.

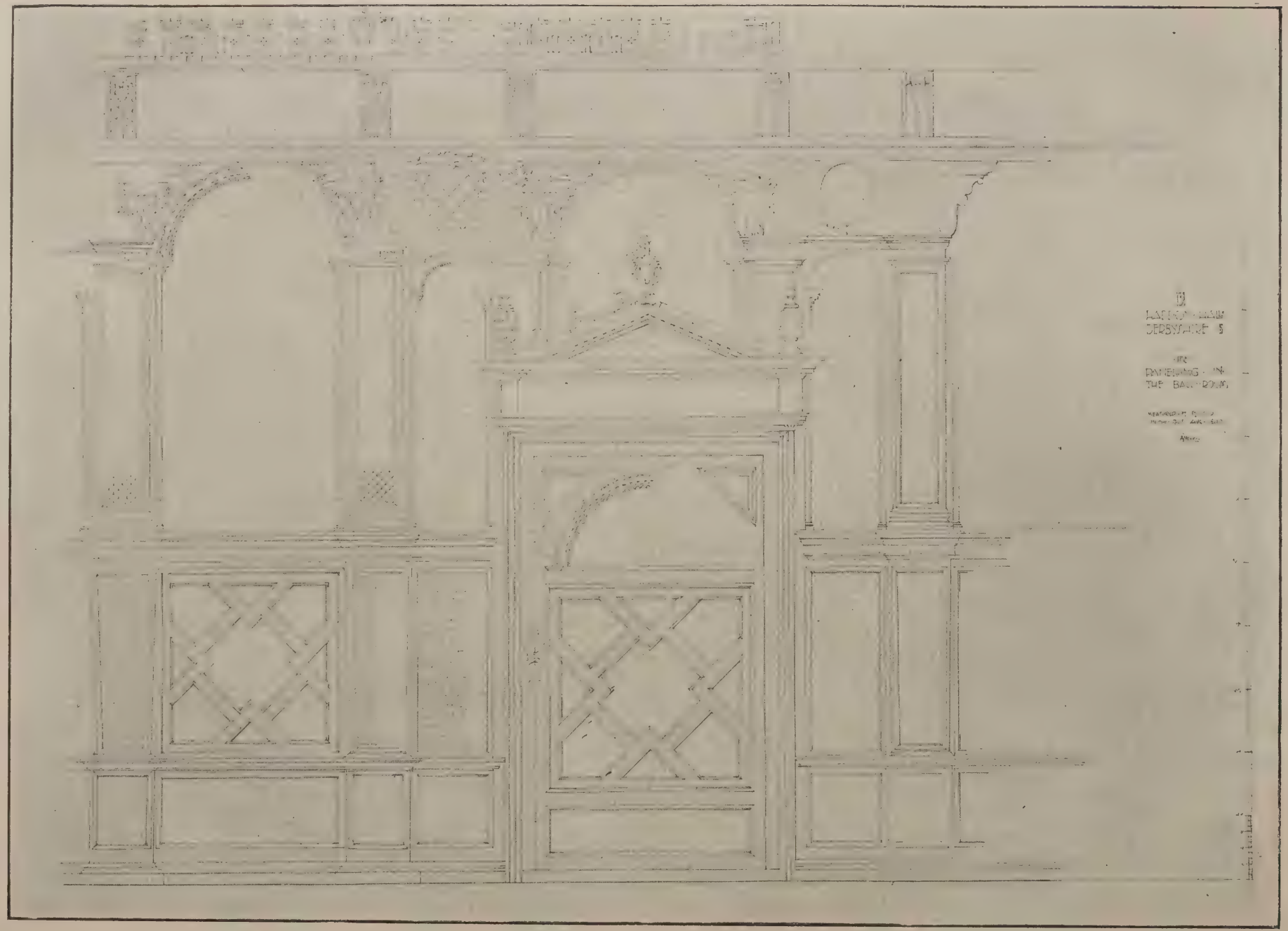
In cases of old hardwood doors, in which glue and nails were used to hold the mouldings in place, which have been kept well painted and are in fair condition, they may be finished by burning off and using a flat filler. In some instances they are in a very bad condition—moulding loose and weather checked in every portion. Do not attempt to get the mouldings back in place, because it cannot be done. Being in use for years, dirt has got behind them, which prevents them getting in place. The only way is to take off the mouldings and clean off the dirt behind them. If warped, soak in hot water, when they may be sprung back into position. If weather-beaten so much that they are scaly with rotten wood, scrape off what you can and partly smooth with coarse sand-paper; then take one of the plaster of Paris products now sold for decorative purposes, mix it to a paste and with a trowel plaster the cracks full. Then sand level.

Concerning the finishing of outside doors with varnish, it is a principle in painting that no varnish which is much exposed, no matter how well suited for the purpose, does well over straight oil coats of paint. Varnish to do its best must be over flat coats, well rubbed and perfectly dry.

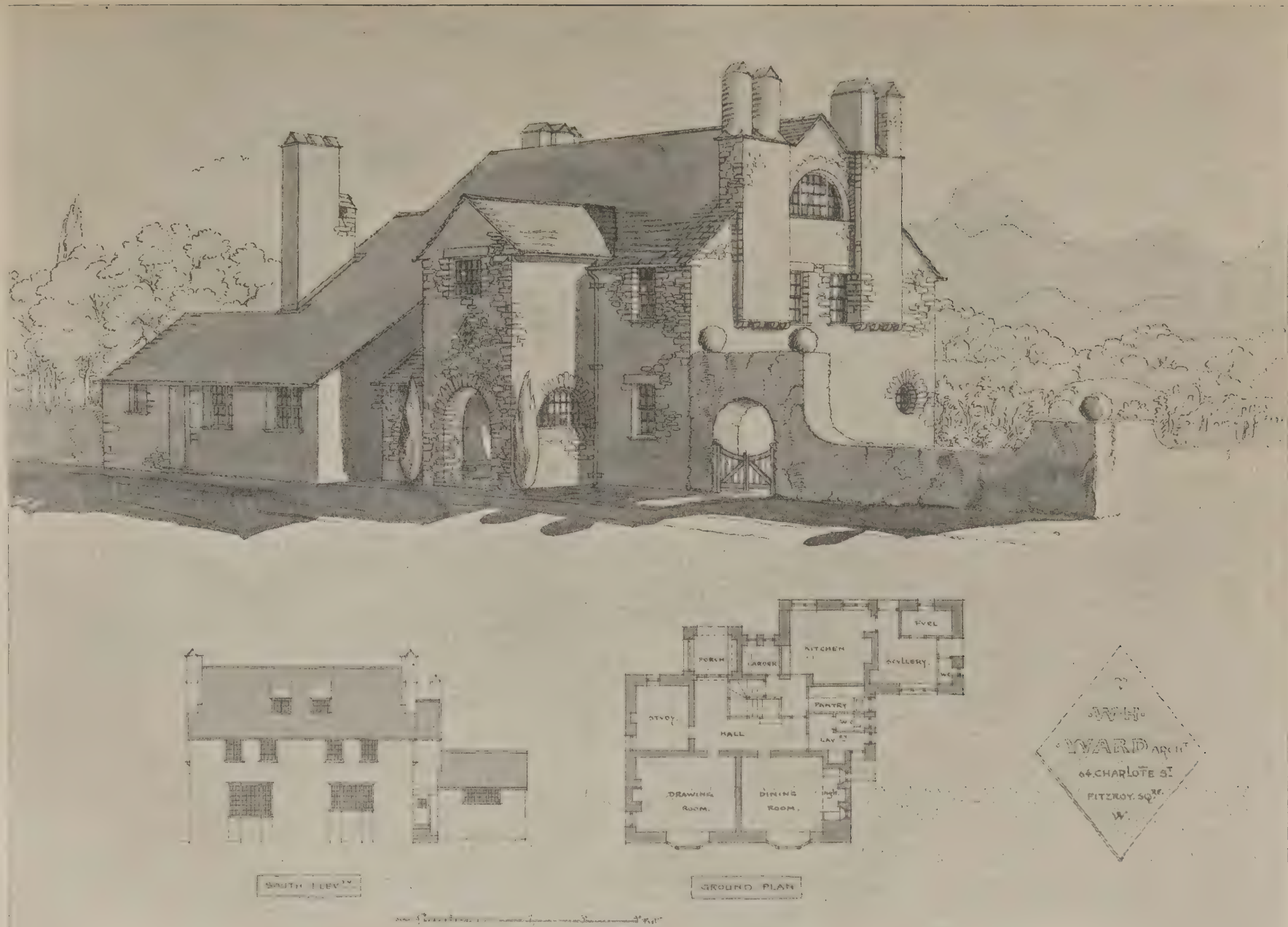


DRAWN BY H. DYMOKE WILKINSON.

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PANELLING IN THE BALL ROOM, HADDON HALL, DERBYSHIRE. Measured and drawn by J. A. WOORE.



"MOSS GATE," NEAR KESWICK. W. H. WARD, Architect.

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The Banqueting Hall
Haddon Hall
Fred^k Adcock

Bricks and Mortar.

APHORISM FOR THE WEEK.

A man need not be an architect to live in a house.—GOETHE.

Our Plates. THE Cross Keys Inn, Edmonton, situated adjacent to the fine old parish church of Edmonton and adjoining the old Edmonton railway station, was pulled down and destroyed a few years ago. It is very greatly to be regretted that it was not spared, as its great picturesqueness, fine colouring, and general grouping, combined with its antiquarian interest, made it an extremely interesting old-time place. The sketch reproduced was made in the summer of 1838 by Mr. H. Dymoke Wilkinson. In the interior there was much that was interesting. Many of the walls were of immense thickness, all lined with panelling of many dates. Some very fine old mahogany panelling, probably of the time of Elizabeth or a little later, was especially interesting. The fireplaces, throughout of the last century, were of simple though admirable design. They were chiefly in wood, with one or two good marble ones. The staircase was very plain, with a moulded handrail and twisted balusters.—The illustration of the banqueting hall at Haddon Hall is by Mr. Frederick Adcock, and that of the panelling of the ballroom from a pencil drawing by Mr. J. A. Woore. The latter was one of a set that gained a medal of merit in the R.I.B.A. Pugin Studentship competition this year.—"Moss Gate," by Mr. W. H. Ward, of London, W.C., is a small country house near Keswick, situated on a gentle slope facing south, and commanding on that side a pleasant view of the Newlands Valley and the surrounding mountains. An attempt has been made in designing it to keep in the local traditions and to preserve the simple and austere style characteristic of the district. The walling is of green Borrowdale slate-stone, and is executed in the local manner; each course has a slope outwards to throw off wet, and the mortar is kept 3in. back from the face, giving the appearance of a dry wall. The roof is covered with slate from the same quarries. All external woodwork is painted white except the doors, which are green, and the front door, which is oak. Internally a special feature has been made of the staircase and of the dining-room ingle, the latter of which is paved with red tiles.

"Big Ben." THE great clock at Westminster, 320ft. above the ground, is stopped for repairs; but it can show a good record, as ever since the year 1859, when it was constructed and erected by Mr. Dent, it has hardly ever been more than one second out of time. Messrs. Dent and Co. contract with the Government to keep it within two seconds of true time. The present clock tower occupies as nearly as possible the site of the similar great structure erected by the first Edward, the cost of which, it is said, was defrayed by a fine exacted upon a certain judge for accepting a bribe. This ancient tower contained "Great Tom of Westminster," a bell now only known by repute and superseded by the first "Big Ben," which weighed 16 tons, but, being found defective, was broken up, and was succeeded by the present giant. The big clock's face measures 22½ft. across its dials, the hour hand is 14ft. in length, the weight of the hammer is 4cwt., the winding up of the going part takes ten minutes, the winding up of the striking parts—the quarter and the hour part—occupies five hours each and has to be done twice a week. Its pendulum weighs 680lbs., and the figures on the enamel dial are each 2ft. long. The bell weighs about 14 tons, its circumference is 27ft. and its height 6ft. 6in. It is ornamented with Gothic figures and tracery in low relief, and is inscribed with the date of its casting. Keeping it company are smaller bells of 4 tons each, which note the four quarters. When the clock is thoroughly cleaned its solemn note upon the midnight air will once more be welcomed by Londoners as the voice of an old friend.

The New Government Offices. THE work of excavating the site for the new Government buildings at the bottom of Whitehall is proceeding apace. The present level of the ground—that is, 30ft. below the roadway in Parliament Square—consists of fine yellow sand, and in its vast extent it suggests a beach by the sea. There would be water as well to bear out the analogy were it not for the extreme precautions taken to keep it under. Night and day a powerful pump is at work, sunk below the level of the sand to prevent flooding. How great the danger is may be judged from the fact that about 10,000gals. of water are pumped out every hour. When the works were first started nearly 20,000gals. an hour was the average. It is fairly well known that the Thames flowed over this part of Westminster for centuries. Even in the early days when the Abbey over the way stood on an island, all the ground now occupied by the Government offices south of the Horse Guards, as well as the site of the Houses of Parliament, was more or less under water. The strata at the present excavations reveal the effects of the water period immediately the made ground and old foundations are penetrated. Before the fine sand is reached there is a stratum several feet in thickness consisting of loam, sand and vegetable matter such as would be washed down a river from higher ground. It is of a dark appearance, and has been likened to peat. In fact, it is said to contain sufficient vegetable matter and wooden fibre to make it as combustible as peat. The sand is reached 18ft. down, and is about 10ft. deep. The contractors are penetrating through the sand to the gravel in order to find a sound bottom for the 6ft. bed of concrete on which the foundations will be laid. Before many months pass the whole of this cleared space—700ft. long, 350ft. wide and 30ft. deep—will be walled in and covered with concrete. Then the builders will come upon the scene and commence their six years' task of erecting the new offices.

Aberdeen's City Architect. AT the last meeting of the Aberdeen Town Council Councillor Johnston moved: "That in view of the great increase of architectural work devolving upon the Council, it be remitted to the Special Committee in connection with the burgh surveyor's department to consider and report on the duties of the city architect (Mr. Rust), and whether an arrangement can be carried out to combine the whole of the city's architectural work under one official and office." Mr. Johnston said that he had compiled figures regarding the works carried out by the Town Council since 1892 up to 1899. On the City Hospital £25,000 had been spent; on the police workshops, £7,000; on workmen's dwellings, £10,000; on the Corporation lodging house, £16,000; on the police stables, £3,000 on the new fire station, £10,000; on the bathing station, nearly £15,000; on public conveniences, nearly £8,000; on the police offices, £14,000; or about £110,000 altogether. With the sums spent on public works carried out by the Town Council, the total amount reached something like £140,000. In Edinburgh there was an official styled the city superintendent of works, who devoted his whole time to the office. In Dundee they proposed to abolish the office of city architect. In Glasgow there was a superintendent of works. Now, it seemed to him that the time was very opportune for the question of the architectural work of the city to be considered by the Special Committee. The Lord Provost said they were asked to look into the whole matter of the burgh surveyor's department. In that department they found at present two architects with some assistants, and he looked upon that as certainly coming under their purview. He failed to see that there was any slur cast upon Mr. Rust at all. If they dismissed Mr. Rust and appointed another, that would be a decided slur; but if they found in the course of events that matters could be better met by having a certain class of work done by a certain set of officials, they were perfectly entitled to make a rearrangement, as they found it necessary. After a good deal of discussion the motion was carried by 16 votes to 8

London Government Act. ON the first of November next the London Government Act will become operative, and eight days afterwards there will be twenty-eight gentlemen entitled to call themselves mayors of as many metropolitan boroughs, not to mention the 227 aldermen and the 1,362 councillors. Not only do the new municipalities inherit all the duties, property, and liabilities of the old vestries and district boards, but they will take over many of the powers of the County Council at once, while others will probably be from time to time delegated to them. Perhaps the most important privilege assigned to them is that of promoting or opposing Bills in Parliament, a right which, so far, only the City Corporation and the County Council have enjoyed. In future the municipalities and not Spring Gardens will deal with wooden structures, sky signs, street obstructions and the registration of dairies, slaughter-houses and other matters comprised in the Public Health (London) Act; while they will have concurrent jurisdiction with the Council in such matters as the Building Act, the regulation of water companies and the housing of the working classes. They will manage main roads and bridges and will be able to stop up streets without asking the consent of the County Council. Then there are provisions for transferring other powers from the central to the local body; and in order that there shall be uniformity of practice it is enacted that when such transferences have been made to more than one-half of the municipalities the County Council shall, through the medium of an application to the Local Government Board, compel the rest to take over the same liabilities. Indeed, so far as circumstances permit these new corporations are made as similar to the large provincial municipalities as possible.

The Fee that Wren Received. IT has always been the practice of the bulk of humanity to grumble at the wages, salary or fees received for work done. Even such beneficent beings as architects are not exempt, for, strange as it may seem, they are no more than human. But a look at the records of the past will show that after all present-day architects are not so badly off. For the "great care" and "extraordinary pains" which Sir Christopher Wren took in connection with the rebuilding of St. Stephen's, Walbrook, the magnificent sum of twenty guineas (about sixty-five guineas in current money) was granted him. Five per cent. is not so bad after all, and what of the extras? Mr. Mountford has already received as his premium for the Sessions House design much more than Wren did for all his work on the church mentioned. O! ye gifted architects of 1900, meditate on this and weep for your professional sins.

The Working Men's College. IN these days of technical and secondary education enthusiasm, when polytechnics and University settlements abound almost on every hand, very little attention seems to be paid to a London institution which was the pioneer, by a very long lead, of all similar institutions. The Working Men's College in Great Ormond Street was founded as long back as 1854 by Frederick Denison Maurice, father of the present General Maurice, C.B. It is an institution rich in memories of the great educational pioneers of a past age—of such men as Kingsley, Judge Hughes (the author of "Tom Brown's Schooldays"), and Ruskin; but enthusiastic supporters of the college in Great Ormond Street are not nearly so numerous as they once were, although the classes are still conducted with considerable enthusiasm. The building is sadly in need of repair, but the building fund started has only at present reached £5,000, while nearly £20,000 is required for the new building. It seems a great pity that the pioneer of educational institutions for the people should be languishing while a few thousand pounds would set it on a proper footing again. It is greatly to be hoped that wealthy educational enthusiasts, including admirers of Ruskin and the other founders, will rally round this time-honoured institution.

THE PARIS EXHIBITION.

BY F. HAMILTON JACKSON.

II.—THE DECORATION OF THE BUILDINGS.

(*Continued from page* 31, No. CCLXXXVIII.)

THE decoration of the various buildings which form the Exhibition is carried out in various materials. There is first sculpture proper, whether in bronze, stone, or marble, with which may be grouped the plaster enrichments of various kinds of which such great use has been made; pottery, whether of one colour or of many; mosaic and painting; stained glass and plaster coloured to imitate wood carved and painted; and metal work, gilded or in its natural colours. The sculpture proper is most of it attached to the two permanent palaces, one of which contains the exhibits of pictures and statuary and the other a splendid collection of decorative objects illustrating the history of artistic labour from its beginnings in France up to the year 1800. Nearly every class in the Exhibition has also its retrospective exhibition dating from 1800 onwards, so that one has a most interesting series of examples of French art from the earliest times to the present day to examine if one takes the trouble to look them up in their various places. The Pont Alexandre III. is also decorated with groups of figures in stone and bronze, painted green or partially or wholly gilded, and with candelabra and ornamental escutcheons, &c. The character of the decorations of the Avenue des Invalides may be gathered from the eulogistic remarks of the French guide published by Hachette: "a succession of white and golden walls, of castles of cream and palaces of sugar, besprinkled with many-coloured syrups, decorated with sweetmeats cut into the shapes of oriflammes and vases." The palaces are in fact over-decorated with fantastic and too-projecting forms, suggesting the lack of restraint which one finds in Hindoo art, both in the want of a sense of constructional application and in the arrangement of subordinate parts. Two of the principal façades have been handed over to the tender mercies of the painter, with very unfortunate results. The architecture was not of much account perhaps, but the coloured work entirely destroys what architectural feeling there may have been. The general idea appears to be suggested by confectionery, and the idea of decoration seems to require but two things, plenty of female figures in high relief and scrolls and swags of flowers and fruit of the periods of Louis XIV. or Louis XV. The Palaces of Pottery and Fixed Decoration, which face each other across a broad space having beds of standard roses which smell sweetly, are decorated on the upper storey with three large compositions on each face—on one side the Arts of Earth, of Wood and of Stone, and on the other the Book, Weaving and Metal. Of these the best is "Weaving," by Paul Buffet, whose work seems to be founded on Henri Martin, but who has a good feeling for colour, with a certain quaintness of arrangement. The Arts of Earth and Stone on the other side are also tolerably good when seen from across the square, but do not bear a closer inspection well. In these also the "pointillistes'" manner of work seems to have inspired the artists.



FIGURE OF PEACE, FURNITURE PALACE.

From the pavilion of the town of Paris, westward along the Cours la Reine, stretches the Rue de Paris, flanked on one side by the various side shows which are intended to make people laugh and extract francs from their pockets. Here are the Maison du Rire, the Palace of Tableaux Vivants, the Garden of Song, La Roulette, Le Grand Guignol, the Theatre of Gay Authors, Bonhommes Guillaume (marionettes), and the Theatre of the Dance—all decorated with painted friezes of figures and other ornaments in plaster and colour. These are often tolerable in decorative colour, and sometimes even not bad in drawing, but the treatment and subjects are often such as would not be tolerated in English fair booths. No doubt it is very fine Art Montmartrois, but if the entertainment within is fairly indicated by the decorations of the outside it is of a character which the Englishman only goes to see when in Paris. The noise along this street is distracting in the afternoon and evening, and the crowds make it almost impassable. From each show come sounds of drums and trumpets, interspersed with shouted conversations and orations from personages in strange costumes, at whom the crowd wonders and laughs. Fortunately, the quiet person can avoid it by descending to the lower walk by the Seine, from which such an excellent view may be had of the Pavilions of the Nations on the other side of the river. These pavilions are among the most striking and attractive portions of the Exhibition, and I hope to return to them later, together with the very clever "Vieux Paris," which reproduces many of the buildings of historic interest no longer existing. In the section "Navigation and Commerce" two interesting buildings are to be found. The pavilion of the Peninsular and Oriental Steam Company has a good though rather extravagant frieze round the top in modelled plaster coloured and metalled, showing ships and clouds and broad rays of the sun. The spandrels of the portico also are decorated in the same manner. Other panels surrounding the lower parts are of figures uncoloured, and not so successful. The domes appear to be covered with aluminium, which makes them very bright. The other interesting building is the German pavilion of mercantile marine, which is crowned by a reproduction of the lighthouse at Bremen and has a cleverly painted frieze representing sea and ships of different sorts. Owing to its being carried right round the building, dropping into angles and passing over curved forms, the horizon is unpleasantly distorted. Two figures modelled in the round and coloured form part of the decoration above the door, mingled with ropes, anchors and oars, round the archivolt runs a very conventional ornament, and above is a heraldic eagle, also conventional, showing considerable incongruity. The Palace of Forests, Hunting and Fishing, a little further on, has a painting by M. Aubertin on its façade, which would be effective if carried out in mosaic. The doors and two small windows with balconies are set back within a great niche in the façade. At the top, on a yellow ground, upon which project deep red masses which one supposes are rocks, a boat appears; two men row and two haul in a net. At each side the waves throw up spray, being themselves a dark blue, which changes to palish green a little way down, and one sees red and blue fish, gold-coloured seaweeds, the net, and darker green masses against which pale purple anemones float below. A few birds fly round the fishers. The rest of the decoration shows how one can go wrong, animal forms and wood forms being combined with the architecture in a monstrous manner, which is highly praised by the French guide. The sculptor has, in fact, ousted the architect. The Palace of Mines and Metallurgy has at the angle a very fine doorway crowned by a great dome, and flanked by two towers also finished above with a kind of dome. Here is placed a carillon of thirty-two bells, which execute various pieces of music—"Adeste Fideles," the Christmas hymn so familiar to our ears, was followed by an air from "Les Cloches de Corneville" and others equally incongruous in juxtaposition. The bells range from a weight of 4 kilos to 840. This monumental porch is a very successful piece of decorative colour. The mass of the central dome is warm green, the ribs cream colour, with bosses of pale yellow and blue. The arch is dull yellow, the shields with which it is ornamented pale blue, the whole being apparently made of glazed pottery. The smaller domes are dead coloured and decorated with garlands and two cartouches of bluish-green with brown ornaments, a lower band of decoration bearing leaves and flowers in the same colours. The globes at the summit of the flanking towers are a pale turquoise

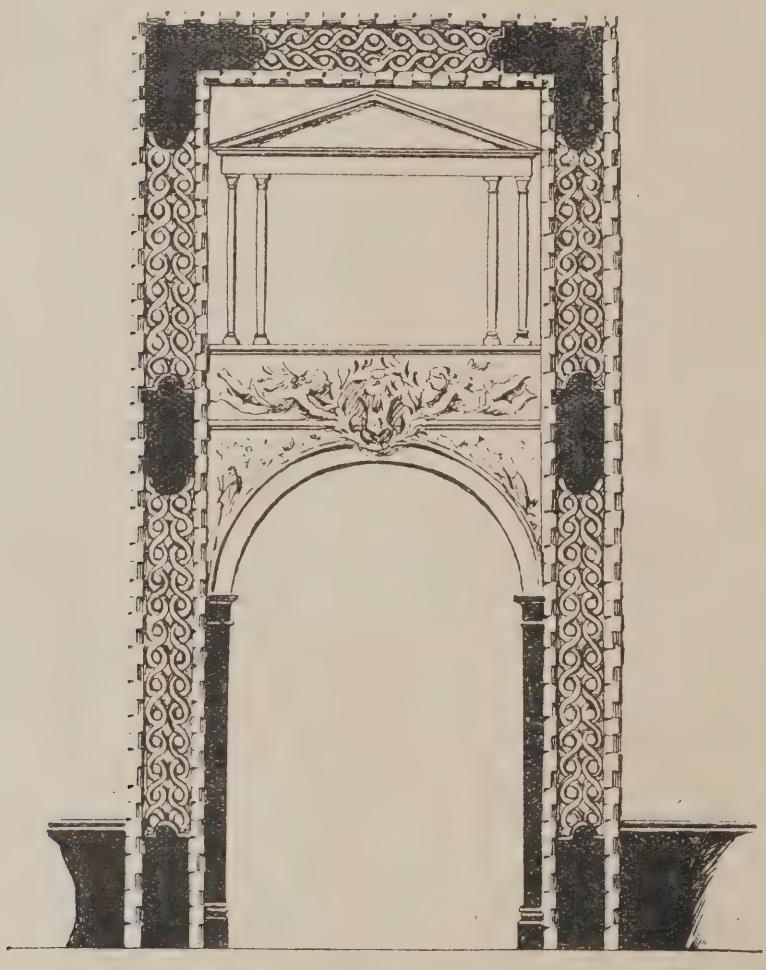


WINDOW FROM INVALIDES ENTRANCE. DRAWN BY F. HAMILTON JACKSON.

the rest coloured in pale browns and creams. It has the same Oriental suggestion which is so evident in other parts of the Exhibition, in this case not unpleasantly.

The Palace of Transport has a very fine frieze, signed A. Allar, which shows barbarians, Egyptians with a sphinx on a cart, Arabs on camels, Indians in palanquins, howdahs and carts drawn by oxen, Russians on sledges, Laplanders with reindeer and dogs, Greeks in boats, one of which is towed by oxen! a bride and bridegroom in a cart drawn by men and girls with music, a Renaissance horse litter and Buddhist wheelbarrow full of girls! Coaches, sedan and sledge from Holland, hand sledges and Louis XV. coach, on one side of the grand central portal. On the other a diligence, steam coaches and cabriolets, stage coaches, railway trains, an ambulance, a Hansom cab, a cripple's carriage, a trolly with a marble group, an omnibus and a perambulator, balloons and air ships, a military captive balloon, a high bicycle, a motor tram, a triplet cycle and a motor safety bicycle, as the most modern inventions. The figures are white against a background of pale turquoise green. Upon the piers from which the arches spring below are reliefs of artisans connected with railways and other modes of transport. These single figures are not so successful as the frieze. The most successful frieze, however, is that on the façade of the Grand Palais towards the Avenue d'Antin, which has been made at the pottery manufactory at Sèvres from the designs of M. J. Blanc. It is in high relief and glazed, being treated with considerable variety of colour, and runs along above the windows beneath the colonnade, the figures facing towards the grand doorway. On the left is ancient and mediæval art, led by S. Louis on a white horse, which again is led by a white-winged angel bearing a cross; a little genius a trifle further back bears a tablet inscribed "Fides," indicating that from Egyptian and Assyrian times Faith had been the chief inspiring principle in art. On the other side all is changed. A very flamboyant and meretricious "Art," surrounded by a large nimbus with rays, flaunts it on a gilded chariot companioned by draped and nude figures of both sexes. Behind follow the great men of the Renaissance, who it is plainly suggested followed Art in place of Faith. The series commences with Cimabue and ends with Garnier the architect, whose Grand Opera appears in the background behind him. The ground here is of varied blue-green, against which typical buildings show in warm cream colour behind the different groups of the long procession. The greatest effort in the way of decoration has been made in the "Salle des Fêtes," which is regarded by the French as a veritable "tour de force," and upon which the Parisian talent which is considered the best has been employed. Fernand Cormon, François Flaming, Albert Maignan, and Georges Rochegrosse have painted the immense compositions on the vault. Men of less reputation have assisted with subordinate work, though J. P. Laurens occupies a place above the eastern tribune. The sculpture is also clever, though the inspiration is as usual sought from the labour of the prolétaire, and around the balustrade separating the hall from the galleries are placed thirty-six statues, which represent the thirty-six nations who exhibit. The effect is good on the whole and the colour pleasant. The hangings are of a warm yellow green, with borders of brown gold, and the general colour is a pale yellow green and low-toned cream, relieved with a pale gold colour and with dull red in the recessed parts, a good deal of the modelled ornament being left white. The most successful of the lower range of paintings are those by MM. Gabriel Biessy and Louis Bégaux, representing "The Desert" and "The Sahara Scrub," in which the subjects are treated as sunsets with a good deal of red and orange and an upper border which is very successful in uniting the pictures to the general red tone of the recesses. The "Woods and Mountains of the Asiatic Continent," by MM. Piérre and Jean Paul Laurens are also decorative, though not so much so as those just mentioned. There are three main entrances on the ground floor, and a great staircase which ascends to the gallery on the fourth side. At the bottom of this stair a couple of nude figures hold lamps in a right-angled sort of way. One thinks that for such a position and service draped figures would have been better, both as regards mass and composition of line. Between these entrances, which are flanked with broad ornamental piers, are eight iron columns, two between each, which support three arches, and so bring the plan from a square to a circle. The webs of these columns are filled in with pottery panels in a very decorative and thoroughly constructional way, and the effect is excellent. A podium of cement runs round the central space, with massive gratings in it made of stamped tin! The principal ribs of the dome are overloaded with ornamental objects, and the dome generally is less successful than the lower part of the hall. The design of the glass velarium is apparently suggested by flights of rockets or a chromotrope, and is very poor, consisting of wormy lines and rosettes of pale and rather unpleasant colour, something like the pale windows in St. Paul's Cathedral, though the colour becomes fuller towards the summit. The planning of the angles with alternately projecting and recessed parts is very clever, and the effect is excellent.

By the other nations, apart from their pavilions, little is shown in the way of decoration, with the exception of Germany, Austria, and America. Germany is easily first, and her court in the Invalides palace and her rooms in the picture gallery are decidedly striking. To begin with the latter. Two staircases meet on a landing before the entrance to it, and the Germans have had the good taste to hide the structural ironwork with hangings of a yellow-brown sateen with a red pattern printed as border. Within the door of entry is a semi-circular portico of four Doric columns in white and grey mosaic, bearing an architrave of the colour of bronze patina and gold, upon which are two little Renaissance flying angels with a shield, and above which are two standing angels on a larger scale, also bearing shields. The curtains which hang between the columns are of a dull red plush. The wall within is stencilled in orange on a red ground. The door between this room and the next is divided into an archway and upper storey, framed with golden guilloches and a Venetian dentil border, with plaques of black marble at the corners, of which the dado also is made and the pilasters to the door. The arch, spandrel and frieze are the colour of green bronze patina, and two Renaissance angels appear again on the frieze, with a wreath surrounding the shield. The upper storey has a shallow pediment and narrow coupled columns, the latter gilded. On the other side the whole thing is gilded from top to bottom. The next room is hung with green yellow and has a modelled frieze in white on black. Beyond is a colonnade of streaky black marble (all imitation, of course), with little rooms off on each side, lighted from the top and hung with green, which conducts to an octagonal hall, also green, with a cornice of gold. The whole effect is very artistic and striking. In the court in the Invalides palace, also, a true feeling for architectural effect of the theatrical sort is shown. A flat archway of some depth is flanked by two equestrian statues of bronze on high pedestals. In front is a metal group of an eagle conquering a dragon (!), and around is an arcade of arches of various shapes opening into fitted rooms in which furniture is exhibited, from which steps descend to the central area, which is decorated with small trees and shut off by a shaped dwarf wall. Between the statues steps project, flanking a tank into which water runs from a metal mouth with pleasant trickle. Beyond the darkness of the flat arch is a large pottery wall-fountain, fully lighted, and beneath it is a space decorated at each side with columns and pilasters of onyx, and with niches and fountains. The floor is laid with mosaic, which is also used in the vault and on some of the columns, and a modelled frieze over the lower colonnades, coloured bronze and gold, adds richness to the decoration. The Germans have had the good sense to construct their own staircases, and they are very successful sometimes. In one there is a very original arrangement of



DOORWAY IN PICTURE GALLERY (GERMANY). DRAWN BY F. HAMILTON JACKSON.

balusters and panels. The influence of L'Art Nouveau is strong, and leads to extravagances, but when they have thrown that off they will have to be reckoned with as designers. In one room, which was a good deal over-carved and decorated, was an inlaid design in which the framing cut through the subjects with a fine disregard, in one place severing a horse's nose from his head and neck and distributing the fragments in two adjacent panels. Part of this subject was hidden by a constructional seat! and in other parts of the room and on the ceiling the same defects were evident. The Austrian picture galleries are a little over-grey in tone, but very quiet and refined. The pictures are scattered along the lower part of the walls. L'Art Nouveau reigns, and one is rather worried by the strange cuttings and piercings of the woodwork and the affected curves of the stencillings of the friezes and bands of ornament. The colours used are grey with greener grey and pale yellowish stencillings and red stained woodwork in one room. In another the same ground (a sort of twilled Bolton sheeting), with the addition of gold in the frieze and metal mountings to the brown-green stained woodwork. In another a pale brown is used with embroidery of pale old-gold colour and toned white, with woodwork stained a black brown. The door curtains are in excellent taste, double silk and cotton reversible fabric of good design and colour, and in another place of watered silk of a grey-green with *appliquée* of lemon green and embroidery of gold cord. The Furniture Court is not so good as the German section, though the feeling shown for colour is excellent. The divisions of the girders have been ingeniously made use of as panels, within which a casting of brass leaves and stems has been affixed with good effect. A room decorated by Czech firms has some well-executed decorative paintings, which are pleasant in colour and do not jump at one. The carving is a little overdone, but a cabinet with metal mountings has some delightful low-relief panels, and over the doors are metal grilles of greened bronze and brass, with pleasing arrangements of leaves or seaweeds, with masks. I observed in this section some extremely queer embroideries of *appliquée* cloth outlined in various coloured cords, so as to get different effects with the same ground colour. The United States has tried to give an architectural look to its section with a great arch flanked at each side by a group of sculpture, and a central pavilion from which colonnades extend in four directions, with a pretty ornamentation of branches and leaves, gold on white, surrounding the columns. The exhibits of glass are rather disappointing, and a bad copy of Raffaelle's "Miraculous Draught of Fishes" comes oddly in an exhibit labelled "Art Nouveau." One of the stalls in the perfumes section (Houbigant) has been decorated by Mucha. There are four painted panels with figures in relief, a figure in the round at the end, and several mirrors, all with the crescent-moon shaped bordering to which he has accustomed us. The statue has a sort of double nimbus of violets, roses and irises—artificial flowers—which shows plainly that the charm of his design is not the arrangement but the beautiful drawing and colouring. The figures are outlined in black and the interspaces coloured with rather delicate colours. The result is that the outline overpowers the colour and damages the decorative effect. There is a frieze of flowers also in relief below and between the wall hangings. The tables are extremely Art Nouveau, and are painted in pale colours; the dado has alternate lyre-shaped compartments of leaves and flowers in relief, coloured pale green upon grey green, and the same shaped compartments upside down of a plain browner pale green, with very good effect. The Union Centrale des Arts Decoratifs has a little pavilion to itself, consisting of four rooms. The first has stencilled patterns on the walls in two greys, yellow green and pale orange, the last two shading into each other, well designed, as is the border in pale yellow-green, darker green and grey and low-toned orange. The frieze and furniture are rather too much Art Nouveau, but are beautifully carved. The next room has woven panels about 12ft. high, of very good design, though with rather too many perpendicular lines. The plants employed are roses and bay intertwined with oak towards the top; crowns of bay occur at the top and near the bottom. The ground colour is deep salmon, the stems are grey, the rose leaves green and the flowers lilac: here brown outlines are used, and also to the stems, while the bay leaves are yellow-green and grey. The carving on frieze and furniture in this room is of the most delicate description, suggesting modelling in wax. The treatment is rather too naturalesque for the purpose to which the ornament is applied. The next room is all grey-green pottery, with a frieze divided into sunk panels by pilasters within which is fruit growing on branches in high relief and treated with naturalism, while in the same panel are highly conventional upright flowers incised. One end of the room has a very sketchy fountain and many pots of good shapes and colours are dispersed about. Beyond is a Salon des Dames, which contains trifles in poker work and other things with which ladies delight to work. Notwithstanding, there is suggestion in the pavilion and much that is admirable.

(*To be continued.*)

Professional Practice.

Aberdeen.—The St. Clair Engineering Works have just been completed on the north side of Pittodrie Street for Mr. John A. Sangster, engineer, of Aberdeen. The main building, which has a total length of 135ft. and measures 90ft. in breadth, is built of granite rubble, with the exception of the east wall, which is of brick, in order to permit extensions to be readily carried out. The roof is very strongly constructed of pitch pine. The span of the main rafters is 40ft., and these are supported at each side by a row of strong cast-iron pillars. The slope of the main rafters is continued downwards to the outside walls, so that practically the whole of the main building is under one roof. Above the tie-beams of the principal rafters a loft, 25ft. wide, and running the whole length of the building, is formed, which will be used for the storage of patterns. Access to the loft is obtained by a stairway at the north end of the building, where, on the ground floor, is the pattern shop. The west side is principally occupied as a machine department. The east side will be used as a fitting shop. At the north end of the main building is also situated the engine-house, the walls of which are covered with V-linings, and the floor boarded. On the side next the Links, and adjoining the main workshop, the blacksmith's shop and boiler-house are erected. The main building is lighted on each side by three rows of roof-lights, glazed with patent ribbed plate glass, ¼-in. thick, carried on T-iron astragals extending the whole length of the roof. There are also a number of windows in the north gable, and along the east wall of the building. On the side used as the machine department the floor is laid with concrete, while the rest of the floor space in the main building is macadamised and rolled. At the south end of the works, facing Pittodrie Street, are situated the offices and stores, with the main entrance in the centre. On the left of the main entrance, which measures 14ft. in width by 12ft. in height, are the time- and store-keepers' office and tool room; adjoining this is the general store. On the right of the main entrance is a large store for oils, paints, &c., and the foreman's office. Ascending by a pitch-pine stair with ornamental iron balusters and polished birch handrail the upper floor is reached. In the centre is situated a counting-house. Adjoining this is the private office, from which access is gained to a stock-room used for storing finished articles. Connected to the counting-house by a passage enclosing the staircase is the drawing office, measuring 22ft. by 14ft. The whole suite of offices is lined 4ft. up from the floor with stained and varnished woodwork. The counter and other fittings are also stained and varnished. The upper portions of the walls are plastered and coloured with distemper. The heating of the suite of offices, &c., is effected by a series of direct-indirect steam radiators with ventilating bases, supplied by the American Radiator Company. The offices are divided by a 9in. brick wall from the large workshop. The new premises were designed and erected under the supervision of Mr. William Smith, architect, 316 King Street, Aberdeen, and the following are the names of the contractors:—M son work, Beattie and Beaton, St. Peter Street; joiner, J. and A. Arthur, Canal Road; slater, George Bain, Hutcheon Street; plasterers, Sellar and Company, John Street; painter, G. Donald and Sons, Netherkirkgate; plumber, J. Blaikie and Sons, Littlejohn Street concrete work, Peter Bisset and Son; all of Aberdeen. The iron-work used in the new building was supplied by Mr. Sangster.

Birmingham.—The construction of the important group of intersecting arcades on land lying between New Street, High Street and Union Street has progressed so far that early next month there will be a thoroughfare from High Street to a point in Union Street near Corporation Street lined with shops and covered with a glass roof, except where it crosses Union Passage. By Christmas all the buildings associated with these sections of the arcades will be finished, and considerable progress will have been made with the other parts of the scheme. The full set of arcades will not be complete, however, for another two years, though probably all the new thoroughfares will be open to the public before the end of that time. There will be then two arcades opening from New Street, one opposite King Edward's School and another starting from opposite Lloyd's Bank and entering the High Street Arcade at right angles. The portion of the whole scheme which, apart from the High Street and Union Street sections, is nearest completion is the latter arcade, which is being erected for the Midland Arcades Company. The rest of the scheme—the High Street, the Union Street and the upper of the New Street Arcades—is being carried out for another company, the City Arcades, Limited, but the whole of the arcades will really form part of one system. The heaviest portion of the preparatory work at the Midland Arcade has been done, and the basement is completed, and in about twelve months there will be a way through and the shops will be opened. Of the City Arcades, that from High Street has had its frontage completed for some time. The glass roof now extends for 228ft. of the distance from High Street to Union Passage. The Union Street section, about 100ft. long, is roofed in, and the façade of the Union Passage end is practically complete. This, like the other entrances, is in brick and terra-cotta. The design of the frontages to New Street, High Street and Union Street is of Renaissance character. The total height will be about 80ft., and all the ornamental features will be of terra-cotta, with the flat portions in dark red Ruabon bricks. In High Street the entrance is flanked by two shops on one side and one shop on the other, and in New Street there will be a similar arrangement. The High Street façade is broken by a series of embayed windows running to the top storey. The terra-cotta work includes a number of cupolas or campaniles supported on small pillars, with ornamental work, including a number of grotesque figures and faces serving as caryatides, gargoyles and keystones. The Union Street front, occupying the site of the Old Library, is designed in a similar manner, but with some structural variations. In New Street the frontage, which like that in High Street will be 62ft. wide, will be recessed, and the windows in the upper storeys will be fronted by an independent series of rounded arches on circular columns. The City Arcades themselves will be about 22ft. wide in the clear, the shop fronts being brought forward so as to form a balcony and leave a footway of about 15ft. The frontages of the shops, of which ultimately there will be about a hundred, will average 14ft., the depth varying, and over each will be a showroom opening on to the balcony. The balustrade of the balcony and the pilasters of the shop fronts will be of a Mooresque design carried out in glazed green faïence, the glaze being shaded to imitate malachite. The shop bays are marked off on the balcony by cupolas in green faïence, replicas on

a reduced scale of those which ornament the street frontages. At the junction of the two City Arcades from High Street and New Street near Union Passage the New Street section will be considerably widened out, with a block of four shops dividing the footway. A little farther towards New Street the glass roof will be carried to a height of 50ft., forming a large dome, with a kiosk under its centre. At the corner of Union Passage and Warwick Passage a triangular piece has been thrown into the public way, and a similar thing will be done where the New Street Arcade opens into the passage, so that the opening will exactly face that of the arcade from Union Street. All the shops will have basements, and under each arcade will run a subway for the delivery of goods and another in which all gas, electric light and other supply mains will be laid. The building erected from the designs of the late John Henry Chamberlain for Messrs. Chamberlain, King and Jones, in Union Street, has been undermined in order to form a basement 77ft. by 36ft. The heavy engineering work, as well as the buildings—which will include an extension of the Louvre backwards from High Street and its connection with the Midland Arcade—has been carried out by Mr. Edward John Charles, of Moseley. The architects are Messrs. Newton and Cheetham.

Lynn.—At its last meeting the Board of Guardians selected a scheme for a new infirmary. The Board had three plans before it:—No. 1 (the block scheme) providing for the erection of the infirmary as one large building, estimated to cost £8,200; No. 2 (the pavilion scheme) to erect the infirmary in three blocks—connected by corridors—one each for the men and women and the third for administrative purposes (accommodation of the nurses, &c.)—estimated to cost £8,700; and No. 3 providing for utilising the present building, with additions—estimated cost, £6,500. For Nos. 1 and 2 thirty-years loans would be granted; for No. 3 fifteen years. At the previous meeting the subject was under discussion, and a committee of the whole Board presented a report recommending the adoption of the pavilion scheme, but, by the casting vote of the chairman, the report was rejected. At this meeting the subject came up for consideration *de novo*, with two propositions concerning it on the agenda. The chairman, Mr. C. H. Ayre, moved:—"That the Board do now make a selection between the plans numbered 1 and 2, and that the architects be instructed forthwith to make detailed drawings, for the approval of the Local Government Board, of the plan which shall be selected." In reviewing the steps which had been taken in this matter, the chairman mentioned that Mr. Gordon Smith, the architect to the Local Government Board, who was consulted on the subject by a committee of this Board, told them that in having an infirmary of the design of plan No. 1 (like one at Basingstoke, which they had viewed), they would have one erected after modern principles and quite up to date. One thing that impressed the committee which visited Basingstoke very much was that there were large verandahs, measuring nearly 50ft. in length, on to which the patients could be taken to get the sun and air. The No. 2 scheme would provide for only half that length of verandah; also the buildings would be more expensive to erect and more costly for management. The Board seemed to be evenly divided for and against No. 2 plan, and there was a suggestion by Mr. Springall that plans Nos. 1 and 2 should be submitted to the Local Government Board for them to advise which was the more suitable. He (the chairman) was in favour of No. 1 scheme; but if No. 2 were adopted he would give the carrying-out of it his hearty support. Without taking any prejudiced part, he could not help thinking that, as between plans Nos. 1 and 2, for the purposes of an infirmary and as suiting the site No. 1 was preferable. If he had been a younger man he would have been inclined to join a party to pull down the present workhouse altogether. The valuable site would go far towards building a new workhouse and infirmary, and the Board would then have a more economical place, which would repay the outlay hand over hand. But he could not put the clock back.—Mr. E. Dunn seconded the proposition, and spoke in favour of No. 1 scheme, saying it was less costly than No. 2, and the expenses of management would be less. No. 1 scheme provided for a much more compact building; with No. 2 scheme they would run the risk of interfering with the rights and privileges of their neighbours.—Mr. Lock explained that after all there was not so much difference between Nos. 1 and 2. No. 2 scheme was really taking the one straight line of buildings in No. 1, and folding the wings so as to get a western and southern aspect for each building. But No. 1 plan took the Board into deep water, because if it were adopted the old building was doomed. No. 2 plan could be carried out in sections. There would be three blocks, and the westernmost could be built at once and attached to the old building by a temporary corridor. No. 1 plan was for a colossal building, stretching from east to west, and with a northern aspect along its whole length.—Mr. J. Hillen proposed as an amendment that plan No. 3 be considered as well as Nos. 1 and 2. He objected to Nos. 1 and 2 on the ground of economy. He suggested that they should add two wings to the present infirmary; they could be built at different times and each could be planned to point south. The great object in an infirmary was to get the maximum amount of light and heat. If the two wings were connected to the present building (which could be the nurses' dwelling) by corridors, they would have the pavilion scheme at a much less cost. Mr. Hillen's amendment, which was to ascertain whether No. 3 plan should come before the meeting, was put, and was rejected by 11 votes to 6.—Mr. R. F. Springall then proposed as an amendment:—"That the plans Nos. 1 and 2, together with any other documents considered necessary, be sent to the Local Government Board, and the advice of their architect asked as to which is the most suitable for this union, and that such advice when given be adopted by this Board." Messrs. Smith and Son, of Reading, the Board's architects, he said, had told the Board that they had been carrying out a series of progressive plans of infirmaries; and if Basingstoke infirmary was a good place Lynn would have something better. Messrs. Smith did not say that the cost of No. 2 plan would be £500 more than No. 1. They said the relative cost would be £500 more—or 6 per cent. more. The amendment was put to the meeting and rejected. Mr. Springall then moved another amendment:—"That this Board postpone the consideration of the plans for the proposed infirmary until the clerk to the Board can arrange for the architect to the Local Government Board, together with Messrs. Smith, of Reading, to meet the Board at a special meeting in order to give the Guardians their advice as to the plans in question," which was not seconded.—Mr. T. Green then proposed that the Board adopt No. 1 plan, which Mr. R. Dye seconded. Mr. W. Lock proposed that No. 2 plan be adopted, and this Mr. T. Green seconded. On a division No. 2 plan was adopted by 8 votes to 7.

Okehampton.—A new market building is now in course of erection on the site of the inconvenient premises which for nearly three-quarters of a century served the purpose of a butchers' market and corn stores. Occupying the whole of the space between the pannier market and technical schools the new structure will be 173ft. long, with an average width of 37ft. It is being built of local dressed stone relieved with white brick, Bath stone and granite. There will be two entrances in Dartmoor granite, with Bath stone pediment and trusses and massive iron gates. The floor of the market will be laid with cement concrete, and the roof supported by composite trusses of wood and iron. Ventilation will be secured by means of gable louvres towards Lodge Road and special ventilating turrets in the roof. To provide internal lighting the whole of the north side of the roof will be glazed for a length of 12ft. The stalls will be of wood and iron. The building has been designed for the Corporation by Mr. J. Archibald Lucas, of Exeter, and is being erected by Mr. Ball, of Okehampton. It will cost about £1,500, and the work is contracted to be finished by the end of September.

Portsmouth.—At the last meeting of the Town Council a report was submitted by the Libraries and Museum Committee, with reference to the new Technical Institute. They recommended the adoption of No. 3 sketch plan, prepared by the assessor, and that application be made to the Local Government Board for sanction to borrow the sum of £45,000, the estimated cost of the building. The amount was divided as follows: Institute, £30,000; library, £10,000; and examination hall, £5,000. Alderman Ward, who moved the adoption of the report, said that the committee had at first thought £30,000 would meet the requirements of the Municipal Institute, but the assessor stated it was impossible to put up a suitable building for that sum. The estimate for plan No. 2 was £43,000, and they asked for power to borrow £45,000. The additional accommodation for the library would make provision for 70,000 books instead of 40,000. Mr. Evans and Mr. Carpenter complained that the steps to the building projected into the roadway. Mr. Vernon-Inkpen said the assessor had been told he would have to get the steps within the limit of the boundary. Replying to a question, Alderman Ward said the large hall would be large enough to seat 250 to dinner—more than double the size of the Mayor's Banqueting Hall. The report was then put and carried.

Enquiries Answered.

The services of a large staff of experts, including all those engaged on "Specification," are at the disposal of readers who require information on architectural, constructional, or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Drains below Houses.

HULL.—JUSTICE writes: "A client buys a piece of land about 107ft. long on which to build seven good cottages. The land falls to such an extent that the drainage can only be obtained by draining with the land, which necessitates coming under the end house, as adjoining there is a gable end. There is a local by-law permitting a drain under a building if bedded in concrete and ventilated. This by-law was carried out on the plans, but these the Urban Council refuse to pass on the ground that by building six houses only or by building seven houses of less frontage the drainage could be effected without passing under any house. The Council was asked to reconsider the matter, but they decline to do so. We should like to know our position: should we apply to the Local Government Board, or build and occupy and let the Council take legal proceedings?"

I am of opinion that the construction put upon the by-law by the Council is correct.

H. P. B.

How to become a Member of the Sanitary Institute.

ILFORD.—ENQUIRER writes: "I wish to become a member of the Sanitary Institute. Can you recommend me what books to study or tell me the way to proceed? I am managing foreman to a builder, and am anxious to become somewhat proficient in sanitary work: I have done plenty of this kind of work, but this will not entitle me to be enrolled."

The examination in "practical sanitary science" requires a knowledge of ventilation, drainage, sewage disposal and water supply. The principal provisions of the Model By-laws and a few of the more important Public Health Acts should also be carefully noted. Further particulars may be obtained on application to the Secretary, Sanitary Institute, Parkes Museum, Margaret Street, London, W. The following works are recommended for study:—Reid's "Practical Sanitation" (Griffin and Co.), Coleman's "Sanitary House Drainage" (Spon),

Moore's "Sanitary Engineering" (Batsford), and Knight's "Annotated Model By-laws."

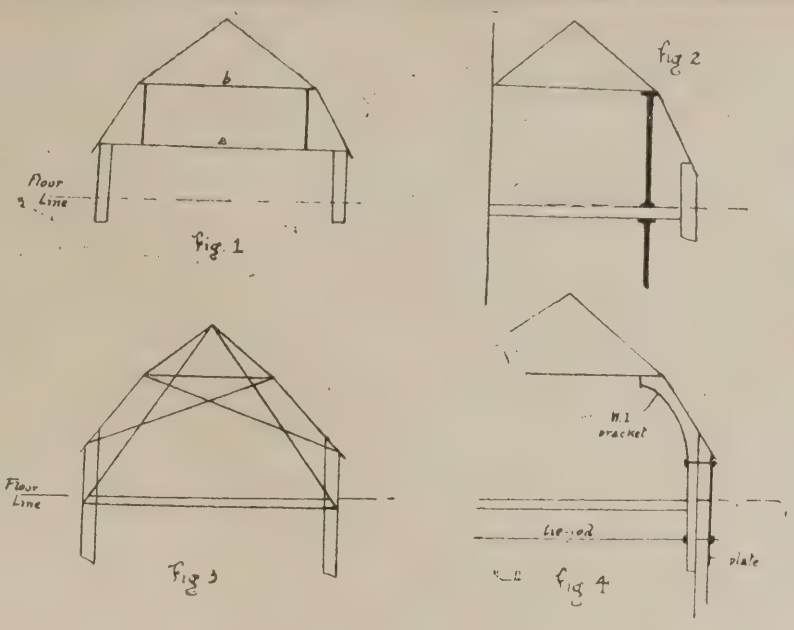
T. E. C.

Oak Fencing.

AYR, N.B.—H. writes: "I shall be glad if you can give me any information about split oak fencing—the scantling of the materials both in laths and in posts and rails forming the framework of the fence. Also where the materials can most readily be obtained. So far as I can learn this class of fencing is not obtainable in Scotland."

The accompanying illustrations will serve to show in a general manner the details of construction of oak park fencing, as usually erected in the South of England. As will be seen, the details apply to a fence 5ft. in height, and they may be taken as approximately correct for any height in reason, the only reservation necessary being that for a higher fence the posts may be proportionately stouter and should have longer butts, so as to be able to stand the increased wind pressure. It is usual to char and tar (gas) the butts before the posts are fixed and to leave the fence undressed in any way; but sometimes, as when fixed as the front boundary fence of a residence, the posts are painted white, whilst the remainder of the wood is dressed with Stockholm tar or boiled oil. Although the gravel board is a customary provision it is sometimes omitted, and a brick plinth substituted; sometimes there is no substitution, but when the pales are fixed close to the ground they are much more liable to premature decay. The rails are either sawn or cleft, the former being preferable as making the alignment better; sawn pales are now being brought into use, probably on account of cheapness, there being less waste than when the pales are cleft. Pales are made of different widths, and in best work are fixed with copper nails, though zinc and iron nails are also employed. The fence from which the details are taken is fixed in 9ft. bays, and the horizontal section shows how each bay is finished off by a pale fixed in reverse position. The top rail is fixed about 4in. below the top of the fence, but when it is desired to render the fence unclimbable the top rail, of different section as shown, is fixed flush with the top and covered by a weathered capping, through which, from the under side, ordinary steel cut nails about 3½in. long are driven. Wrought nails with sharper points would be an improvement, though, of course, the cost would be higher. A list of firms supplying the fencing or the materials therefor appeared on p. 392 of the BUILDERS' JOURNAL for January 24th last.

H. E.



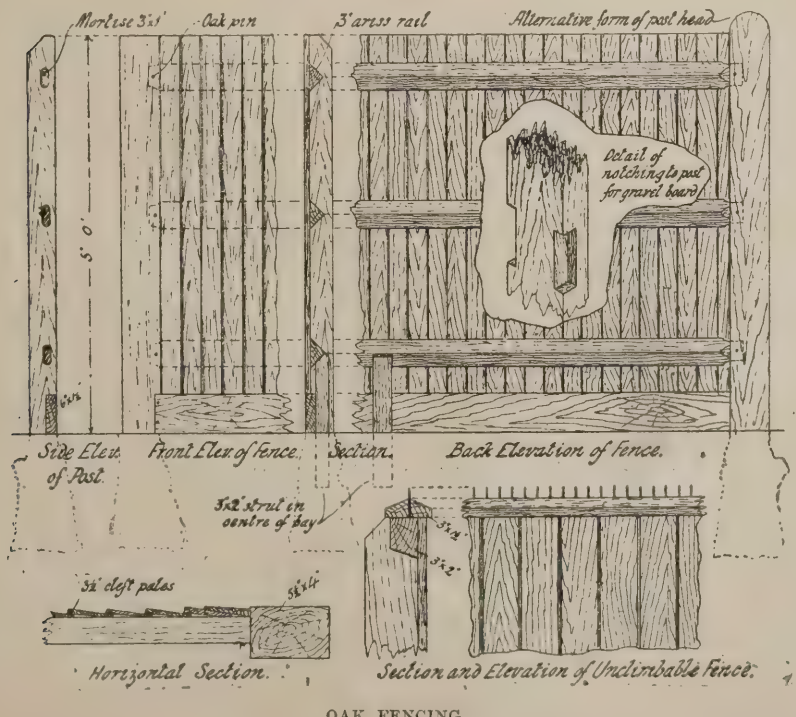
HEAD ROOM ON FIRST FLOOR.

Head Room on First Floor.

COVENTRY.—AN OLD SUBSCRIBER writes: "A client of mine wishes to erect a two-storey factory as per sketch (not reproduced). He is restricted in carrying up the wall facing the passage to a height of 13ft. (right of light). What construction of roof would it be necessary to adopt so as to obtain, say, 7ft. or 8ft. head room on the first floor? You will notice that the distance from the first floor to the eaves is 3ft. only. The roof may be any shape so long as the head room is obtained."

In answering this query it is presumed that it is impossible to arrange with the adjoining proprietor for an extension of the height to which our correspondent's client may carry up his wall. It is sometimes possible in these cases to give a *quid pro quo* somewhere else and so compromise the matter. It should also be remembered that the roof of the proposed new factory if unduly high may possibly itself cause an injurious loss of light to the adjoining owner, though if the angle of the new roof be kept below 45 deg. this injury is hardly likely to occur. The various methods of evading the difficulty mentioned by "Old Subscriber" which occur to me are:—(1) Sink the level of the bottom floor 3ft. or 4ft. below the present ground line and so obtain a lower level for the upper floor; then put any ordinary roof truss on the top of the outer wall, which will still be only 13ft. in total height. (2) Use an ordinary "Mansard" roof truss as shown in outline in Fig. 1., or, if preferred, leave out the lower tie-beam, *a*, and carry the ends of the upper tie-beam, *b*, on upright timbers or light iron columns, as sketched in Fig. 2. It will be noticed these columns form an obstruction in the ground floor room as well as the upper. (3) Or the floor joists may be utilised in the place of tie-beams and a construction such as that sketched in Fig. 3 adopted. Iron trusses would probably occupy the least space and so occasion the minimum of obstruction in the upper storey. It would, of course, be necessary to roof light this portion of the building, though perhaps windows may also be placed in the gable ends. (4) In place of roof trusses, as previously described, a wrought-iron bracket, as shown in Fig. 4, may be employed to carry the roof tie, all its outer edges being of T section connected by a web in exactly the same way as an ordinary rolled joist, save that this bracket is curved, whereas a joist would be straight. An iron plate may be placed on the outer side of the main wall and each bracket secured in its upper portion by a bolt through the wall. The lower extremities would be tied by a round iron rod at about 1ft. 6in. or 2ft. below the ceiling line of the room below.

G. S. M.



OAK FENCING.

R.I.B.A. Studentships and Prizes.

EDINBURGH.—E. J. K. writes:—"Where can I obtain a list of subjects and details of competitions for the R.I.B.A. studentships?"

A list of the subjects of these competitions appeared on page 64 of our issue for February 28th last. Full particulars are given in a pamphlet issued by the R.I.B.A. at its offices, No. 9 Conduit Street, Regent Street, W., price 3d.

Surveying and Sanitary Notes.

New Park for Eastbourne.—The Eastbourne Town Council has decided to purchase a park of 82 acres from Mr. Freeman Thomas. The scheme includes a low-level drive to the Willingdon Estate, and the total expenditure on it will be £12,500.

Dungarvan Main Drainage Scheme.—The Dungarvan Urban District Council have retained the services of Mr. W. Kaye Parry, M.Inst.C.E., of Messrs. Kaye Parry and Ross, civil engineers, of Dublin and Westminster, as consulting engineer in connection with their proposed main drainage scheme.

The Haymarket and Lower Regent Street, London, after a lapse of a few years only, are again being re-paved with wood—Alcott's redgum. This wood is of a khaki colour, and though softer than hardwood is extremely durable. It can be laid with great rapidity and requires no creosoting or tarring.

Changes around Windsor.—A river-side promenade is being constructed to remove the one defect on the Windsor bank and a new road from Thames Street in the direction of the promenade is assuming definite shape. Plans have also been drawn for laying out the Goswell Meadow, in the rear of the promenade, as gardens, with kiosk and bandstand. It is expected that the improvements will be completed by next summer.

The Ventilation of the Bradford Kirkgate Market is being improved by the fixing of a large sun fan. This is a matter which has long stood in need of attention. The market is becoming increasingly popular, and at times, when the press of visitors is heaviest—Saturday nights, for instance—the atmosphere is so trying that many people who are not quite strong find they must keep out of the building because the conditions are unendurable. To an appreciable extent business has been lost from this cause.

Dewsbury Improvement Scheme.—It is proposed to make a new road through Crow Nest Park and the Old Borough Park. The estimated cost of carrying out the scheme is £9,857, but against this sum there would be the amounts received for land sold. It is proposed to sell a great portion of the Borough Park, as well as a strip taken off Crow Nest, for building purposes. The matter has been under consideration for some time past, but the Council has now approved the principle of the scheme, and they have requested their Parks Committee to work out details and to submit them.

Shrewsbury Sewage Scheme: Nearing Completion.—The carrying-out of the elaborate scheme of sewerage and sewage disposal adopted by the Shrewsbury Town Council in the early part of the year 1896 has taken a very much longer time than anybody anticipated when the first contract was let, and there are some members of the Corporation so pessimistic in reference to it that they do not hope to see its completion for a long time to come. There are not wanting signs, however, that the end is at last within measurable distance. Part of the scheme is now actually in operation, and, the engineers say, is working in an excellent manner.

The Historic Pantiles at Tunbridge Wells—in regard to the control of which there has been considerable litigation between the Lady of the Manor and the Corporation—will, it is expected, shortly come under the absolute management of the Town Council. Preparations are being made to light the quaint linden walk with electricity, and it is also proposed to erect a large fountain, to be supplied by the chalybeate springs. Owing to the continued friction between the manorial authorities and the Town Council in the past, the Pantiles promenade has been much neglected, and considerable satisfaction is felt, not only by the inhabitants, but by the many visitors to the town, that steps are about to be taken to put the resort in good condition without spoiling its old-world appearance.

Sanitary Inspectors' Conference.—The members of the National Union of Sanitary Inspectors assembled at Leamington on Thursday last, for the fourth annual conference and thirteenth annual meeting, which was held under the chairmanship of Mr. William Bland, of Barton and Wimston, in the absence of Sir Francis Powell, M.P., president, who is in Germany. The union was accorded a hearty welcome to the town. The official reception by the Mayor and Corporation took place on Friday. Lord Leigh invited the inspectors to visit Stoneleigh Abbey, and Lord Algernon Percy gave permission for a visit to Piers Gaveston's monument. Arrangements were also made for visits to Warwick Castle, Stratford-on-Avon, Kenilworth Castle, and other historic places in the neighbourhood.

East Pentire Estate, Newquay.—The second sale of plots on this freehold building estate took place recently. Since the first sale the vendors have made new roads and laid the sewers and water mains, and altogether the estate presents a most attractive appearance. The five plots facing the sea were not sold, but twenty other lots were disposed of, realising £3,401. Mr. J. Ennor, of Newquay, is the surveyor.

New Parks for Leeds —Leeds is to have two new parks. The City Property Committee have agreed to acquire Harehills Park Estate for £35,000, in the Chapeltown District, the area being 32 acres, and a site in Harehills Lane for £14,000, subject to the approval of the City Council. With the opening of new parks the Corporation are gradually abolishing the slums of Leeds, and it was recently announced that the Dusty Miller public-house in East Street had been bought for a street improvement.

Masters and Men.

Bristol Association of Clerks of Works and Builders' Foremen visited the seat of Sir W. H. Wills, M.P., at Blagdon, recently. On arrival at Blagdon the party were met by Mr. E. Blizzard and Mr. Edwards, bailiff to Sir W. H. Wills, and were conducted over the estate and grounds. After a ramble through the woods, the party were entertained to luncheon, the chair being taken by Mr. E. Blizzard. The party afterwards visited the church, the tower of which has been recently restored by Sir W. H. Wills, and thence proceeded to view the new waterworks reservoir in the valley.

Threatened Strike of Builders' Labourers in Cork.—At present the minimum weekly rate of pay is 16s., but in some instances a number of the men receive 17s., and others 18s. The men now ask the employers to concede an increase of 2s., the first advance to take effect on September 1st, and the second on March 1st next. The employers, while declining to accede to the September increase of pay, have agreed to give the 1s. advance on the standard rate of wages in March next. This determination has caused much dissatisfaction amongst the employees, who have decided that a general strike shall take place next Monday. This step has yet to be considered by the Cork United Trades Council.

The Building Trade Dispute in Ipswich has been settled. The terms of the agreement arrived at between the employers and men at the meeting on August 17th are as follow:—"That a new rule be added to those accepted and known as being drawn on the lines of the carpenters' rules, viz., 'That the members of the Master Builders' Association agree not to employ labourers to do bricklayers' work'; and further that the secretary of O.B.S. furnish that association with a fair copy of the aforesaid rules, embodying the statement that the agreement entered into is binding on both parties for three years, from March 25th, 1901; that the wages hitherto agreed upon be paid—7½d. per hour from August 20th, and an extra ½d. per hour be paid from March 25th, 1901."

A Carpenter's Custom.—Before Mr. Slade at Southwark police-court, last week, a carpenter complained that his employer refused to pay him when he "knocked off" work. The clerk asked, "When was that?" "This morning before breakfast. I gave him an hour's notice, and, according to our trade rules, I was entitled to be paid at once," was the answer. "Can't you go on Saturday for your money?" "No, it is our rule to be paid 'on the nail.'" "But is it worth your while to take out a summons, rather than wait till Saturday?" "I think so, because it is the custom of our trade." "In all probability he will pay you on Saturday." "Perhaps not. He seems to me to be a rather shaky customer." Mr. Slade: "How much does he owe you?" "Sixteen hours at 10½d. an hour." "Very well. Take your summons."

Keystones.

A new Hotel at Whitby is to be erected, at a cost of £50,000.

The Central London Railway Stations are to have flats and offices built over them.

For new Offices for the Cuckfield Rural Council at Hayward's Heath £850 has been borrowed.

The Death of Mr. Thomas Faed, R.A., which occurred recently, will not cause a vacancy, as he retired from the Academy in 1893.

A Marble Bust of Mr. Gladstone was unveiled at Stirling in the Hall of Heroes of the National Wallace Memorial last week.

A new Infectious Diseases Hospital for Bo'ness and Grangemouth is proposed to be erected at a place convenient to both towns.

Electrical Treatment for Lead-Poisoning.—The North Staffordshire Infirmary has been provided with electrical apparatus for the treatment of lead-poisoning.

The Lunatic Ward of St. George's Workhouse, Mint Street, E.C., is being altered and repaired under the superintendence of Mr. G. D. Stevenson, architect, 13 and 14 King Street, Cheapside, E.C.

St. George's Vestry and Electric Lighting.—On Friday last a special vestry meeting of the parish of St. George's, Hanover Square, W., considered the proposed electric lighting of the streets at a cost of £17,000 annually for a term of thirty-one years. After discussion the motion was adopted.

A new Sailors' Home at Chatham is to be erected. The Admiralty have expressed their willingness to contribute a sum not exceeding £5,000. The grant will be contingent upon the condition that £1 is raised by voluntary donations for every £1 provided from public money. An immediate start is to be made in building the first section of the home.

A new Parish Hall at Aspley Guise is to be built. The building will contain a hall 28ft. by 54ft., including a platform; a council chamber 16ft. by 12ft., with a deed room and a reading room 16ft. by 18ft. The building is estimated to cost £1,500, but it is expected that a further sum of about £500 will be required for seats, fixtures, lavatories, &c.

The new Essex Museum of Natural History at Stratford, which fortunately escaped the fire that destroyed the adjoining Technical Institute a few months ago, is now in course of arrangement, and will probably be opened on October 20th. The Institute buildings are being repaired, and will, it is thought, be ready for reopening in six or eight months' time.

High-priced Chairs.—The Local Government Board has objected to the Hunslet Guardians at Leeds proposing to furnish its board room with eighteen oaken chairs, at a total cost of about £60. The defence of the Guardians is that what they propose is simply to buy chairs to match others bought some years ago, and they mean to carry out their proposal.

Light—and the Want of it.—A dispute between Alfreton Council (Derbyshire) and the local gas company as to the price of gas for street lighting has resulted in the town being in darkness at night. A town's meeting was called by tradesmen to force the Council to agree to the gas company's terms, but an overwhelming majority was in favour of the action of the Council.

The Excavations at Wilderspool, near Warrington, on the site of the old Roman city there, are progressing favourably. Chief among the discoveries hitherto made have been a number of hypocausts in varying stages of preservation. The tenth of these was recently brought to light and found in a better state of preservation than any of the others. The over arch, which in the case of each of the nine previously unearthed had unfortunately collapsed, was in this instance found to be intact, and there was also the accompanying floor of the chamber which the furnace originally heated.

An Isolation Hospital for Thorne is proposed to be erected at a cost of £2,000 by the Thorne Parish Council.

A Memorial to Lord Russell is to be erected in the new Westminster Cathedral, if Cardinal Vaughan will give permission.

The Pagoda at Kew.—Mr. J. Landfear Lucas has called attention to the refusal of permission to the public to ascend this Pagoda, in grounds which are maintained by an annual Parliamentary grant of about £20,000.

Tramway Schemes for Essex.—The West Ham Corporation, the East Ham and Ilford District Councils, have each under consideration schemes of electric traction. There is to be a through connection that will give travelling facilities over a thickly-populated area of that portion of Essex.

The Large Lake in Brockwell Park has been entirely lined with hydraulic cement, and the depth adapted to inexpert swimmers, the gradients being three, four and six feet, with a dive of seven feet. There is a shed for undressing and dressing. Bathing, as formerly, will be restricted to the early hours of the morning.

A Reredos at St. Clement's Church, Barkerend Road, Bradford, has been erected. The material with which it is wrought is Venetian glass mosaic, manufactured by the Venice and Murano Glass Company, Italy and London. The chancel windows are also included in the scheme of decoration now completed. These windows are the work of Mr. E. C. Kemp, of London. The pews in the church have been re-stained and varnished.

A Plaster Model of Lord Leighton's Memorial Bust has been placed in St. Paul's. Seated figures representing Sculpture and Painting are placed at the east and west of the tablet, which bears the following inscription:—"To the memory of Frederick, Lord Leighton of Stretton, painter, sculptor, seventh President of the Society of Arts, this monument is erected by his many friends and admirers. Born Dec. 3, 1830, died Jan. 25, 1896. He lies buried in the crypt of this Cathedral."

St. Paul's Church, Barrow, has just had a new organ and a vestry room added. The work of building the new vestry and organ chamber has been done by Messrs. Thoms and Son, of Grange, and the organ has been built by Messrs. Alex. Young and Sons, of Manchester, to the order of Councillor James Thompson, of Monks Croft. The case, which is of oak, was designed by Messrs. Austin and Paley, who also designed the new vestry, &c.

The Leeds Public Dispensary is to be extended by the erection of a new building, the opportunity being afforded by the widening of North Street. The street improvement encroaches to the extent of 28ft. upon the existing dispensary, and, the building being now too small for the requirements, such a serious curtailment cannot be contemplated. An suitable site on Hartley Hill has been secured in the immediate vicinity, and the erection of a new dispensary is to be proceeded with at as early a date as possible. The ground selected comprises about 1,470 square yards; it has a frontage of 80ft. to North Street, and is open to Hartley Hill on the south side and to Back Brunswick Street on the north.

"The Temple of Heaven," at Peking, lies in the southern quarter, in the "Chinese City," about two and a half miles from the Legations and Imperial Palace. The extensive grounds of the temple are surrounded by walls. Within the enclosure stand two temples. The principal one is composed of a flat, marble-paved altar, surrounded and supported by three circular marble terraces and flights of steps. Above this platform stands a large edifice with three roofs, all of bright blue glazed tiles, representing a symbol of Heaven. The second altar, which stands apart, is very similar—the terraces and steps being almost a counterpart—with the exception that there is no triple-roofed building surmounting it. These buildings are among the most interesting religious structures of China. The stones, slabs, balustrades, steps and decorations are all ranged in symbolical numbers.

Firebricks from Dredgings.—It is stated that a Suffolk brickmaking firm, after experimenting with the dredgings of the River Stour, finds that excellent firebricks can be made from them.

Montevideo Port Tenders.—The tenders for the construction of the port at Montevideo have been opened. Three great British contracting firms have tendered, the lowest being £2,600,000, and the highest £3,000,000. Three French houses also sent in tenders.

Views and Reviews.

The Drawing of Ornament.

This booklet consists of twenty-four examples of relief ornament and sixty-eight analytical diagrams of construction printed on pages 11in. by 8in., with a few hints and directions for the drawing of them. The examples of ornament are Greek, Arabian, Gothic, Roman, Byzantine, and Renaissance, and are presumably photographic reproductions of the casts so familiar to all art students—the Greek fret ornament, the Gothic quatrefoil from a diaper pattern, the Roman rosette or the beautiful acanthus, for instances. Above each example are the diagrams showing how the student is to proceed, how he is to obtain his governing lines, and how he is to work out the subordinate parts. The hints given are of the most elementary character—in fact, too elementary—and contain only two remarks that are worth noticing: one is that the analytical diagrams are not to be copied, but only used as suggestions; the other "that accuracy of form and freedom of line should be secured before attempting finish." It is a common failing among students, particularly those studying the antique, to be giving their attention to detail when the all-important main lines are wrong. Having these examples before the eye reminds us of what should be the true use of freehand drawing and light and shade. It is not to produce copies as copies—these are worthless—but as a mean to an end, to train the hand and eye to better things. This is the only legitimate reason for copying, yet cases are numerous of art students working night after night on, say, a piece of stump work, while all the while they would be improving themselves much more if, instead of producing one laborious drawing, they had drawn half a dozen less highly finished ones, and so acquired a greater proficiency. For obtaining a freer hand and a feeling for design, therefore, the examples in the book under notice can be recommended for home study; but do not let them be copied and copied and copied for the sake of simply producing copies.

"Freehand Drawing of Ornament," by John Carroll. Burns and Oates, Limited, 28 Orchard Street, London, W. Price 1s. 6d.

LONDON'S CONGESTED STREETS.

A PLAN for relieving the present congested state of the London streets has been formulated by Messrs. W. Rose Smith and Mr. H. Hoyne, Fox. Briefly it involves the construction of a great central terminus in the neighbourhood of Piccadilly Circus, connected by about forty tunnels with the termini of the several London railways. In addition to the passenger traffic it is proposed that the market produce should be loaded into trucks, brought up to town on the present railway lines, and then dropped by means of lifts down to the underground lines referred to. From the Piccadilly centre the trucks would be taken to the markets they were intended for. The promoters claim that this would do away with half the congestion of the London streets. Nearly two thousand million tons of food a year, at present dragged through the crowded streets, would be swiftly and invisibly transferred from one corner of London to another—and London streets would be free for pedestrians and noiseless electric-motor vehicles.

New Companies.

Thiersant, Limited.

This company was registered on August 15 h, with a capital of £500 in £1 shares to acquire, work and turn to account any inventions relating to acetylene gas or otherwise.

Clayton West Freeholders' Building Co., Ltd.

This company was registered on August 14th with a capital of £2,360 in £10 shares to take over the business of the Clayton West Freeholders' Building Company. Registered office: 9 Station Street, Huddersfield.

Kennedy Brick Machine Company, Limited.

This company was registered on August 18th with a capital of £3,700 in £1 shares to acquire and turn to account any patents, inventions, contracts or rights. The first directors (to number not more than five) are to be appointed by the subscribers.

Walcot, Limited.

This company was registered on August 10th with a capital of £1,000 in £1 shares to carry on the business of timber growers, brokers and merchants, sawmill proprietors, &c. H. T. Walcot is permanent managing director, and may appoint other directors.

Improved Tenements Association, Limited.

This company was registered on August 16th with a capital of £2,000 in £10 shares to acquire and deal with lands, houses, buildings and property in London or elsewhere, and to carry on the business of builders, contractors, &c. Registered office: 10 Drapers' Gardens, E.C.

North Kent Land Company, Limited.

This company was registered on August 16th with a capital of £30,000 in £1 shares to carry on the business of land and property owners, builders, &c. The first directors (to number not less than two nor more than seven) are to be appointed by the subscribers. Registered office: 139 Queen Victoria Street, E.C.

Panel Decorations Company, Limited.

This company was registered on August 13th with a capital of £2,000 in £1 shares to carry on the business of cabinet makers, furnishers, decorators, dealers in panels and pictures, &c. The first directors (to number not less than two nor more than five) are to be appointed by the subscribers.

Rogers and Gowlett, Limited.

This company was registered on August 16th with a capital of £10,000 in £1 shares to acquire the business carried on by Rogers Brothers at Watford, and to carry on the business of ironmongers, electricians, hot-water engineers, &c. The first directors (to number two) are J. Rogers and P. Gowlett (both permanent). Registered office: 61 High Street, Watford, Hertfordshire.

Perfect Portland Cement Corporation, Limited.

This company was registered on July 23 h with a capital of £200,000 in £1 shares, to acquire certain lands, quarries, &c, containing marl, coprolites, clay, sand, brick, earth and other minerals, situate at Swaffham, Bulbeck, and Bottisham, Cambridgeshire; and generally to carry on the businesses of cement hydraulic lime, clay, sand, stone and manure merchants, as road and street contractors, colliery proprietors, and as manufacturers of and dealers in materials used in connection with the said businesses; to erect and maintain workmen's cottages, offices, storehouses, or other buildings, machinery, plant, tools, fixtures, ships, steamers, carriages, electrical engines, steam engines, tram and motor cars. The first directors (of whom there shall be not less than three nor more than twelve) are J. Douglas, F. B. Thacray, J. W. Knights, S. Brighouse, and S. A. Bartlett.

Joseph Benton and Son, Limited.

This company was registered on August 14th with a capital of £10,000 in £5 shares to acquire the business carried on by J. R. Benton at Hope Street, Great Grimsby, as Joseph Benton and Son, and to carry on the business of timber merchants, builders, contractors, sawmill proprietors, &c. J. R. Benton is governing director for life. Registered office: Reliance Works, Hope Street, Great Grimsby.

Carlow Gas Company, Limited.

This company has been registered in Ireland with a capital of £5,500 in 1,100 shares of £5 each to acquire and carry on the business of the Carlow Gas Light Joint-Stock Company, Limited, which was constituted in 1846. The first directors (to be not less than three nor more than six) are Messrs. Joseph C. Deighton (chairman), D. Shackleton, Daniel T. McGrath, Edward Duggan and Edward Morris. Registered office: Montgomery Street, Carlow.

City of Sheffield Property Company, Limited.

This company was registered on August 20th with a capital of £5,000 in £10 shares to acquire and deal in real and personal property of all kinds, to advance or lend money on any security, and to carry on the business of landowners, builders, contractors, financiers, &c. The first directors (to number not less than three nor more than five) are J. Parker, R. Craig, H. S. Barker and J. T. Hickson.

Diamond Wall Cement Company, Limited.

This company was registered on August 17th with a capital of £5,000 in £1 shares to acquire and turn to account a concession granted to E. W. Bell by an American company for manufacturing and selling in the United Kingdom a new material for plastering, known as Diamond Wall Cement. The first directors (to number not less than two nor more than five) are C. A. Dalton, B. H. Johnson and E. W. Bell.

Page, Calnan and Company, Limited.

This company was registered on August 4th with a capital of £50,000 in £10 shares (of which 2,400 are six per cent. cumulative preference, 2,500 ordinary and 100 founders') to acquire the business of timber merchants carried on at Barking, Hornchurch, Upton Park and Plaistow, Essex, and at 185 Cannon Street Road and 159–161 Commercial Road, Middlesex, by J. Calnan, under the style or firm of Page, Calnan and Co., and, generally, to carry on the businesses of timber and joinery merchants, importers and exporters, builders' merchants, mechanical, electrical, water and sanitary engineers, carpenters, decorators, shipowners, carriers, &c.; tug-owners, wharfingers, contractors, plumbers, painters, builders, marble-workers, papermakers and printers, stove, grate and range manufacturers, &c. The first directors (of whom there shall be not less than three nor more than seven) are J. Calnan, W. Davis and W. T. Taylor. Registered office: Town Quay Wharf, Barking.

Cheadle and Gatley Cemetery Competition.—At the last meeting of the District Council plans, reports and estimates of the projected new cemetery were examined and considered. The plans under motto "Semper Paratus" were adopted, and the first prize of £40 was awarded to the author. The second prize of £20 was awarded to the author of the plans submitted under the motto of "Experientia." It was resolved to divide the proposed cemetery into consecrated and unconsecrated portions. "On reading the names of the successful draughtsmen it transpired that Mr. Geoffrey H. Brady, son of Mr. W. H. Brady, of Stockport, and nephew of the Chairman of the Council, was the successful competitor, and that the authors of the plans 'Experientia,' the winners of the second prize, were Messrs. Barton and Percival, of Ashton-under-Lyne."

CURRENT PRICES.

FORAGE.

		£ s. d.	£ s. d.
Hay, best	per load	4 0 0	4 7 6
Sainfoin mixture	do.	3 10 0	4 10 0
Clover, best	do.	4 5 0	5 0 0
Beans	per qr.	1 7 6	1 8 6
Straw	per load	1 8 0	1 18 0

OILS AND PAINTS.

Castor Oil, French	per cwt.	1 11 6	1 12 8
Colza Oil, English	do.	1 10 3	—
Copperas	per ton	2 0 0	—
Lard Oil	per cwt.	1 17 0	—
Lead, white, ground, carbonate	do.	1 2 10	—
Do. red	do.	1 0 4½	—
Linseed Oil	do.	1 13 6	—
Petroleum, American	per gal.	0 0 6⅜	0 0 6¼
Do. Russian	do.	0 0 6½	0 0 6¼
Pitch	per barrel	0 8 6	—
Shellac, orange	per cwt.	2 16 0	—
Soda crystals	per ton	3 0 0	3 2 6
Tallow, Town	per cwt.	1 4 9	1 8 0
Tar, Stockholm	per barrel	1 6 0	—
Turpentine	per cwt.	1 7 6	1 7 9

METALS.

Copper, sheet, strong	per ton	85 0 0	—
Iron, Staffs., bar	do.	10 0 0	11 10 0
Do Galvanised Corrugated sheet	do.	13 0 0	—
Lead, pig, Spanish	do.	17 17 6	—
Do. do. English common brands	do.	17 17 6	—
Do. sheet, English, 3lb. per sq. ft. and upwards	do.	20 0 0	21 0 0
Do. pipe	do.	22 0 0	—
Nails, cut clasp, 3in. to 6in.	do.	12 0 0	13 0 0
Do. floor brads	do.	11 15 0	12 15 0
Steel, Staffs., Girders and Angles	do.	8 10 0	9 0 0
Do. Mild Bars	do.	9 7 6	9 15 0
Tin, Foreign	do.	139 0 0	139 10 0
Do. English ingots	do.	143 0 0	144 0 0
Zinc, sheets, Silesian	do.	23 10 0	—
Do. do. Vieille Montaigne	do.	24 5 0	—
Do. Spelter	do.	19 10 0	19 12 6

TIMBER.

SOFT WOODS.

		£ s. £.	£ s. d.
Fir, Dantzic and Memel	per load	3 0 0	4 0 0
Pine, Quebec Yellow	do.	4 7 6	6 0 0
Do. Pitch	do.	3 5 0	3 15 0
Laths, log, Dantzic	per fath.	4 10 0	5 10 0
Do. Petersburg	per bundle	0 1 1½	—
Deals, Archangel 2nd & 1st	per P. Std.	12 15 0	18 0 0
Do. do. 4th & 3rd	do.	13 5 0	—
Do. do. unsorted	do.	11 0 0	12 10 0
Do. Riga	do.	6 15 0	8 10 0
Do. Petersburg 1st Yellow	do.	15 0 0	16 10 0
Do. do. 2nd „	do.	10 15 0	13 15 0
Do. do. Unsorted „	do.	8 15 0	13 0 0
Do. do. White	do.	11 5 0	11 15 0
Do. Swedish	do.	10 15 0	22 10 0
Do. White Sea	do.	13 5 0	17 15 0
Do. Quebec Pine, 1st	do.	13 15 0	23 15 0
Do. do. 2nd	do.	18 15 0	—
Do. do. 3rd &c.	do.	9 0 0	9 15 0
Do. Canadian Spruce, 1st	do.	10 10 0	11 15 0
Do. do. 3rd & 2nd	do.	7 5 0	9 10 0
Do. New Brunswick	do.	7 5 0	8 0 0
Battens, all kinds	do.	8 5 0	9 10 0
Flooring Boards, 1in. prepared, 1st	per square	0 12 0	0 13 3
Do. 2nd	do.	0 8 0	0 9 3
Do. 3rd &c.	do.	0 9 6	—

HARD WOODS.

Ash, Quebec	per load	3 17 6	4 10 0
Birch, Quebec	do.	3 12 6	3 17 6
Box, Turkey	per ton	7 0 0	15 0 0
Cedar, 1in., Cuba	per ft. sup.	0 0 3	0 0 3½
Do. Honduras	do.	0 0 3 23/32	—
Do. Tobasco	do.	0 0 3½	—
Elm, Quebec	per load	0 12 6	5 10 0
Mahogany, Average Price for Cargo, Honduras	per ft. sup.	0 0 4 15/16	—
Do. African	do.	0 0 4 17/32	—
Do. St. Domingo	do.	0 0 6 7/32	—
Do. Tobasco	do.	0 0 4 3/8	—
Do. Cuba	do.	0 0 4 27/32	—
Oak, Dantzic and Memel	per load	3 15 0	5 7 6
Do. Quebec	do.	4 12 6	5 0 0
Teak, Rangoon, planks	do.	8 10 0	14 10 0
Wainscot, Riga (Baulk)	do.	3 15 0	5 15 0
Do. Odessa Crown	do.	3 15 0	5 15 0
Walnut, American	per cub. ft.	0 1 8	0 3 2

The New Building for the London Chamber of Commerce is to be built by a company which has now been registered at Somerset House under the title of the London Chamber of Commerce Building Company, Limited. The company has not yet secured a site for the new building.

Defacing a Picture.—One of Ford Madox Brown's famous mural paintings in the Manchester Town Hall has been wantonly defaced by some unknown person with black and red pencil marks. The Town Hall Committee has offered a reward of £50 for the apprehension of the offender. It is believed that the marks can be obliterated without damaging the picture.

TENDERS.

Information from accredited sources should be sent to "The Editor." Results of tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the Work.

BRIGHTON.—For the execution of wood paving works for the Corporation. Mr. F. J. C. May, C.E., Town Hall, Brighton:—

A. & F. Manuelle	£13,707	P. Smith	£13,140
W. Griffiths	13,584	Mowlem & Co., Westminster *	13,034
Acme Wood Flooring Company	13,336		

* Accepted.

BURTON-UPON-TRENT.—For the erection of fifty cottages for the Corporation. Mr. G. T. Lynam, Borough Surveyor, Town Hall, Burton-upon-Trent:—

A. Jewell	£12,133 19 2	R. Kershaw	£9,750 0 0
J. Dickenson	11,411 11 6	J. & T. W. Selby	9,895 14 4
W. A. Stevenson	10,000 0 0	W. Walkerdine, Derby *	9,000 0 0
G. Hodges	9,875 0 0		
A. Geary	9,751 0 0		

* Accepted.

CANTERBURY.—For the execution of water-supply works for the Blean Rural District Council. Mr. H. T. Sidwell, C.E., Herne Street, near Canterbury. Quantities by the Engineer for the Works:—

For supplying and laying:—
Williams, 71 Bankside * £1,446 0 0

Laying only:—

Turner	918 0 0		
Seamark & Hudson	727 0 0		
E. Nun	595 0 0		

Per ton:—

C. P. Gibbons	£8 12 0	Butley Iron Works	£7 12 6
Stanton Iron Works	8 7 6	Sheepbridge Co.	7 12 6
J. Romans	8 2 0	Biggs, Wall & Co.	7 9 6
S. Roberts	7 15 0	Merton	7 7 0
Cochrane & Co.	7 15 0		

* Accepted.

[Engineer's estimated cost, £1,500.

CARDIFF.—For the erection of a house and depot, Roath Park, for the Corporation. Mr. W. Harpur, C.E., Town Hall, Cardiff. Quantities by the engineer:—

Gerard Hallet	£2,149 8 10	D. W. Davies	£1,896 0 0
John Blight	2,041 9 1	Geo. Griffiths	1,855 8 0
Melhuish Bros.	2,035 13 8	E. R. Evans Bros.	1,850 8 2
W. H. Ingleson	1,998 10 0	J. H. Venning *	1,850 0 0
Blacker Bros.	1,939 13 1		

* Accepted. [All of Cardiff.]

LONDON.—For proposed new depot for the London Parcels Delivery Company, Limited, at South End Road, Hampstead, N.W. Mr. Henry Poston, architect, 39 Lombard Street, E.C.:—

Holliday & Greenwood	£7,149	Hall, Beddall & Co.	£6,819
Killby & Gayford	6,936	Todd & Co.	6,817
Mowlem & Co.	6,850	Blyton & Sons *	6,700

* Accepted.

LONDON.—For the erection of two houses and shops, Nos. 412 and 416 High Road, Tottenham, for Mr. Andrew Powles. Mr. Augustine C. Green, architect, 40 Bruce Castle Road, Tottenham, N.:—

H. Knight & Son	£2,650	W. H. Howell	£1,850
A. Porter	1,972	S. Goodall	1,597
J. Stewart	1,927	John Groves *	1,474

* Accepted.

LOUGHBOROUGH (Leicestershire).—For alterations, &c., to Town Hall, for the Town Council. Mr. A. H. Walker, C.E., Town Offices, Loughborough. Quantities by engineer:—

H. Shardlow	£3,730 0 0	W. Corah	£3,466 11 11
J. G. Parker	3,627 0 0	Moss & Sons, Ltd., Loughborough *	3,450 0 0
J. F. Ball	3,620 0 0	Main, Kendall & Main	3,395 0 0
W. F. Harding	3,606 0 0	Wm. Talby †	3,304 0 0
J. G. Sills	3,550 0 0		
C. A. Dobson	3,476 0 0		

* Provisionally accepted. † Withdrawn.

LOUGHBOROUGH.—For painting and decorating interior of Corn Exchange, entrance hall and staircase, and exterior of Town Hall. Mr. A. H. Walker, A.M.Inst.C.E., Borough Surveyor. Quantities by surveyor:—

	Exterior of hall.	Entrance hall and staircase.
W. Bass	£25 0 0	£67 10 0
A. E. Walker	25 0 0	66 19 6
W. J. Billson	24 18 6	67 5 0
J. Fisher	26 15 0	66 17 6
F. Shipley	28 15 0	67 5 0
Grundy & Son	30 0 0	65 0 0
A. Street	27 10 0	68 4 6
T. Johnson	28 19 6	67 10 0
W. J. Shipley	29 9 0	70 0 0
Whitlock & Gatton	12 12 3	36 1 2
Snaith & Co.	13 4 7	56 10 7
Walker & Son*	9 17 6	43 17 6
Sparrow & Son	12 2 4	49 16 4

	Interior of Corn Exchange.	Total.
W. Bass	£132 15 0	£225 5 0
A. E. Walker	131 0 0	222 19 6
W. J. Billson	127 16 6	220 0 0
J. Fisher	134 0 0	227 13 6
F. Shipley	132 12 0	223 12 0
Grundy & Son	132 0 0	227 0 0
A. Street	135 15 0	231 9 6
T. Johnson	131 17 3	228 6 9
W. J. Shipley	134 5 0	237 14 0
Whitlock & Gatton	89 18 7	138 6 11
Snaith & Co.	102 0 0	171 15 2
Walker & Son*	83 8 4	137 3 4
Sparrow & Son	84 19 4	146 18 1

* Accepted.

PAIGNTON.—For the completion of a new road, Paignton, for Mr. W. M. G. Singer. Mr. W. G. Couldrey, architect, Paignton. Quantities by Mr. V. C. Brown, Paignton.

E. Westlake	£492 10 0	C. & R. E. Drew *	£485 0 0
H. Webber & Sons	487 6 0		

* Accepted.

POKESDOWN.—For kerbing, paving, &c., Parkwood Road and two others, for the Urban District Council. Mr. E. W. Ingamells, engineer, Council Offices, Pokesdown, Hants:—

The Asphaltic Limestone Concrete Co., Lim.	£2,259 16 5
W. H. Saunders	1,882 9 1
Josiah Smart	1,799 4 1
Grounds & Newton, Bournemouth and London *	1,752 2 7
H. Shepperd (informal)	—

* Accepted.

WESTCLIFF-ON-SEA.—Accepted for the completion of small residence in Preston Road, Westcliff-on-Sea, for Mr. J. Luke Cocks. Mr. H. Fuller Clark, architect, 28 John Street, Bedford Row, W.C.:—

T. Lawford £695

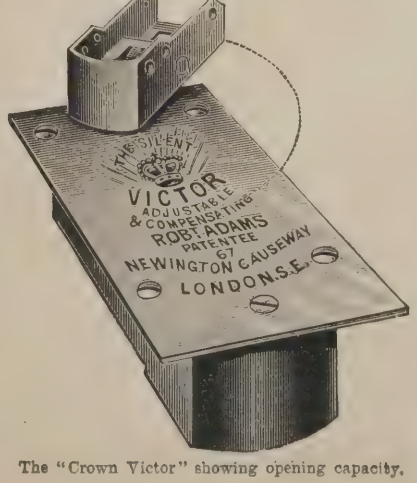
COMPLETE LIST OF CONTRACTS OPEN.

DATE OF DELIVERY.		WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
		BUILDING.		
Aug.	31	Belfast—Hospital		W. H. Stephens and Sons, 13 Donegall Square, North, Belfast.
"	31	Lincoln—Boiler House		W. Watkins and Son, St. Edmund's Chambers, Silver Street, Lincoln.
"	31	Witton-le-Wear—Church Restoration		Borcham and Morton, 24 John Street, Sunderland.
"	31	Aldershot—Post Office	H.M. Office of Works	Postmaster, Aldershot.
"	31	Grangetown, Yorks—House		County Surveyor, Northallerton.
"	31	Abbotsham—Cottages	Rev. R. W. Sealy	R. T. Hookway and Son, 12 Bridgeland Street, Bideford.
"	31	Carlisle—Shop Front	Corporation	H. C. Marks, 36 Fisher Street, Carlisle.
"	31	Edinburgh—Workmen's Houses	Magistrates and Council	Borough Engineer, Edinburgh.
"	31	North Shields—Alterations	Tynemouth School Board	F. R. N. Haswell, Tyne Street, North Shields.
Sept.	1	Donington, Lincs.—Reconstructing Bridge	Holland County Council	L. Starkie, Wellington House, Skirbeck.
"	1	Fazeley, near Tamworth—Altering	Tamworth School Board	J. H. Godderidge, 4 Bolebridge Street, Tamworth.
"	1	Gorran, Cornwall—Stable	Mr. W. Knight	F. C. Jury, Tregonissey Road, St. Austell.
"	1	Treherbert, Wales—House	Trustees of Bethany English Baptist Church	G. Hiley, Grocer, Treherbert, Wales.
"	3	Bradford—Shed	Corporation	J. H. Cox, Town Hall, Bradford.
"	3	Leeds—Boiler House	Corporation	City Engineer, Municipal Buildings, Leeds.
"	3	Merthyr Vale, Wales—Chapel		T. Roberts, Belle Vue Cottage, Aberfan, Merthyr Vale.
"	3	New Brompton, Kent—Alteration	Economical, Industrial and Provident Society, Limited	E. J. Hammond, 111 High Street, New Brompton.
"	4	Marlborough, Wilts—Hall	Corporation	C. E. Ponting, Architect, Marlborough, Wilts.
"	4	Bristol—Foundations	County Council	H. Williams, 24 Clare Street, Bristol.
"	4	Polapit Tamar, Launceston—Billiard Room	Mr. R. C. Coode	J. Kittow, Church Street, Launceston.
"	5	London, N.—Lodge	Southgate Urban District Council	Clerk, Council Offices, Palmer's Green, N.
"	6	London, S.E.—Public Baths	Lambeth Vestry	A. H. Tiltman, 51 Russell Square, W.C.
"	6	Camberwell—Offices, Stables, &c.	Vestry	Surveyor, Vestry Hall, Camberwell.
"	7	Benwell, near Newcastle-on-Tyne—School	School Board	J. W. Thompson, 63 Grey Street, Newcastle-on-Tyne.
"	7	Cromer—Coastguard Station	Admiralty	Watch Room, Coast Guard Station, Cromer.
"	8	Leicester—Roofing	Corporation	A. Colson, Millstone Lane, Leicester.
"	10	Walsall—House	School Board	Bailey and McConnal, Bridge Street, Walsall.
"	10	Halifax—Church Restoration		B. Lee, Sexton, Cinder Hills.
"	10	Ilford—Bandstand	Urban District Council	H. Shaw, 7 Cranbrook Road, Ilford.
"	10	Stradbroke, Suffolk—Alterations	East Suffolk County Council	H. Miller, 16 Museum Street, Ipswich.
"	11	Worcester—Engine House	Corporation	T. Caink, Guildhall, Worcester.
"	17	Cardiff—Law Courts	Corporation	Town Clerk, Town Hall, Cardiff.
"	17	Richmond, Surrey—Infirmary and Nurses' Home	Guardians	A. J. Wood, 17 The Green, Richmond, Surrey.
"	17	London, S.E.—Stables	Vestry of St. Mary Magdalen, Bermondsey	F. Ryalt, Town Hall, Spa Road, Bermondsey.
"	17	Pembroke Dock, Wales—School	School Board	G. Morgan and Son, 24 King Street, Carmarthen.
"	17	Walsall—School	School Board	Bailey and McConnall, Bridge Street, Walsall.
"	18	London, E.C.—Enlarging Telegraph Factory	Commissioners of H.M. Works	Secretary, H.M. Office of Works, &c., Storey's Gate, S.W.
Oct.	1	Pleasley Hill, near Mansfield—School	Mansfield School Board	Vallance and Westwick, White Hart Chambers, Mansfield.
"	2	London, N.—School	Edmonton School Board	H. W. Dobb, 54 London Wall, E.C.
		ENGINEERING.		
Aug.	31	Stockport—Tramcars	Tramways Committee	J. Atkinson, Borough Surveyor, Stockport.
"	31	Newcastle-on-Tyne—Conduits	Corporation	C. Hopkinson, 26 Victoria Street, London, S.W.
"	31	Warrington—Reservoir, &c.	Corporation	J. Deas, Bank House, Warrington.
Sept.	1	Fenton, Staffs—Railway	Leek and Manifold Valley Light Rlwy. Co.	J. Forsyth, Heron's Cross, Fenton, Staffs.
"	1	East Retford—Sinking Well	Water Committee	J. B. Fenwick, Gas and Water Offices, Retford.
"	1	Midhurst, Sussex—Steam Rolling	Rural District Council	A. G. Gibbs, Council Offices, Midhurst.
"	1	Preston—Electric Lighting		F. E. Dixon, 49 Lune Street, Preston.
"	3	Salford—Switchboards	Corporation	Lacey, Clirehugh and Sillar, 78 King Street, Manchester.
"	3	Worthing—Electric Lighting Plant	Corporation	Burstall and Monkhouse, 14 Old Queen Street, Westminster, S.W.
"	3	Whitby—Electric Lighting	Urban District Council	Preece and Cardew, 13 Queen Anne's Gate, S.W.
"	3	Belvedere, Kent—Lighthouse	Corporation of Trinity House, London	The Secretary, Trinity House, London, E.C.
"	3	Keswick—Reservoir	Urban District Council	J. Mansergh, 5 Victoria Street, Westminster, S.W.
"	3	Llanelly—Subway	Urban District Council	Surveyor, Town Hall, Llanelly.
"	4	Portsmouth—Electric Tramways	Corporation	E. Rotter, Town Hall, Portsmouth.
"	5	Lisbon—Iron Bridge		Public Works Department, Lisbon.
"	5	Newtown, Montgomery—Laying Main	Urban District Council	R. W. Davies, Surveyor, Newtown.
"	5	Melton Mowbray—Waterworks	Urban District Council	E. Jeeves, Nottingham Street, Melton Mowbray.
"	7	Madron, Cornwall—Sewerage and Water Supply Works	Urban District Council	F. Latham, Engineer, Penzance.
"	7	Chippenham—Septic Tanks	Rural District Council	A. H. Lapham, Surveyor, Corsham.
"	8	Bradford—Refuse Destructors	Corporation	Mr. McTaggart, Corporation Depôt, Hammerton Street, Bradford.
"	8	Nelson, Lancs.—Dynamo	Corporation	A. Allen, Gasworks, Nelson, Lancs.
"	10	Southampton—Electric Crane	Harbour Board	W. Bowyer, Harbour Offices, Town Quay, Southampton.
"	10	Witton, near Birmingham—Bridge Works	Trustees of Mr. James Daykin	J. E. Willcox, Union Chambers, 63 Temple Row, Birmingham.
"	11	Southampton—Electrical Plant	Guardians	W. H. Mitchell, Son, and Gutteridge, 9 Portland Street, Southampton.
"	11	Hitchin—Engine and Pump	Urban District Council	W. O. Times, Council Offices, Corn Exchange, Hitchin.
"	11	Norwich—Boiler		A. E. Collins, Guildhall, Norwich
"	11	Oldham—Boilers	Electric Light Committee	A. Andrew, Gas and Water Offices, Oldham.
"	12	Palma, Balearic Isles—Lighting	Corporation	Commercial Department, Foreign Office, S.W.
"	12	London, N.E.—Electrical Plant	Hackney Electric Lighting Committee	R. Hammond, 64 Victoria Street, Westminster, S.W.
"	12	Harrington, Cumberland—Pier Extension	Harbour Board	J. Eden, 58 Port Street, Workington.
"	15	Minehead, Somerset—Improving Sea Front	Urban District Council	F. W. Roberts, Engineer, Taunton.
"	17	Jassy, Roumania—Waterworks		Technical Department, Communal Council Office, Jassy.
"	18	Ewesley, Northumberland—Reservoir	Tynemouth Corporation	Borough Surveyor, Tynemouth.
"	19	Plumstead—Electric Plant	Vestry	J. B. Mitchell, Vestry Hall, Maxey Road, Plumstead.
"	22	Horton, Surrey—Dynamos	London County Council	R. W. Partridge, 6 Waterloo Place, S.W.
"	22	Horton, Surrey—Pumping Machinery	London County Council	R. W. Partridge, 6 Waterloo Place, S.W.
"	26	Uganda—Steel Trestle Viaducts and Traveller	Railway Committee	Crown Agents for the Colonies, Downing Street, S.W.
"	26	Ulverston—Water Mains	Rural District Council	W. F. Y. Molineux, 3 Benson Street, Ulverston.
"	30	Wellington, New Zealand—Engines	Corporation	J. Duthie and Co., Limited, 23 Lime Street, London, E.C.
Oct.	2	Barcelona, Spain—Elevators	Harbour Commissioners	Commercial Department, Foreign Office, S.W.
"	2	Madrid—Steam Tramway	Spanish Government	Commercial Department, Foreign Office, S.W.
"	2	Acton—Works for Public Baths	Urban District Council	D. J. Ebbetts, 242 High Street, Acton.
"	2	Edmonton—School	School Board	J. Moule, School Board Offices, Upper Edmonton.
Nov.	14	Lahore, India—Tramway Materials	Municipal Committee	Secretary Municipal Committee, Lahore.

PERFECTION IN **Spring Hinges**

The "VICTOR" Double Action Spring Hinges open wider than any other—viz., 135° each way, *i.e.*, 45° beyond right angles—and close with a perfect check action.

ROBERT ADAMS,
PATENTEE,
65 & 67 Newington Causeway, LONDON, S.E.
Telegrams: "ROBERT ADAMS, LONDON."



The "Crown Victor" showing opening capacity.

PERFECTION IN **Spring Hinges**

The "VICTOR" Single Action Spring Hinges open wider than any other—opening to and closing from the angle of 180°, *i.e.*, the half circle, with a perfect check action.

ROBERT ADAMS,
PATENTEE,
65 & 67 Newington Causeway, LONDON, S.E.
Telephone: 804 HOP.

COMPLETE LIST OF CONTRACTS OPEN—*continued.*

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
	IRON AND STEEL.		
Aug. 31	Cardiff—Pipes	Corporation	Electrical Engineer, Eldon Road, Cardiff.
„ 31	Sandgate—Fencing	Urban District Council	A. R. Bowles Surveyor's Office, Sandgate.
Sept. 3	Blackpool—Pipes	Fylde Water Board	W. Wearing, 34 Victoria Street, Blackpool.
„ 3	Kingstown, Ireland—Gates	Urban District Council	Town Surveyor, Town Hall, Kingstown.
„ 3	Glasgow—Fence	Corporation	A. B. M'Donald, Public Works, City Chambers, Glasgow.
„ 5	Leicester—Sewers	Highway and Sewerage Committee	G. Mawbey, Town Hall, Leicester.
„ 5	Southampton—Railing	Corporation	W. G. B. Bennett, Borough Engineer, Southampton.
„ 6	Belper—Water Mains	Urban District Council	J. Pym, Clerk, Belper.
„ 10	Reigate—Pipes	Rural District Council	R. B. Grantham and Son, 23 Northumberland Avenue, W.C.
„ 26	The Hague, Holland—Socket Pipes		M. Nydoff, Noblestreet 18, The Hague, Holland.
	PAINTING AND PLUMBING.		
Sept. 1	Alnwick—Painting		J. Creswell, Moot Hall, Newcastle-on-Tyne.
„ 1	Morley—Painting, &c.		E. Broomhead, 51 New Bank Street, Morley.
„ 7	Shrewsbury—Painting	Water Committee	W. C. Eddowes, The Square, Shrewsbury.
	ROADS AND CARTAGE.		
Aug. 31	Wolverhampton—Paving	Markets Committee	J. W. Bradley, Town Hall, Wolverhampton.
Sept. 3	Erith, Kent—Street Works	Urban District Council	Council's Surveyor, High Street, Erith.
„ 3	Kingstown, Ireland—Footpaths	Urban District Council	J. Donelly, Clerk, Town Hall, Kingstown.
„ 3	Southwick, Sussex—Flints	Urban District Council	Surveyor, Council Offices, Southwick.
„ 3	Winton, Bournemouth—Gravel and Cartage	Urban District Council	W. T. Streather, Council Chambers, Winton, Bournemouth.
„ 4	Branksome, Dorset—Tar and Macadam	Urban District Council	S. J. Newman, 3 Tennyson Buildings, Ashley Road, Branksome.
„ 4	Stapleford—Streets	Rural District Council	F. R. Hawley, 1 Stamford Street, Ilkeston.
„ 5	Clacton-on-Sea—Making-up	Urban District Council	A. R. Robinson, Town Hall, Clacton-on-Sea.
„ 5	London, N.—Streets	Southgate Urban District Council	C. G. Lawson, Surveyor, Council Offices, Palmer's Green, N.
„ 5	Middleton, Lancs.—Paving	Corporation	W. Welburn, Town Hall, Middleton.
„ 6	Clacton-on-Sea—Flints	Urban District Council	A. R. Robinson, Town Hall, Clacton-on-Sea.
„ 6	Southend on-Sea—Street Works	Corporation	A. Fidler, Borough Surveyor, Southend.
„ 10	Jarrow—Road Works		Borough Surveyor, Grange Road, Jarrow.
„ 11	Egremont, Cheshire—Asphalte Paving	Wallasey Urban District Council	W. H. Travers, Public Offices, Egremont.
„ 11	London, N.—Street Improvement Works	Stoke Newington Vestry	R. Brown, Vestry Offices, Stoke Newington.
„ 11	Ripley, Derby—Street Works	Urban District Council	R. Argile, Oxford Street, Ripley.
	SANITARY.		
Sept. 1	Carrickfergus, Ireland—Sewers	Urban District Council	W. F. Stephens and Son, 13 Donegall Square, North Belfast.
„ 1	Alderley Edge, Manchester—Sewers	Urban District Council	W. Spinks, 20 Park Row, Leeds.
„ 3	Llandaff, Wales—Sewers	Rural District Council	W. Fraser, Council Offices, 35 St. Mary Street, Cardiff.
„ 3	Lower Bebington, Cheshire—Sewerage System	Urban District Council	Belve and Priest, 13 Harrington Street, Liverpool.
„ 4	Aldershot—Sewer	Urban District Council	Surveyor, 126 Victoria Road, Aldershot.
„ 5	Leicester—Sewers	Highway and Sewerage Committee	E. G. Mawbey, Town Hall, Leicester.
„ 6	Greenock—Extension of Sewer	Board of Police	Master of Works, Greenock.
„ 8	Audenshaw, Lancs—Sewers	Urban District Council	J. P. Wilkinson, 47 Arcade Chambers, St. Mary's Gate, Manchester.
„ 8	Roxeth, Harrow—Draining	Burial Board	Cowell and Shaw, 49 Finsbury Pavement, E.C.
„ 10	Reigate—Sewage Works	Rural District Council	R. B. Grantham and Son, 23 Northumberland Avenue, W.C.
„ 11	Bromley—Sewers	Urban District Council	Surveyor, Council Offices, Bromley, Kent.
„ 11	Ripley, Derby—Sewer	Urban District Council	R. Argile, Council Offices, Ripley.
„ 12	Greenwich—Sewerage Works	Board of Works	Clerk, 141 Greenwich Road, Greenwich.
„ 12	London, N.W.—Sewers	Hendon Rural District Council	J. A. Webb, Stanmore Hill, Stanmore.
	TIMBER.		
Aug. 31	London, E.—50 Fathoms of Deal and Batten Ends	St. George's-in-the-East Guardians	J. R. Browne, Guardians' Offices, Raine Street, Old Gravel Lane, E.
Sept. 1	Hoylake, Cheshire—Timber	Urban District Council	T. Foster, Council Offices, Hoylake.
„ 21	Hull—Timber	Corporation	A. E. White, Town Hall, Hull.
„ 22	Horton, near Epsom—Fencing	London County Council	R. W. Partridge, 6 Waterloo Place, S.W.

COMPETITIONS OPEN.

DATE OF DELIVERY.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	BY WHOM ADVERTISED.
Sept. 15	Cardiff—Asylum	£105	Borough Engineer, Town Hall, Cardiff.
„ 27	Willington Quay—Store	£10	Secretary, Industrial Society, Limited, Willington Quay.
„ 27	Ashford, Middlesex—Schools		E. Brooker, Ashford, Middlesex.
„ 30	Devizes—Hospital	£20, £10	O. Sheppard, Clerk to Joint Committee, Devizes.
„ 30	Musselburgh—Town Hall	£26 5s. and £15 15s.	Town Clerk, Council Offices, Musselburgh.
Oct. 30	South Shields—Municipal Buildings	£200, £100, £50	J. M. Hayton, Town Clerk, Court Buildings, South Shields.
Nov. 30	Swansea—Harbour Offices	£100, £50	T. Strick, Harbour Offices, Swansea.
No date.	Riviera—Villa for Sir William Ingram	£78 15s., £26 5s., £5 5s.	"Architectural Review."

COMING EVENTS.

Saturday, September 1.
ARCHITECTURAL ASSOCIATION.—Sixth summer visit to Colney Chapel Convent, St. Albans.

Monday, September 3.
TRADES UNION CONGRESS at Huddersfield.

Wednesday, September 5.
BRITISH ASSOCIATION (Meeting at Bradford. First Day).—Presidential address by Sir W. Turner, F.R.S., 8.30 p.m.

Thursday, September 6.
BRITISH ASSOCIATION.—Meeting at Bradford (second day). Sectional meetings. Soirée in St. George's Hall at 8.30 p.m.

Friday, September 7.
BRITISH ASSOCIATION.—Meeting at Bradford (third day). Sectional meetings. Professor Gotch, F.R.S., on "Animal Electricity," at 8.30 p.m.

Saturday, September 8.
BRITISH ASSOCIATION.—Meeting at Bradford (fourth day). Sectional meetings. Excursions to places of interest in the neighbourhood.
NORTHERN ARCHITECTURAL ASSOCIATION.—Visit to St. Columba's Church, Sunderland.

Monday, September 10.
BRITISH ASSOCIATION.—Meeting at Bradford (fifth day). Sectional meetings. Professor W. Stroud, D.Sc., on "Range Finders," at 8.30 p.m.

Tuesday, September 11.
BRITISH ASSOCIATION.—Meeting at Bradford (sixth day). Sectional meetings. Soirée in St. George's Hall at 8.30 p.m.

Wednesday, September 12.
BRITISH ASSOCIATION.—Meeting at Bradford (seventh day). Concluding general meeting at 2.30 p.m.
INSTITUTE OF SANITARY ENGINEERS.—Meetings of Examination and Literary Committee at 2.30 p.m., General Purposes and Finance Committee at 3.30 p.m., Election Committee at 5 p.m., and members' sessional meeting at 7 p.m.

Thursday, September 13.
BRITISH ASSOCIATION.—Meeting at Bradford (eighth and last day). Excursions to places of interest in the neighbourhood.

Tuesday, September 18.
IRON AND STEEL INSTITUTE.—Autumn Meeting begins in Paris.

Tuesday, September 25.
CHURCH CONGRESS.—Meeting at Newcastle (first day).

Wednesday, September 26.
CHURCH CONGRESS.—Meeting at Newcastle (second day).

Thursday, September 27.
CHURCH CONGRESS.—Meeting at Newcastle (third day).

Friday, September 28.
CHURCH CONGRESS.—Meeting at Newcastle (fourth and last day).

CONTRACTS OPEN.

MANSFIELD SCHOOL BOARD.
TO BUILDERS AND CONTRACTORS.

Persons desirous of TENDERING for the ERECTION and COMPLETION of NEW SCHOOLS, situate at Pleasley Hill, near Mansfield, may see plans and specification, and obtain quantities, on payment of the sum of £3 3s. (which will be returned on receipt of a bonâ-fide Tender and the return of the documents), on application at the Offices of Messrs. VALLANCE & WESTWICK, Architects, White Hart Chambers, Mansfield.

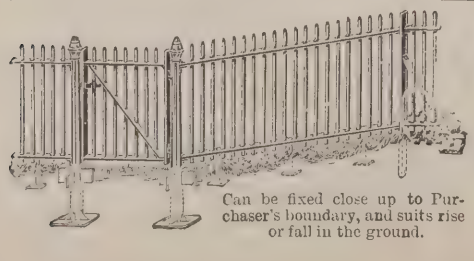
The standard rate of wages must be paid by the successful contractor.

Tenders to be sent by post in the envelope provided for the purpose to the undersigned, on or before the 1st day of OCTOBER next.

The lowest or any Tender will not necessarily be accepted.

J. HARROP-WHITE,
Clerk to the School Board.

Bank Chambers, Market Place, Mansfield,
August 1900.



Can be fixed close up to Purchaser's boundary, and suits rise or fall in the ground.

BAYLISS JONES & BAYLISS'
NEW PATENT
SELF-ADJUSTING ROUND-BAR
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THE BUILDERS' JOURNAL & ARCHITECTURAL RECORD

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EFFINGHAM HOUSE, ARUNDEL STREET, STRAND, W.C.

An Architectural Causerie.

"Palatial."

THERE is no phrase that more frequently meets the eye in the popular press than "a palatial building." It seems to indicate a sort of standard of magnificence, and to the mass of unobservant persons stands in place of description. It should not pass without comment, however, for it gives us an insight of the popular mind and explains to some extent the mushroom growth of bad design and bad building in the metropolis and elsewhere. "Palace" is a word with a history. Before the time of Romulus, a rustic divinity named Pales figured in the worship of Central Italy, and gave the name to the Palatine Hill, the site of infant Rome: his feast was kept on the "birthday" of the city, the 21st of April. Here in due time arose great villas and eventually the residence or *Palatium* of the Cæsars; this, rebuilt and extended by Nero, became his Golden House, in which he said "he was at last lodged as a man should be." The word was generally used in the plural by Roman writers, possibly because it fitted their verses better than the singular: in Christian times it was applied to the residence of a bishop, though, according to some authorities, only when placed within his cathedral city: later popular custom has caused a wide divergence in its use. We find it applied to civic buildings, to residences of governors, magistrates and others all over Europe: it is most generally used in Italy, the land of its birth, where, indeed, it is given to the private residence of any important individual, provided that the whole building be his. Its popular uses are many; "*e in Palazzo*," for instance, means in the case of a barrister that he is in court.

If "palace" has been popularised, its adjective "palatial" has been degraded. Popular admiration of buildings is largely governed by three things—great size, great apparent costliness, and great elaboration of detail. To the palatial idea, therefore, we may trace the lavish display of polished granite and plate glass, of mosaic and marble in places where good taste would forbid their use; the multiplication of materials and general confusion of designs, the *style tourmenté*, as it is called in France; the total disregard of harmony. The most extraordinary examples of "palatial" vulgarity may be seen in and about the theatrical region of mid-London, in restaurants and places of amusement. In the cafés, now so numerous, which the Italian-Swiss colony has set up, the decoration consists of several systems upon a single wall. The effect of mirrors (partly obscured by elaborate painted flowers and foliage), red velvet, panelling, glazed tiles, carving, painted ceiling and "electroliers," is bewildering; it is impossible for the eye to find an inch of restful surface. In luncheon bars the same idea prevails of crowding as many styles of ornament upon the walls as the place can hold. A curious example of this may be seen in the treatment of the iron pillars now so general: next the ground they are encircled with polished mahogany, then with some kind of enamelling, then with velvet, and finally with a band of gilded metal. Exteriors, too, commencing with polished granite and running upwards through red brick, rubble, half-timber (or its imitation), white freestone, terra-cotta and gilded metal, are not at all uncommon, whilst vast gilded letters higher than a man project from the front and proclaim the purpose of the structure. In more important buildings, where some of the restraints of architectural decency are still observed, the ill-effects of the perverted palatial theory may be traced in gloomy halls and comfortless rooms and passages; designs which aim at grandeur and succeed in being dreary.

J. C. P.



THE OLD "SWAN" INN, ATHERSTONE. DRAWN BY FREDERICK J. BARNISH.

Municipalities as Patrons.

THERE was a time when patronage of literature and the arts was in the hands of the wealthy few. Power wielded in this fashion by vain and capricious plutocrats was good for neither the arts nor those who practised them, and the fulsome flattery to which the *literati* of that happily bygone era found it possible to stoop caused the flattered to rank themselves little lower than the gods. We all have heard how Dr. Johnson was treated with a contemptuous indifference by that arch-patron of his day, the Earl of Chesterfield, and how Johnson repaid those affronts with stinging satire; but literature has long been enfranchised, and if the arts cannot ever be raised to the same terms of independence, at least modern times have seen the coming of another patron besides the individual, and in the appearance of our great municipalities as collectors in trust for the ratepayers we have a new and a promising factor which should at least give as great a spur to the imagination of artists as when bidden to work for the undistinguished individual. In architecture, also, as in those other departments, the coming patron (even if it has not already come into power) is the Municipality, and it should be easily possible to design and build for our cities and towns, great and small, manufacturing or residential, in a more dignified and inspired way than for merely private uses. There is, or should be, something in town halls or municipal building to touch the imagination and to prefigure the power that nowadays lies in the hands of those bodies, representative of the sovereign people. Whether the people—i.e., the ratepayers—exercise their sovereignty is another matter which need not arrest one's imaginative Pegasus in full flight. A thousand years of history, of strenuous endeavour, of invention, of struggles for religious, for individual and corporate liberty, are the portion of many of our towns; and if the man descended from an ancient and distinguished lineage is proud of his descent surely it is legitimate for corporations to feel the glow of local patriotism animate them, and to spare a thought for buildings beautiful and impressive, for art collections pleasing and instructive. The very corporate existence of our cities and towns has only been achieved slowly, and at the cost of great endeavours by generations of public-spirited men, who have wrested from kings and governments and from manorial lords their charters and rights of market, and it is but fitting that these things should be duly commemorated.

The thoughts that gave rise to these words came unbidden in the Great Hall of Manchester's great group of public buildings—that stately pile of Waterhouse's which, if too closely beset with small enrichment to have that largeness of scale which public buildings demand, and too weirdly planned for the stranger to readily find his way about in, is still a noble home for Manchester's municipal life. In that hall is the series of pictures by Ford Madox-Brown setting forth some phases in the rise of Manchester, from the founding of Mancunium by the Romans until the beginning of the era of invention. This series is famous, and rightly so, for it was not only a work of the most individual of the Pre-Raphaelites and of all his works the most characteristic, but stands forth as the first attempt made to picture the history of a city for the benefit of its citizens. Moreover,

Ford Madox-Brown achieved something more than he suspected or the City Fathers bargained for. His style, a curious amalgam of old conventions and modern waywardness, does more to interest the public than the productions of any other conceivable painter or decorator. Sometimes, going the round of these frescoes, we think him to have lacked both drawing and a sense of humour, and again, in some exquisite bit of observation, he proves himself at once a consummate draughtsman and a humorist of the first degree. Bound by no rules, he produced a series of works that have no part with the lifeless formulæ of the average historical painter, and, although he may have disappointed some conventional folk, has earned our gratitude. It is too much to expect to discover another such artist immediately or to find many other opportunities for his gifts when discovered, but in this direction—that of fine buildings and art collections—lie the opportunities for distinction of our wealthy corporations. C. G. H.

Sites.

THE wisdom contained in the proverb of the two men who built their houses respectively on the sand and the rock is, of course, indisputable, but of the wisdom of the following remarks of a recent writer in a high-class American architectural paper not as much can be said:—"Happy is the architect who can set his house on an uneven site! Happier still is he who can plant it on a rocky one, and happiest of all the man who has irregular masses of stone to build on, cropping out amongst turf and soil. From such sites, indeed, the architectural tradesman will pray to be delivered; he can see no possibilities in them and only one certainty—the certainty of extra trouble to himself. . . . The only course he can advise is to have the place levelled before he begins. . . . Enough of the architectural tradesman—twin-brother to the jerry-builder, and spoiler of all the beauties of our land. The real architect, on the other hand, will feel that now at last he has a chance. How with skill and infinite care he will so shape the structure to the ups and downs of the place it stands on that it looks almost from the first like a part of nature. . . . Even a few grassy mounds, with the walls artistically fitted to them, will give a house the priceless individuality which no outlay on materials or decoration can ever confer. But the fitting must be of that highest type in which art conceals art." Here we have a zealous advocate for a modern house built in the manner of Edinburgh Castle; very pleasing in the abstract, but most absurd when analysed. Just fancy a "most desirable villa" with a base like the teeth of a saw or the top of a wave: it is hoped that this contour is not supposed to be continued inside, otherwise the floor boards would have to run over the "grassy mounds" in places, forming a natural sideboard here and a flower-pot stand there, while we should go up and down hill to get from the sofa to the cupboard! This of course is not intended; but to enable the bottom floor to be flat, if levelling were not adopted, the joists would have to be a good way up the walls, and all the space below them would be lost: in the ordinary course, when the bottom floor is raised basements are formed below. One feels a holy enthusiasm in agreeing with the statement that the fitting "of the highest type" would give to the houses a "priceless individuality"—priceless indeed, in the dead cat sense. No, let the gardener-architect lay out the grounds if you will, let him adapt the natural undulations, the projecting rocks and, most important, the surrounding trees; but he had better have a flat site (not meaning necessarily a horizontal one) to build his house on, otherwise he may find he has the architectural delirium tremens now so prevalent in the good old Fatherland. R.

On Reflection.

English Balconies.

BALCONIES are intended to serve a useful purpose, to support something or somebody. Yet most of these additions to houses in this country are never used. Therefore, why keep adding them? To the Spaniard or the Italian the balcony is of real use, because it is here that he likes to take his noonday siesta or to sit and smoke under cover of bright-coloured awnings. But the Englishman does nothing of the sort: he is not to be found on his balcony when the temperature rises to the nineties; neither is he to be seen there after the table has been cleared and he is at rest with all the world. No, at these times you will generally find him in the library chair, on the dining-room sofa, or leisurely taking stock of his geraniums, lobelias or kidney beans. So that it seems foolish to provide this useless balcony. Its presence would perhaps be justifiable if it enhanced the beauty of the building; but it does not—rather it disfigures it, because in many instances it consists not of a stone slab projecting two or three feet from the wall with an enclosing iron railing, but of a prison-like arrangement of bars reaching half way up the window, with a narrow gridiron at the bottom presumably intended for flower pots. Again, there might be some defence if the balconies were used for these flowers. It is true that many persons do make this use of them, but the greater proportion do not, with the result that when the paint on the iron has blistered well, showing rust below, and all the angles and tracery have become choked with dirt, the balcony is even more displeasing to look at. By all means erect balconies if they are going to be used; but what is the use of doing so all along the street frontages when it is known that it is not the custom of the country to sit out on balconies placed in these situations?

A New Terror.

AMERICANS will do anything. Such is their craving for novelty, such their fever for acquiring dollars, that precedent or established æsthetic opinions receive little consideration. Everything is rushed madly onward as if they thought the world were coming to an end soon, and only a short time remained in which to "mail" all things forward and book a front seat on the golden car of Life's Vanguard. A peculiar characteristic of the Yankee is that while he comes over here and affects an interest (which flavours strongly of the guide-book) in our romantic castles and abbeys, he returns to his country as keen as ever in his all-engrossing commercialism; so that here he is a mere sentimentalist, a being with the feelings of a poet and the backbone of a "storekeeper." His inborn "go-aheadness" is of course responsible for the fact that the States shares now in the glory of the great nations of the earth, and there are phases of it which are highly commendable; but, after all, it is just this feeling which has created such monstrosities as overhead railways and sky-scrapers. As, however, we take America's lead in many things (not omitting the weather), it is to be feared that there will shortly be added to our list of incongruities the building with the sheet metal front. Steel construction in building has now become an exact science, but hitherto the tall building, though virtually of steel, has been cloaked over with a stone front, tacked on to the framing as it were. The employment of metal has now been carried a step further. Houses with fronts faced entirely with sheet-metal plates are now becoming popular in America. This is only a development of corrugated-iron building, but, unsightly as the iron is, it is handsome in comparison with the highly ornamented metal front. A writer has said in these columns: "You may do what you will with corrugated iron, you may paint it red or green, or in stripes, or leave it for the dust to settle on and tone down its rawness a little, still it remains the emblem *par excellence* of naked and unashamed gimcracking." What, therefore, can be said of those metal fronts which have the worse features of being loaded with senseless and unsuitable ornament? Simply that they are an eyesore. And yet if "Jerry" gets the chance he will put them up here by the dozen. It is interesting to note that sheets can be obtained stamped to imitate brick and rock work, which would of course add to their merit. The sheet metal used for interiors was bad enough, but now that the idea has been applied to the façade the effect is doubly offensive. It is the fact that the fronts are so ornamented that makes one fear. The ornament is laid on wholesale, and we all know the notion is prevalent nowadays that restraint in design means plainness and that much florid ornamentation means beauty. So that the outlook is disquieting.

Two Good Statutes.

ON Friday evening last the Local Government Board issued a circular to county councils respecting certain Acts of Parliament passed during the recent session which contain provisions affecting them. Among these Acts are the Housing of the Working Classes Act, 1900 (63 and 64 Vict., c. 59) and the Ancient Monuments Protection Act, 1900 (63 and 64 Vict., c. 34), and the present is therefore a fit opportunity to point out exactly what new powers are now given to councils. Before the passing of the new Housing Act, Part III. of the Act of 1890 could only be adopted in a rural district after a somewhat complicated procedure, but now a rural district council may, with the consent of the county council, easily adopt Part III. of the Act of 1890 for the whole or any part of its district. Again, with the consent of the county council, the rural authority is now enabled to lease land to any lessee for the erection of lodging-houses. In its leases the following provisions are specially to be inserted:—(1) Binding the lessee to build on the land as prescribed, and to maintain and repair the buildings, (2) securing the use of the buildings exclusively as lodging-houses, and (3) prohibiting any addition to or alteration of the character of the buildings without consent. If the rural authority does not properly exercise its powers these may be transferred to the county council, a provision which needs only to be stated to be appreciated. This new Housing Act should prove very beneficial in alleviating the existing misery and overcrowding now so deplorable in rural districts. The other Act passed during last session—the Ancient Monuments Protection Act—has already been dealt with in these columns, but a summary of its chief provisions may here be given. Its object is to facilitate the preservation and maintenance of ancient monuments, this term embracing any structure, erection, or monument which is of historic or architectural interest. County councils are empowered to purchase or become guardians of any monument, and are also enabled to receive voluntary contributions towards the cost of purchase or maintenance. There is also a section imposing penalties for injuries to ancient monuments. Like the Housing Act, much may be expected of this one, and now that legislation is giving the necessary power we may feel less fearful about many historical structures throughout the Kingdom. There will now be no talk of carting them away, stone by stone, and re-erecting them on alien soil.

HEVER CASTLE, KENT.

By FRANCIS R. TAYLOR.

HEVER CASTLE was built by William de Hevre during the reign of Edward the Third, and the existing defensive portion of the structure is probably similar to that erected by him. Sir Geoffrey Boleyn, a well-to-do tradesman and Lord Mayor in 1459, bought the castle from Hevre's descendants. He commenced the present building and left its completion to his grandson, Sir Thomas Boleyn, father of the unfortunate Anne Boleyn. On the death of Sir Thomas the estate passed into the hands of Henry the Eighth, who gave it to Anne of Cleves. It is owned by the Waldo family, who have now held it for more than a century and a-half.

Hever Castle is a good example of fifteenth century domestic architecture. It may be considered as transitional between the feudal castle of a turbulent age and the peaceful nobleman's residence of a later period. The home in these mediæval times had to fulfil the double purpose of a habitation and a means of defence, and the arrangements for guarding against attack at Hever Castle appear to have been very



PORTCULLIS, HEVER CASTLE, FROM COURTYARD.

thorough. There is a wide deep moat surrounding the building, but owing to its having been neglected the water (from the river Eden) is now in a state of stagnation, though it is covered with beautiful water lilies. There was formerly an outer moat at some distance from the inner one, but this has long ago dried up and been filled in.

Hever Castle is rectangular on plan, with an open courtyard. The external appearance is very picturesque, with the high-pitched roofs and effective gable ends. The castellated gatehouse on the east front is approached across the moat by a bridge of brick and stone, the drawbridge having long since disappeared. The gateway contained three portcullises, the outer and the inner of which remain intact. They are formed of a stout framework of oak secured with iron riveting, and they slide up and down in stone grooves. The outer folding doors have a riveted framework of oak similar to the portcullises, whereas the inner folding doors are of solid oak with a wicket in them.

The rooms above the gateway were used as furnace chambers for melting lead and pitch. These materials could be poured through holes in the stone vault of the gateway to give an exceptionally warm reception to an attacking party. The gatehouse forms one side of the courtyard; on the other three sides the dwelling apartments are suitably arranged. The domestic work facing the courtyard produces a very good effect with its parapeted walls of timber and plaster and with its oak mullioned and transomed windows.

The internal arrangements as originally conceived and carried out have been much modified by the succeeding owners of the place, with the inevitable result that the existing order of things is far from satisfactory. The banqueting hall, for instance, must have lost most of its charm when converted into a kitchen. The old kitchens are on the north side of the building, and have two large arches over the fireplaces, one of which has been built up with brickwork. The passage between the old kitchens and the banqueting hall is shut off by an old oak screen with fluted pilasters.

There are several subsidiary staircases in addition to the principal one, and some are of recent date. Formerly a spiral staircase led from the banqueting hall to the upper floor, and provided access to the first-floor rooms and to the Long Gallery. This gallery, under the roof on the west side, is an extremely interesting part of the house. It has at the north and south ends a four-light transomed window, and a large bay window on the west side at the south end. The glass of the bay window has been taken out, and the spaces between the mullions filled in with brickwork, which seems rather a pity, considering the historical associations connected with it. From this window, it is said, Anne Boleyn watched the departure of her royal lover and his cavalcade. The oak panelling to the Long Gallery has Ionic pilasters spaced at intervals. The carving to the caps, the fluting of the pilasters and the mouldings to the panelled work are beautifully wrought. There is a fireplace recess at about the centre on one side of the room, and a trap-door at the north end opening into one of the secret dungeons of the castle.

Many of the apartments throughout the house still retain the old oak panelling in its original condition, though a portion of it is missing here and there. The panelling in the room over the gateway has been executed in recent times, and is of deal painted to resemble oak—a "sham" which is at once apparent and does not commend itself. A similar treatment of deal panelling is also found in the guard room.

The grounds of the Castle are now hemmed in by trees, but during the historic events enacted here there was a bowling green on the eastern side, situated on the space between the inner and outer moats. Facing the bowling green is a curious old wooden stable of fifteenth-century date. Above the stables are several interesting sleeping apartments, with a gallery in front looking on to the bowling green and the east front of the Castle.

The roads leading to Hever Castle are notorious in wet weather for their muddy condition, and Henry the Eighth, who frequently rode over to see Anne Boleyn, many a time



COURTYARD, HEVER CASTLE.

stuck in the mud. A blast of a horn was then sounded and the Castle retainers came to his assistance.

At Hever, Anne Boleyn spent her early years and was educated under the guidance of a French governess. She attended Princess Mary on her journey to France, and upon returning the courtship with the amorous monarch proceeded apace, a courtship which led to her marriage and, after a little more than four years of wedded life, to her execution (May 19th, 1536).

Her father, Sir Thomas, died two years after this event, and in the Boleyn Chapel of Hever Church is his monument, which consists of a large square tomb covered with a Purbeck marble slab. Upon the slab is a fine brass of his effigy with an inscription at the head giving the date of his death—March 12th, 1538.

It is stated that Anne of Cleves (Henry the Eighth's fourth wife) died at Hever Castle, but there is evidence to show that the Palace of Chelsea was the scene of her death. There is, however, no doubt that Anne of Cleves lived at Hever, and in her will, made two days before her death, she left £4 to the poor of the parish.

It may be interesting to note that opposite Hever Church is a roadside inn, the sign of which is "Henry the Eighth," and on the sign-board in front is depicted a front and back view of the bluff king's head. This inn was formerly called "The Bull and the Butcher," which title



HEVER CASTLE: SOUTH-WEST CORNER AND MOAT.

referred to the incidents connected with the unfortunate tragedy of Anne Boleyn.

The romantic old castle is well worth a visit: there is a picturesque attractiveness in its castellated portion and in its old domestic work, besides an absorbing interest in its historical reminiscences.

[The foregoing notes were written some time ago, since when the author believes that considerable reparation work has been carried out at Hever Castle.]

THE PRISMATIC LIGHTING OF DARK INTERIORS.*

BY DR. WILLIAM H. GREENE.

THE practical application of the refractive property of the lens or prism to change the direction of light rays passing through it, for the purpose of artificial illumination, originated with the French physicist Fresnel, who first suggested its use in lighthouses, for the protection of maritime coasts, about the year 1815; and the Fresnel lens in various modifications is to-day solely used for this purpose.

The Fresnel lens is designed for projecting a powerful beam of parallel light upon objects to be illuminated at a distance. The principle of this device is seen in Fig. 1, which shows a central plano-convex lens surrounded by a series of rings or segments of

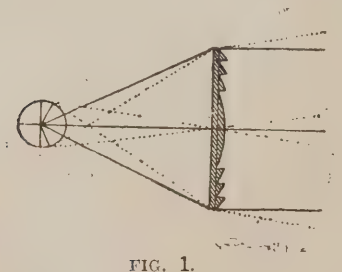


FIG. 1.

lenses or prisms, to which successively diminishing curvatures or angles are given in order to give them a common focus.

Within the past four or five years the application of this principle has been made, and with decided success, to the illumination of dark interior spaces, where the amount of light naturally entering is insufficient for satisfactory illumination, and artificial lighting must occasionally or constantly be resorted to.

The requirements of public buildings and modern office buildings in this respect have been most urgent, and the various devices known generally by the name of "prismatic lights" have been extensively used for the purpose, and have come to be regarded by architects and builders, not to speak of a great number of householders, as indispensable.

It is the purpose of this communication to give a brief review of the art of prismatic lighting, which at the present time is passing through the active stages of the course of evolution to which all the arts are subject, in determining the survival of the fittest.

Omitting for the present consideration of the vault light for basements and cellars, where but one form of prism, namely, an approximately right-angled prism depending on total reflection for its utility, is admissible, there are two general methods in vogue of installing prismatic lights to meet the requirements of service.

In one of these the sheet of prismatic glass is placed in a window-frame in the vertical position, thus taking the place of the window light. In the other, the sheet of prismatic glass is fixed in a more or less inclined position, projecting outwards from the window opening. This form of construction is known in the trade as a "canopy." The question as to which of these two forms of installation will give the best results is determined by the extent of the sky opening upon which dependence must be placed for light.

Where this is of considerable area, as, for example, where the windows face a wide street, the prismatic glass set into the window-frames in the vertical position will give satisfactory results. Where the windows receive their light from a restricted area, as, for example, in courtyards or the side-yards of dwelling-houses, and generally in the many situations where high walls rising in close proximity cut off the free access of light from above, the projecting canopy form of prismatic glass is preferable.

Speaking in a general way, the change from the vertical to the canopy form of installation will be indicated when the incident angle of the light falling on the window opening averages 60° from the horizontal plane.

The popularity achieved by the use of light-projecting devices of this general nature has called into existence a great number of patented inventions, some claiming special forms of prism construction (in combination, in certain cases, with a prismatic or lenticular formation on the reverse side of the glass), and of a far greater number of patents for and methods of glazing, and other matters of minor detail. For the purpose of this communication, these minor devices may be left out of consideration, and the several generic forms of prism construction only will be given attention.

These may be divided into two general classes:—(1) Those in which the glass forming the light-projecting device consists of sheets having on one surface a series of prisms or segments of lenses of any desired angle, the back of the sheet being a plane surface; and (2) those in which the glass forming the light-projecting device consists of sheets having on both surfaces a series of prisms or lenses.

The prism glass most generally known and used is that of the first-named class. The action of a section of prism glass of this construction is shown in Fig. 2, in elevation and plan. It is obvious that the general refracting effect of the prismatic surface in this and in the other forms of prism glass will be substantially the same, whether the refractive surfaces of the structure be straight (i.e., prismatic), or more or less curved (i.e., lenticular), irrespective of the angles of the prism sections or of the curvature of the lens segments. It is important, however, that these angles (or curves) be carefully considered, since upon the correct appreciation of this element the light-projecting efficiency of the structure largely depends. Improper angles (or curvatures) may greatly diminish the efficiency of the device, by the dispersion and loss of light, caused by total reflections in the interior of the glass.

There is general misapprehension regarding the proper action of light-projecting glass, which needs a word of reference. It is assumed by many that the prismatic light should be so constructed that all the exterior light transmitted from the interior boundary of the prismatic window, or canopy, should be directed in lines substantially parallel to the boundary walls, floor and ceiling of the apartment, and that the more nearly this condition is realised the closer will be the approach to the theoretically perfect mode of operation. Some of the manufacturers of prismatic glass endeavour to realise this condition by varying the angles of the prisms uniformly from the centre to the edges of the sheets, on the principle of the Fresnel lens.

A little consideration of what is intended to be realised by prism lighting of interiors will suffice to show that this view is an erroneous one and liable to result, in practice, in a much inferior interior illumination than can be otherwise obtained. This criticism will be understood by stating the general proposition, that the objects of prismatic lighting are, first, to direct as much extraneous light into the interior as possible, and, second, to direct it in such a manner as to derive the largest possible benefit from it.

In considering the relative merits of parallel and divergent light transmission by prismatic glass, it should be said that practically as much extraneous light can be directed into the interior space to be illuminated by the one as by the other arrangement of prisms or lenses. But, when we come to consider the second portion of the proposition, it can easily be shown that the system of transmitting the light in parallel lines cannot possibly be as effective as the method of divergent transmission, and more especially divergent transmission in both vertical and horizontal planes, and for the following reason:—

It is well known that the best effects in interior illumination are realised when uniform diffusion throughout the apartment is obtained. This effect can be secured most effectively only when all shadows are obliterated by calling into requisition the action of the entering light reflected from all parts of the side walls, floor and ceiling of the apartment.

By the method of directing the transmitted light in parallel lines, the ill effects of shadows cast by opaque objects in the path of the entering light will be realised in the most extreme degree, as there will be no ameliorating influence to counteract and neutralise the shadows by reflection from the bounding walls and floor of the apartment; and an inspection of the condition of an apartment thus treated will disclose this objection at once.

By the method of divergent transmission, while quite as much or more extraneous light is thrown into the apartment as by the other method, its distribution is decidedly more advantageous, from the fact that the repeated reflections from the bounding surfaces of the

* Paper read before the Franklin Institute at the meeting held in June last.

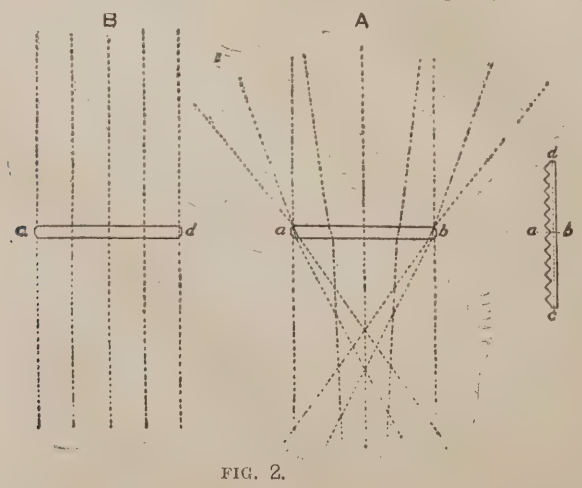


FIG. 2.

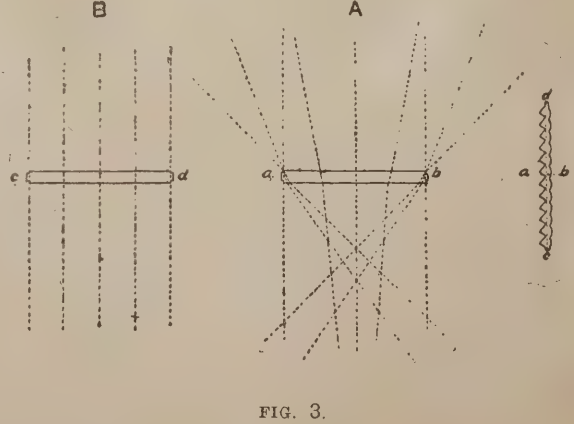


FIG. 3.

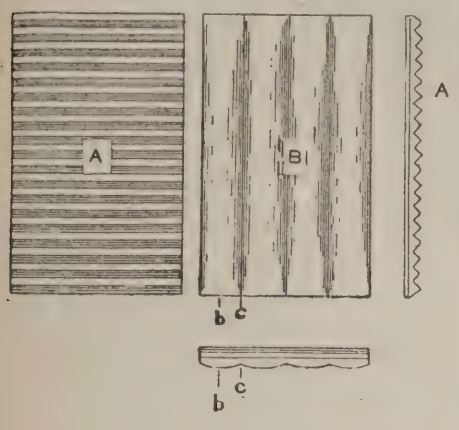


FIG. 4.

apartment cause the practical obliteration of all shadows and a practically uniform diffusion of the light to all parts of the interior.

Returning now to the descriptive portion of the subject, the *modus operandi* of the simplest form of a light-projecting prismatic window is shown in the plan views in Fig. 2, A and B, in which the light from an exterior source falling upon the plane outward surface of the glass is refracted at the boundary of the interior prismatic surfaces and projected into the room to be illuminated.

Fig. 2, A, which is a plan view of this construction taken on the line *a b*, exhibits the effect of the light distribution in vertical plane from the effect of refraction from the terminal portions of the prism, where the influence of the more oblique rays is not counteracted by a modification of the angles of the prism from the centre line to the upper and lower edges of the glass. Fig. 2, B, is a plan on line *c d*, showing that the light rays are not distributed divergently in the horizontal plane, but are all directed in parallel lines.

Figs. 3 and 4 represent the action of prismatic glass of the second class—those having both surfaces prismatic or lenticular.

Fig. 3 shows a form of light-projecting glass that has lately come into use, and for which certain advantages are claimed over the construction previously described. The sheets in this form of prism glass have one surface furnished with prisms—commonly placed towards the room to be lighted—and the other surface formed of a series of lenses of small curvature, distributed in panel form, parallel to the direction of the prisms. This construction, as well as that shown in Fig. 2, manifestly exaggerates in the vertical plane the divergent distribution of the transmitted light, and consequently operates, so far as it goes, in the correct manner, utilising the reflecting action of ceiling and floor in diffusing the light.

The construction shown in Fig. 3 possesses one obvious advantage over the several modifications of Class 1, namely, that the lenticular form of exterior surface arrests and directs into the dark interior to be lighted a certain amount of the exterior light, which, with the plane exterior surface of Class 1, would be lost by total reflection from the exterior plane surface. Practically all of this additional light thus projected into the dark interior would be gained if the angle of the prism and the curvature of the lens panels were correctly adapted to the length of the apartment to belighted.

The latest modification of Class 2 remains yet to be considered. In this, the interior prismatic surface of the glass is the same as that just described, but the exterior lenticular panels are arranged not parallel, but transversely, to the direction of the prisms. The details of this form of construction are shown in Fig. 4, A and B, while the *modus operandi* is best observed in Fig. 5.

The radical difference in the operation of this form of light-projecting glass and that of both forms previously described resides in the fact that the light distribution in this form is exaggerated in the lateral as well as in the vertical plane. This feature is illustrated in Fig. 5, B, which is supposed to be a section of the prismatic glass taken on the line *c d*, from an inspection of which it will be manifest that the vertical arrangement of the exterior lenticular panels will serve a similar purpose in this construction in relation to the light falling sidewise on the exterior surface of the glass as the lenticular panels in the previous case serve in relation to vertical rays: namely, to arrest and refract into the dark interior a considerable amount of light in the horizontal plane which would otherwise be lost for useful purposes. All of the light thus collected and introduced into the dark interior by the lateral collecting action of this device is so much clear gain over the devices previously described.

Further consideration will show, also, that if the interior surface of the glass be provided with prisms of uniform angle, determined in each case by the length of the apartment to be illuminated, this form of construction will secure the same advantage in respect of the vertical diffusion of the entering light as will be obtained from the lenticular prismatic construction previously described.

On theoretical grounds, therefore, the last-described modification of light-projecting glass, belonging to Class 2, should give the best results if intelligently installed. Comparative practical tests also bear out this conclusion.

An additional and important advantage possessed by prism glass of the last-named construction (namely, a prism plate constructed

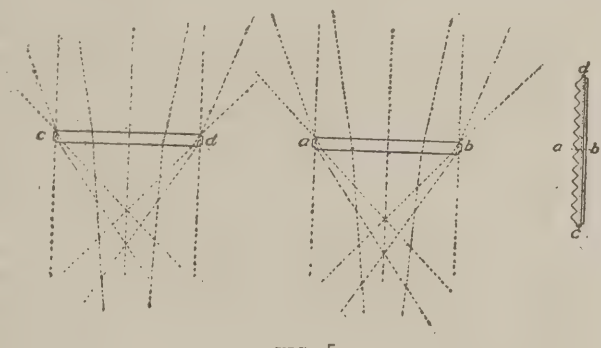


FIG. 5.

with prisms on one side and prisms or lens panels arranged transversely on the reverse side) remains to be noticed.

Since all illumination by means of prism glass is thrown from a comparatively low point, namely, through windows, while all other artificial illumination is directed from a point above, the shadows produced by the prisms on objects in a room constitute a disadvantage common to most systems of lighting by means of prisms, as has been noticed in what has preceded. The light-projecting glass last described, however, by reason of its diffusing quality, both in the horizontal and vertical planes, largely overcomes this objection. Where two such prism windows are used for the same apartment the light thrown from one window completely overlaps that thrown from the other, thereby practically obliterating the shadows produced by prism lights of other constructions.

This construction also has the advantage of enabling manufacturers to produce more readily the larger sizes of prisms, from the fact that one surface has projections at right angles to projections on the reverse side, giving a bridge effect, thus adding to the strength of the plate. For this reason, likewise, it is not essential to have the thickness of the body of the glass as great as with other forms, and, inasmuch as there is a larger loss of light through absorption in passing through a thick than a thin medium, the loss of light from this cause may be very much reduced.

Finally, it may be said that all the various forms of light-projecting prismatic glass accomplish measurably their intended purpose of considerably increasing the illumination of dark interiors over what would occur without artificial aid. In the selection of the kind of light-projecting glass and the manner of its installation the user should be guided by the personal observation of the effects produced rather than by the claims of rival manufacturers.

Current Periodicals.

The Pottery Gazette for September contains much information on the use of lead in glazing, including a letter showing in what respect leadless glazes fall short.

The Genealogical Magazine this month includes articles on "The Armorial Bearings of the Colony of the Cape of Good Hope," "Concerning Heirs and Heirships: Some Instruction for Novelists," "The Stafford Attainders" and "The Armorial Bearings of a Lady." The line drawings of the various armorial bearings are very suitably treated, the result being an excellent reproduction.

The Antiquary.—The article in the September issue of this journal which will be of most interest to our readers is one on the frescoes discovered last year in Little Kimble Church, Bucks. This little church appears to have been completely covered internally with wall-paintings, which were subsequently defaced by Biblical quotations and whitewash in the seventeenth century, or utterly "restored" out of all semblance to their former selves in the nineteenth. Writing about lych-gates, a correspondent suggests that these were originally transported church porches.

The Journal of the Society of Architects for August announces that an examination for membership will be held at the Society's rooms, St. James's Hall, Piccadilly (and also in some provincial centres, if found desirable), on October 9th, 10th, and 11th next, commencing each day at 10 a.m. and terminating at 5 p.m., with an interval of one hour between 1 and 2. The latest date for entering for the examination is September 11th.

The Quarry.—In the issue for September is an article on "The Quarry Stones employed at S. Maurice d'Agaune" from the Roman period to the present day, by Jules Michel. By a turn of fortune the Rhone Valley, which in the time of the Romans went for its building stones to the shores of Lake Neuchâtel, now sends thither columns, fountain bases and large blocks of polished marble. The La Raisse quarries (which the Romans worked to a considerable extent) have long since been abandoned, but the writer suggests that there is a chance now, with our modern appliances, to reopen them, and so enable the magnificent white stone to be used once more. This number also contains an article on "Modern Contracting Methods," showing the lessons for quarrymen to be learnt from the methods adopted on the Chicago Canal and the New York subway.

The Pall Mall Magazine for September includes articles on Inverary and the Wallace Collection at Hertford House. Inverary Castle is now a tourist spot, and during the summer months the *Lord of the Isles* daily brings up its horde of sightseers, turns them loose for half-an-hour, and then carries them off. The building is quadrangular on plan, with a circular turret running up at each corner, and the principal rooms are grouped round a central hall open to the roof and lighted by a pavilion. Many of the walls are covered inside with claymores, axes, and other fighting implements. Not far from Inverary is Dundarawe Castle, an interesting relic of the past; but after all it is the surroundings of Inverary and not its buildings that make the place so pleasing—the woods, the hills and the water are all delightful. The story of the Wallace Collection is told admirably by the late M. Charles Yriarte, who was the expert by whose opinion Sir Richard Wallace was guided in many of his purchases.

R.I.B.A. Journal.—The issue dated August 25th contains an article on the development of Manchester during the nineteenth century

by Mr. Frank P. Oakley, A.R.I.B.A. The plans of the city in 1800 and 1900 show in a striking manner the great changes that have been effected, the widening of the streets, the removal of insanitary areas and the sweeping away of wretched courts and alleys. The earliest authentic date in the history of Manchester is the year 79 A.D., when Julius Agricola established a Roman station at the junction of the rivers Medlock and Irwell. Illustrations are shown of the Free Reference Library, Manchester Exchange in 1820, the Town Hall (Alfred Waterhouse, R.A., architect), St. Mary's Church, Crumpsall (designed by the late Mr. J. S. Crowther), and of several streets. Mr. E. W. Hudson, A.R.I.B.A., contributes an article on the Church of St. John of Jerusalem at Clerkenwell and the discoveries that have been made there recently.

Scientific American (Building Edition).—The August number of this publication contains the usual collection of perspectives and plans of American residences, but the wearying similarity of these designs precludes their being noticed. They are not beautiful, and they look as if they were turned out of some colossal architectural factory to suit any requirement of "cost, size or shape." On the front page there is a good reproduction of the Belgian pavilion at the Paris Exhibition. "Anachronisms in Art" is the title of an interesting article given.

Carpentry and Building (New York) for September contains working drawings for several houses, and articles on "Furnaces for Expensive Houses," "Making Perspective Drawings in Confined Space," "The Art of Wood Turning" and "Modern Factory Construction." The practical information and constructional details given in this journal are excellent, but it is a pity that the designs should be so conventional, and, in most cases, so lacking in beauty. On this side of the Atlantic we are aware of the influx into the towns and cities of the country labourers, but perhaps it is not so generally known that America is in the same plight. Our contemporary says that "the fierce competition of life in the big cities is becoming ever keener, and the ranks of urban labour, skilled and unskilled, are being swollen far beyond the limit of usefulness."

Architect and Builder (New York).—This is practically a new architectural paper, as the old publication has been revised and improved under the new proprietorship. In a thoughtful article on the design of the casing for steel structures, Mr. C. H. Blackall says that, however much variance of opinion there might be as to the inventive qualities manifested, "it is surely acknowledged that there is a right and a wrong way to design a tall office-building." This has resulted in the post-and-girder and the aqueduct styles being superseded by the columnar form of design—that is, treating the whole front as one column, giving a strongly-marked base, a plain shaft, and a rich capital. The sky-scraper is indeed the outcome, not of desire, but of necessity, but its very proportions and monotony are against its being beautiful. "Domestic Architecture in Belgium," "Relation of the Engineer to Architecture" and "Imitation in Architecture" are the titles of three other articles in this number. There are ten separate plates printed on thick paper. Nine of them illustrate façades and interiors of private and public American buildings, the bulk of the work being, of course, in the Classic style so popular in the country. Looking at the porticoes of some American designs you might fancy you were going into a scientific institution instead of a private house.

Architecture (New York) for August is not a very good number. In noticing it we are obliged to refer again to the atrocious modern German school, because four designs are reproduced of a house façade, staircase, hall and garden front from the "Die Kunst." We criticised these very designs in a former issue, and we are glad to see that our American contemporary has the same opinion as ourselves about them. Of the façade is said: "This nightmare is published to show to what an extreme the unrestrained use of applied ornament can be carried," while the garden-front design is sarcastically described as "a restrained example of the Secession style." No one could deny that modern Germany has an architecture (!) of its own creation; but, ye gods, don't let us have it over here. Friend William should teach his countrymen to design better, even if only "for the honour of the Fatherland." In this number there are two excellently-printed plates of a country house at Fort Hamilton (Little and O'Connor, architects), but the building is so Spanish in appearance that without reading the title you might suppose it to be in the neighbourhood of Seville; such copyism is not commendable. There is an interesting little article on the garden scheme carried out by Mr. N. F. Barrett at New Rochelle, N.Y. This gentleman's plot of ground is only 100ft. by 175ft., yet he has so arranged it that specimens of all kinds of gardens — Italian garden, Japanese garden, &c.—are to be seen.

The American Architect.—In the issue of this paper for August 4th there is an interesting note on the peevish self-complacency shown by some of the artists whose pictures are exhibited at the Paris Exhibition. Appended to the list of recipients of medals was a remark to the effect that the absence of certain names, which one might naturally suppose would be included in this grade or that, was due to the fact that these artists had informed the jury that "they would not accept silver or bronze medals"; and added to this there is the statement that this lordly condition was made *after* the list of gold medallists had been posted! In this issue there are six plates of competitive designs for a new Lady Chapel to St. Patrick's Cathedral, New York, by Messrs. N. Le Brun and Sons and Mr. George B. Post, both of New York. Messrs. Brun's design is the more pleasing of the two and harmonises well with the rest of the building; the roof, however, might have been made higher with advantage. In order to minimise labour and facilitate examination, the assessor furnished the competitors with identical outline drawings of the present cathedral, the east end being left blank for the addition of the new chapel; this device proved to be most advantageous. There is also in this number a delightful reproduction of the entrance to the old castle at Miltenberg-on-the-Main, Germany. "Notes on some European Systems of Forest Administration" is the title of a continued article in the issue for August 11th; the information given is of the dry-as-dust kind, and whoever it may be useful to it certainly is not of much good to the architect. The plates in this number include one of the Building Trades' Homes and five showing perspective, plans and details of a new chapel for the Troy Orphan Asylum (Warren, Smith and Biscoe, architects). The store and apartment house at Aue, Saxony, is less German than usual—and therefore less offensive. In the number for August 18th, however, the German shows himself in a villa by Herren Spittler and Kronfuss; only one word can describe it—hideous. Several other Lady Chapel designs (as above) are given as plates. The chief article is one by a writer who tries to show that the horizontal lines of the Parthenon were made to harmonise with the curve of the sea horizon. Such calculations have been pleasing to the hearts of Dr. Emil Braun and Mr. Penrose, but they do not convince, because there must necessarily be so much speculation; nobody knows exactly what the Parthenon was like.

The Clayworker (Indianopolis) for August is a most valuable and useful number. A writer shows how we have copied Nature in many of our inventions—the shells of turtles, the scales of fishes and the cones of trees are creations which the tiler has copied in laying his tiles. Hugh Miller says: "There is scarcely an architectural ornament of the Gothic or Grecian styles which may not be found existing as fossils in the rocks. . . . There is no form of volute known to the architect which may not be found in the rocks, but there are many forms in the rocks unknown to the architect." Much information about brickmaking is given in this number. There is also an article on the vitrified pavement so popular in Philadelphia. It consists of a 4in. concrete base, with a 1in. layer of sand above, on which are laid the bricks, 4in. deep.

The Canadian Architect and Builder.—A writer in the August number of this paper deals with sheet metal as sheathing. He says: "There is a peculiarity of all stock designs for metallic walls and sheathing which seems to be not only not necessary but injurious, producing a monotonous effect; this is the system of interlocking joints concealed by making them part of the pattern. It would probably be an improvement if the joints were recognisable as joints," and he very properly advocates that no pains should be taken to conceal the joints. He deprecates the stamping of sheet metal to imitate brick and rock surfaces, and concludes with the following very commendable remarks: "If the manufacturers of sheet-steel sheathing would divert ingenuity and expense from the endeavour to imitate constructive materials to experiment in search of a good plain or metallic lacquer they would, it seems likely, be doing the best thing to push their material to the full extent of its proper limit in architecture." The illustrations include some of Manning Chambers, Toronto (E. J. Lennox, architect), a large and somewhat pleasing commercial building.

The Building, Engineering, and Mining Journal (Sydney, Australia).—There is an amusing account of red-tapism mentioned in the issue of this paper for June 23rd. It appears that there was an ancient telegraph pole at Cobden, Vic., that had been troubling the minds of the powers that be. A "department" man was sent to inspect it. He did so, and delivered a report to the effect that the pole required a coat of paint. Another "department" man then set out for the pole with a can of paint! Australia is getting on. On page 56 of the BUILDERS' JOURNAL for February 28th last some particulars were given of the competition for a bridge across Sydney Harbour. In the issue for July 7th of the paper under notice is a letter from Professor Waddell, a well-known bridge engineer, about this competition. "Heads I win and tails you lose" is his description of the conditions imposed, which give no assurance that the successful competitor will have the carrying out of the work.

Berliner Architekturwelt.—There is an interesting article in the current issue of this journal on the new Mixed School on the Wilmsstrasse, Berlin. The architect is Ludwig Hoffmann, and the building—a free Classic treatment—is pleasing, though the curved dormers in the roof seem incongruous. There is a good deal of carving at the top of the porches, into which are introduced small heads of teachers and figures of schoolboys. The design for a bridge with three large spans, by A. Orth, of Berlin, has, over the centre piers, columns with sculpture on top, giving it an elegant appearance. Several designs for small country houses and a coloured plate of the police buildings at Augsburg are included among the illustrations. There is also an article dealing with the exhibit of the Berlin Royal Porcelain Manufactory at the Paris Exhibition.

Die Kunst for September is mainly taken up with the annual picture exhibition at the Munich "Glaspalast," but the pictures illustrated are of little direct interest to architects. The most interesting article from our point of view is that dealing with the Finnland Pavilion at the Paris Exhibition, which shows much quaintness of treatment. The several illustrations of the whole building and its details are excellent. Numerous illustrations are given in this number of "Art Nouveau" furniture. There is also an interesting article on "Modern Architectural Effort at the First German Building Exhibition at Dresden."

The Liverpool Architectural Society has just forwarded us the annual report and proceedings for the session 1899-1900. The number of members of this society is now 134 as compared with 131 last year. The balance in favour of the society is £164 2s. 8½d. The pamphlet contains the inaugural and closing addresses by the president for last year, Mr. E. A. Ould.

SOME NOTES ON DRY ROT.—II.

By A SPECIALIST.

(*Continued from p.* 49, No. cclxxxix.).

IN this article actual examples are given of bad cases of dry rot which have been cured. Fig. 1. shows a section of a floor commonly used in some parts of the country (especially in Lancashire) for kitchens and sculleries. It consists of the joists, A, plastered underneath and rough-boarded on top, the boards being covered with a layer of earth, on which are laid the flags which form the floor proper, C, these latter being often covered with linoleum.

It was a floor like this which I was called upon to repair. A portion of the plaster had fallen off owing to the joist being rotten, and I was ordered to take down sufficient plaster to put in a short joist, nailing it to the old one. On removing more plaster I saw that the boards above were rotten: the linoleum had to be taken up and a row of flags removed so as to enable the boarding to be repaired. But, on lifting the first flag several others, as well as the boards, joists and an assistant, went through into the cellar below. This decided the matter. The whole floor was removed, every door post was cut off and spliced, the skirting was replaced with new, the cavities in which the ends of the joists rested were thoroughly cleaned out, and the brickwork was well brushed with a hard brush to remove all traces of the fungus as far as possible. The walls were then given two coats of a solution of corrosive sublimate and the new joists and floor boards treated similarly. The flags were relaid, being first well swept and painted with the above solution and then bedded on fresh earth. The plastered ceiling was omitted, so as to give ventilation, the want of this being undoubtedly the cause of all the trouble.

On examining the cellar doors and windows under the above floor we found that the fungus had attacked them, travelling down at the back, where it could not be seen. These were accordingly taken out and replaced with new, giving two coats of solution to the timber and walls. The cure effected has been permanent.

The next example will show the advantage of doing work thoroughly when dry rot is concerned. The ground plan of the part affected is shown in Fig. 2 and a section of it in Fig. 3. Originally starting in the kitchen, A, the fungus had grown entirely through the walls to the rooms B and C, affecting every door shown; the room D was used as a lavatory and was matchboarded round, also the ceiling. All this was affected, as well as the joists and the floor above; the seat, E, was almost eaten away and the floor was dangerous to walk across.

The room D was not pointed out to me at first, but I discovered it in tracing the extent of the fungus, and on informing the owner that a clean sweep would have to be made of it, he laughed and said: "Certainly not, you shall not touch it; it was all reboarded less than twelve months ago"; and this I found to be true. The old boards had been removed and the walls creosoted and reboarded. The result was that I could push my fingers through the boards in a dozen places.

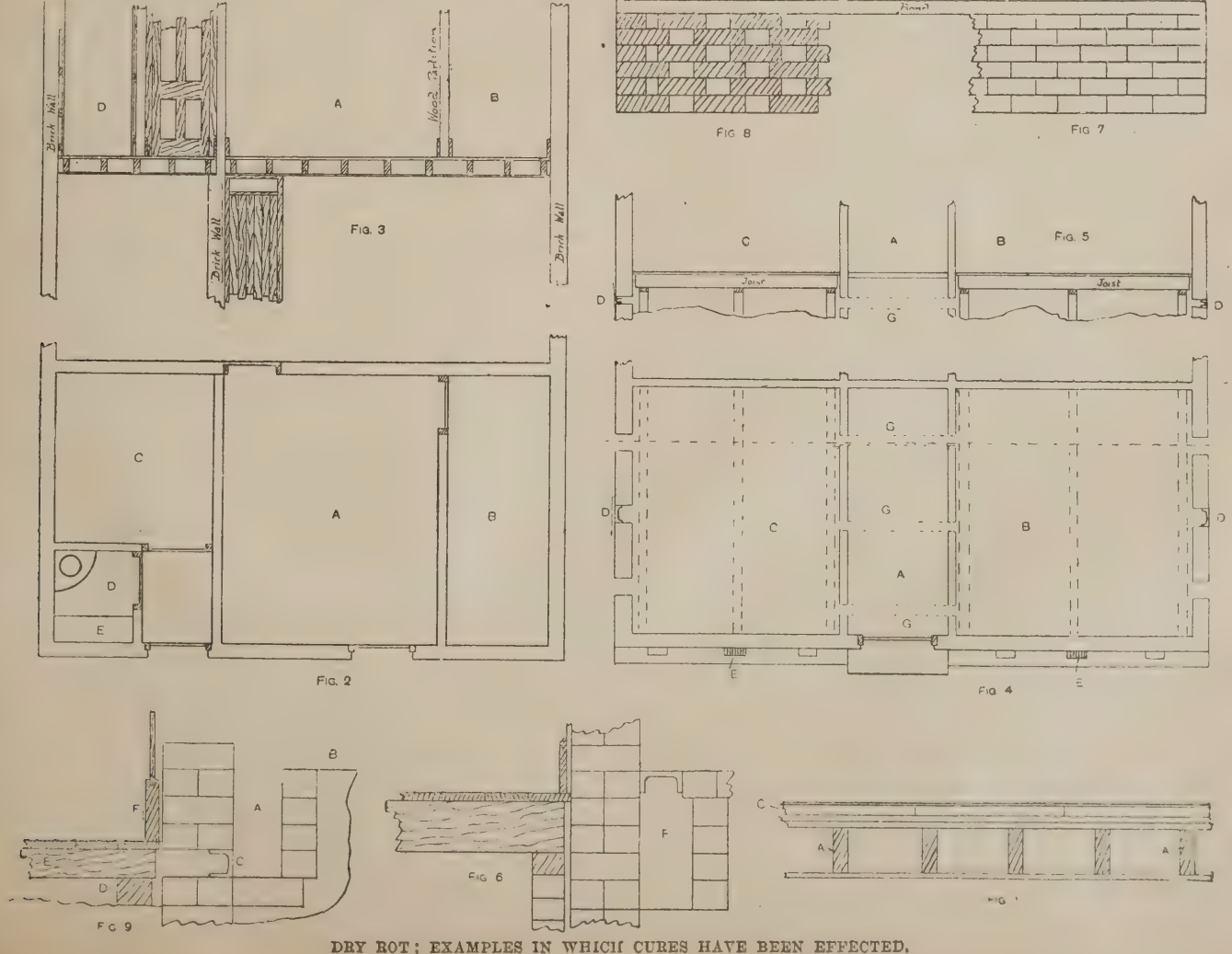
My remedy was a drastic one. Everything was cut away until all traces of fungus had disappeared. All walls, as well as the old and new timber, received two coats of the corrosive sublimate solution: no trace of dry rot has since appeared. The cause of the mischief in this case was traced to a leaky pipe, the water from which had found its way under the floor, which, being entirely unventilated, speedily developed dry rot, with the results given above. I may state that ventilation was ensured by leaving the cellar ceiling unplastered, as in the first case described.

The next example is a somewhat different one. The ground plan is shown in Fig. 4 and the sectional elevation in Fig. 5. A is the entrance lobby, with tiled floor, and B and C are respectively the kitchen and parlour, with boarded floors. As there are no cellars under, the joists are supported on sleeper walls, running from front to back, as shown by dotted lines. No provision had been made for ventilation except the air-bricks D at each end and the two marked E in front. These latter were inserted horizontally as shown in Fig. 6, as the ground line was too high to insert them otherwise; but as the builder had failed to make any connection between the open trench, F, and the cavity beneath the floor, they were not of much use. An extra sleeper wall was also carried up, parallel with the front of house, but what this was for is known only to the man who built it.

Two extra air-bricks were inserted at each end of the house, as shown, also two more in front at each side of the door, and openings were made in the house wall opposite each horizontal air-brick; openings were also made in the sleeper walls, so that the air could circulate freely, but no solution of any kind was used, the fungus not having obtained any hold in the walls. I recommended the insertion of three tubes as shown by dotted lines at G, but this was not done, although it would have been a great safeguard; the fungus, however, has not reappeared so far.

Many builders offer a direct incentive to dry rot by the method they adopt in building sleeper walls. When built as a solid 4½in. wall (see Fig. 7) the air is simply obstructed in circulation, where otherwise all might be well; whereas, if the walls are built as shown in Fig. 8, less bricks and less labour are required and the air is allowed free circulation throughout.

The concluding example is one in which I was unsuccessful, though not from any fault of my own. The floor was about a foot below the ground line, the joists touching the earth in some places, and the bond lying direct on the earth, in places almost buried in it. The only provision made for ventilation was the insertion of two air-bricks in the outside wall, at the bottom of two trenches built up for the purpose. The whole arrangement is shown in Fig. 9.: A is the trench; B, the ground line; C, air-brick; D, bond E, joist; and F, the



DRY ROT: EXAMPLES IN WHICH CURES HAVE BEEN EFFECTED.

panelled dado. The natural result of this arrangement was, of course, that the trenches caught a certain amount of surface water, which drained under the floor through the air-bricks, the timber suffering in consequence.

It was here that pitch-pine joists were put in as being "proof against dry rot," according to a so-called scientific builder; but when I took them out three months afterwards they had a fine coating of fungus. My recommendation in this case was to raise the floor and lower the ground, but I was overruled, and the new floor and dado were put back as before; and the last state of that floor is fast becoming as bad as the first. The next article will deal with the best methods of securing immunity from dry rot in various situations, prevention being decidedly better than cure.

(*To be concluded.*)

A.A. SUMMER VISITS.

COLNEY CONVENT, NEAR ST. ALBANS.

ON Saturday last the Architectural Association visited, as their sixth and last outing of the session, the very extensive buildings of the new convent at Colney, near St. Albans, now being erected for the celebrated Sisterhood of All Saints, Margaret Street, from designs by Mr. Leonard Stokes, at whose kind invitation the visit took place.

The site of this large range of buildings—which have, even in their unfinished state, a curiously mediæval appearance—is situated in the midst of a very charming old-world park of about fifty acres, one that possesses fine masses of old trees, large lawns, beautiful park land and an old kitchen garden of great size enclosed in the usual early eighteenth century red-brick walls of beautiful colour, covered in places by a luxuriant growth of creepers and wall plants; altogether the place forms an ideal setting for a conventual house that is to be the great centre of this famous order.

It is not the purpose of these notes to touch upon the history of this particular convent, that has led to the erection of the fine specimen of modern design and workmanship in question, one that may fitly hold its own with many ancient edifices of a similar character. The opportunity of its erection as an entire artistic and picturesque whole—the combination of traditional planning and design with modern design, producing an almost new type—has been very thoroughly taken up by the designer, whose building merits the closest attention.

Primarily, its plan consists of two large divisions, the convent itself forming the principal one and the entire service block the subsidiary division. The former forms an almost complete square of about 150ft. on each side, with a large refectory at the southern angle projecting beyond the general face of the building and connecting the large service wing (at its southern elevation) with the rest of the buildings. On the north side the conventual church will be erected; till then the large and elaborate Gothic refectory will supply the place of a chapel.

The general planning and disposition of the ground and first floors, and the arrangement of the apartments in the roof, not yet carried out, form one of the most interesting features of the design. The convent division is shaped as a large hollow square, around the inside of which is a grand cloister, lighted by very broad mullioned and richly traceried windows of a comparatively low height, and built into the face of the main wall. Above them are the windows of the cells. On each elevation of the quadrangle are moulded mullioned windows placed symmetrically between three bay windows that are carried up and run into the roof, or nearly so; and above them are some excellent dormer windows. All the roofs are covered with stone slates of much variety of colour, though chiefly browns and greys. The stonework throughout is particularly noticeable. It is of coarse texture, and one known as Welldon stone, freely worked, and producing a most artistic result, much like the effect of a well-weathered surface. This, in conjunction with the soft red brickwork, forms, even in its perfectly new state, a most pleasing colour scheme.

The cloister is roofed internally with a segmental concrete ceiling, with piers and ribs springing between each window parallel with the external buttresses. The whole is plastered, with the stone left in its natural colour. From the cloister are reached the principal entrance (with a parlour or waiting room on each side of the vestibule), the novices' day rooms, the guests' house, the choir sisters' day-rooms, the lay sisters' department, with many other subdivisions, connected with the large service block. This last comprises the kitchens, larders, pantries, stores and other rooms, stables, boiler house with a well-designed chimney of large size, electric light department, &c. Returning to the cloister, three staircases for each division of the tenants lead from it to the first floor, where, on the sides of a continuous central corridor, in itself a most interesting piece of design, are placed cells for a hundred sisters. By this means the space above the cloister walk is utilised to the fullest extent. These sleeping apartments are each about 11ft. 6in. by 8ft., with a window and door. The divisions, reaching from floor to ceiling as a complete partition, instead of the usual arrangement of a cubicle, are constructed of 3in. concrete finished in plaster and cement, and the flooring is made of about 2½in. of coke-breeze concrete brought to a true face, upon which it is proposed to lay ordinary grooved and tongued floor boarding in narrow widths.

The lavatories, &c., are cleverly formed on the usual sanitary principles and arranged within turrets as portions of the architectural design. They are carried out with red glazed brick dados and plastered walls. The wiring for the electric lighting is carried through iron tubes.

The composition of the external elevations generally is extremely effective and in the style of Gothic that the architect has made peculiarly his own. The principal entrance front consists of a massive central feature reminiscent of a large gate-house flanked by turrets. This feature appears also in the cloister court, but has not reached much above the roofs. On either side stretch long ranges of moulded and mullioned windows, those to the south terminating in the elaborate refectory, a very large hall with comparatively small traceried windows set in deep moulded reveals between massive buttresses, a large bay window and a lofty turret. The window in the end wall is a richly traceried one of seven lights. The apartment, which has a hammer-beam roof, is more or less a reproduction of a fine mediæval type. At the northern end of this façade in due course will come the east end of the church, forming a complete scheme. The remainder of the elevations are treated in a very similar manner, built of stone and banded red and stock bricks.

H. D. W.

Correspondence.

"Builders' Journal" Insurance Policy.

To the Editor of THE BUILDERS' JOURNAL.

PARKSTONE, DORSET.

SIR,—In order to be eligible for this policy, is it necessary that the traveller should actually have the BUILDERS' JOURNAL upon his person at the time of the accident, or would having the paper in his possession mean that it might be left at his house? If not, could you not alter the rule to that effect? I believe "Tit-Bits" and other papers allow this to be done. I am a constant subscriber to your paper, but it is inconvenient to carry it about.

Yours truly,

CLERK OF WORKS.

[The Credit Assurance and Guarantee Corporation, Limited, state that they are quite prepared to give the wider meaning to the words "that at the time of the accident the passenger in question had this paper in his or her possession." This means that they would not debate a claim where the publication was not actually on the passenger, but in his possession at home.—ED.]

Architects' Assistants' Salaries.

To the Editor of THE BUILDERS' JOURNAL.

SOUTHPORT.

SIR,—Notwithstanding the protest of "Vigilans," I am inclined to think that "Ambitious" is right in saying that "it is probably their own fault that so many men have salaries of 20s. and 25s. a week." Of course there are exceptions to every rule, as "Ambitious" recognises by the use of the word *probably*, but generally speaking I think architects' assistants get paid what they are worth.

That a youth who has worked for five years for nothing, and whose parents have not only paid a premium to article him to some architect, but are also considerably out of pocket for his keep during those five years, should receive so poor a salary as 25s. seems altogether wrong somewhere. Somewhere! Yes, but where?

The question resolves itself into the old one of Architectural Education in this country. Parents and guardians know nothing of what they are doing when they article their boys to this or that architect. In most cases the premium is paid and the parents think no more about the matter till the boy is "out of his time." Then they complain of the salary that Jack will probably be offered. But the chances are that Jack is not worth more than this pittance. He may be an estimable fellow, but he may be no good as an architect, and the sooner he finds it out the better. If he can be sure of 30s. to start with he will probably be a long time in finding it out, which will be a pity for him; for if he is to make a change the sooner it is done the better.

It is a pitiable spectacle to see the numbers of boys put into architects' offices who by no chance under the sun can ever hope to be architects, or even successful assistants. The main fault is with the parents. The boy does not find out his inaptitude for the profession till a year or two of his time has passed. He is fast for five years, so he tries his best. But it requires quite special faculties to become an architect or an architect's assistant, and no hard work will give you those faculties if they are not yours to begin with.

The 20s. salary offered will be a quiet reminder that you are in your wrong place. If you are ambitious you will look round for a better field for your energy. It will be an unpleasant awakening, perhaps, but best let it come early.

My own experience has been of this nature. When out of my articles I received 25s. a week. But I was not worth more to my employer. It was the old tale of going into the profession ignorantly and without the special faculties necessary. One must be an all-round man, and an academic liking for the study of architecture does not make an architect. Neither, on the other hand, does one or other of any particular branch of the architect's work.

There are lots of manufacturing firms who would be glad of the experience of young men trained in architects' offices. I mean firms connected with the building trade. My experience of the inside of an architect's office makes it easier, perhaps, for me to approach architects as the representative of one such firm. There may be a loss of "caste" to some "professional men" in thus giving up architecture for business, but that is a thing that will harm no one who has the right stuff in him.

I see a good deal of architects now, and from what I can learn really good assistants are not easy to find. At any rate, they will get paid what they are worth. That they might be worth far more at some other work is no cause for them to grumble against their employers, but rather a reason for getting into this other work.

I think the proposal of combination to insure a minimum salary of 30s. would be a huge mistake in the interests of the individual assistants, as it would prevent a lot of young men from ever getting more than this, who under the present conditions would turn their hands to other more profitable work. It would keep inside the profession a large number of men who from all points of view are better outside.—Yours truly,

F. H. C.

FORMATION OF NEW STREETS.

THE LAW IN SCOTLAND.

AT the recent meeting at Elgin of the Association of Burgh Officials of Scotland, Mr. F. G. Holmes, C.E., burgh surveyor of Govan, read a paper on "Laying-out New Streets." In dealing with the Burgh Police (Scotland) Act, 1892, he held that section 146 should be amended so as to deal in a satisfactory manner with the lines of new streets. In his experience, proprietors of feuing subjects had feuing plans prepared showing contemplated lines of streets through their properties without any regard to the practicability of extending them through adjoining properties. He held that Commissioners should have the power to regulate the lines as well as the levels of proposed streets. The widths of proposed streets were even of more importance than the lines of them, and on this matter the power of the Commissioners was very limited, as would be seen by referring to section 152 of the Burgh Police (Scotland) Act, 1892. While in exceptional cases the width of 36ft. might be sufficient for a street, it was very far from being an adequate standard width, and if proprietors took advantage of the Act to limit their streets to such a restricted width the city and town improvement schemes of to-day would in number represent but a mere fraction of the number of improvement schemes which would be required in the future. It might be observed from the section of the Act mentioned that houses could be erected in new streets of a height measured to the roof of the highest habitable room equal to 1½ times the width of the street; consequently, four-storey tenements 45ft. in height might be erected on such streets, and the district built upon in such restricted lines, with the free space behind the houses to correspond, would, from a sanitary point of view be too dreadful.

City Streets and Town Streets.

The Act should discriminate between the widths of streets in towns and those in small residential burghs. In towns the widths should not be less than 80ft. for carriageway and footways, except in cases where the streets were short and could not be extended, in which case the minimum width might be reduced to 50ft., and in a few very exceptional cases, where the Commissioners were satisfied that from the peculiar nature of the surroundings a greater width could not be obtained, a minimum width of 36ft. might be permitted. Where tramways, sewers, gas and water pipes, electric-lighting cables, underground telephone wires were in contemplation a width of 60ft. was required. In some of our cities they had instances of streets 70ft., 80ft., and 100ft. in width, and it was to be regretted that these widths were not more frequently adopted. Apart from the width required for the utility of the street, a sufficient width was required for free space in front of the buildings to be erected thereon, adopting the standard provided for by section 170 of the Act. In purely residential districts a less width for carriageway and footways might be required, because in such districts tenements had usually parterres in front, which were parts of the street so far as free space was concerned. The width would therefore fall to be determined solely by the traffic demands. Regarding the levels of streets, the powers of the Commissioners were ample, as it was left for them to fix the levels. It seemed strange that absolute power should be given to fix the levels and no power whatever in fixing lines. He suggested that in the event of new streets being formed as private streets section 133 should be amended and made more explicit, as its meaning was not clear.

Some Suggestions.

When the Burgh Police (Scotland) Act, 1892, was revised, he urged that an effort should be made to give the Commissioners more control than they had at present in the laying-out of new streets. He also suggested that in applications to the Dean of Guild Court for laying-out new streets the procedure should be much the same as in applications for the erection or alterations of new buildings, so that all proprietors bounding the property or estate on which it was proposed to lay out a new street would be cited and have an opportunity of asking the court for any modification of the lines or levels, or both, that might be necessary for the purpose of working in with contemplated lines of streets on their properties. In cases where the lines of proposed streets were at a considerable distance from any of the boundaries of the estate or property adjoining proprietors might not require to concern themselves, but on the other hand, when they were near the boundaries, it would be necessary for them to see that the proposed levels would work in with their feuing designs, and if not they could ask the court to modify the lines for that purpose. The court would also have an opportunity of ensuring that the lines of proposed streets were so fixed as to provide for ample free space being left behind the houses to be built along the streets, and thereby make easier the carrying out of section 170 of the Act. Should the petitioner in any case be refused lining on the ground that he objected to modify his lines to suit the requirements of the Dean of Guild Court, he could appeal to a higher court.

Mr. W. F. Mackintosh, of Arbroath, next read a paper on

"Legal Procedure in Making Streets."

He said the Police Act of 1892 was very defective in regard to the definition of the term "new street," and was not wide enough to cover the cases of houses being built along a public road or path already existing. If he was right in the case which he quoted the Commissioners had practically no control with regard to building along such a road or path. The position of the first house greatly determined the position of those succeeding, and streets usually sprang up by degrees. The position of matters was this—If a person was proprietor of a field of virgin soil and wished to let it or build houses on it, he must give notice to the Commissioners that he intended to lay out a new street, and, along with such notice, lodge plans and sections showing the proposed levels and drainage in order that levels and width might be fixed; but if there ran through this virgin soil a road or path, say, 20ft. wide, along which no houses existed, and he chose to build or let on each side of the road, the Commissioners had no control over the levels, gradients, drainage or width of this road, which, although it was not a new street under the Act, might be of considerable length and might thus become a busy thoroughfare. It was quite true that the proprietors whose land adjoined the road might of their own accord choose to convert the road into a street in conformity with the Act. Failing their doing so, the Commissoners' only course, so far as he could see, was under section 154 to purchase and acquire sufficient ground themselves in order to widen or improve the street, resorting also, if purchase could not be effected, to the compulsory powers of purchase conferred on them by that section. This, however, would have to be done at the public expense. He advocated that Commissioners should have power of fixing the line of streets or approving or disapproving the proposed line.

Private Streets.

He next dealt with the question of the formation and completion of private streets and of the veto which the owners of three-fourths of the frontage could exercise in refusing to allow the street to be macadamised. The object of section 139 was not only to provide relief to the owners, but also, while enabling the Commissioners to give that relief to owners—a relief that might amount to total exemption—to put the Commissioners in an unassailable position in respect of having given such relief, and put themselves beyond challenge on the part of adjacent owners, who would have to pay a larger sum for street making on account of the relief so given. With regard to the various modes of street making and equitably ascertaining, the costs of an arbitration under section 151, it would be observed, as a manifest defect in the Act, that the Act contained no provision instructing notices to be served on the proprietors of the ground along which the street was to run, or on the owners of buildings already erected intimating the Commissioners' intention to pave or make the street either temporarily or permanently. There could be no question that if the Commissioners proceeded to execute the work without giving notice they could not afterwards recover the expenses of street making. But even when notice was given, if that notice did not specifically detail the mode on which the work was to be done, the same result would follow.

Surveying and Sanitary Notes.

A Subway at the end of Parliament Street is being constructed by the Westminster Vestry in order to connect Bridge Street with Great George Street.

A Proposed new Street in Liverpool, between Bath Street and Great Howard Street, is under the consideration of the Estate and Health Committees of the Corporation.

The Strand "Island."—The footway of the new Strand widening is ready, and very shortly the roadway will be thrown open for traffic. The unsightly backs of the Holywell Street houses have been covered by a hoarding, which has been papered with select designs relating to fluid beef, soap, whisky and other delicacies.

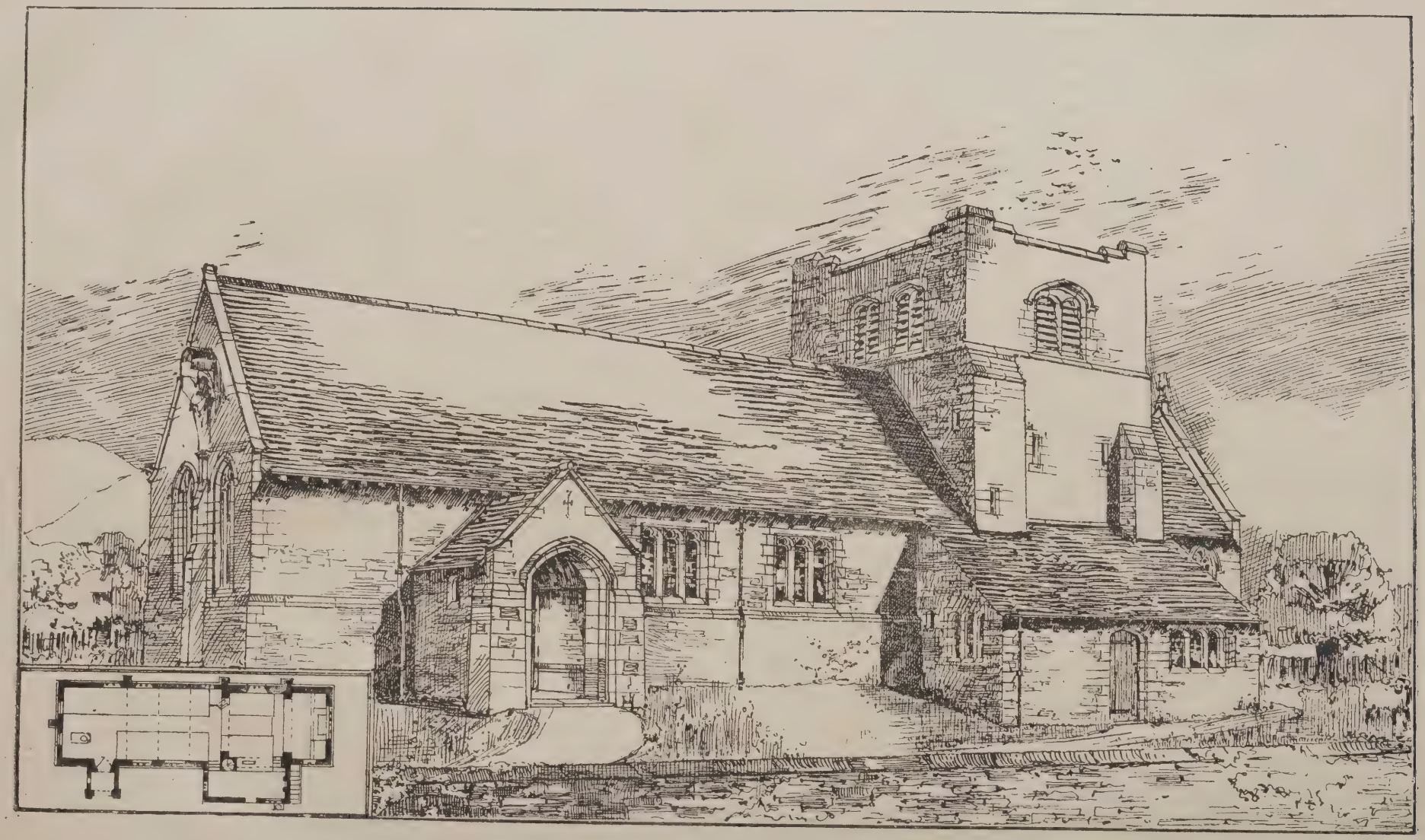
Roads Up in London.—The City end of the Embankment was closed last week for repairs. Buckingham Palace Road is also given over to the road-breaker in the neighbourhood of Victoria Station. Chancery Lane is emerging from its wooden barricades. Waterloo Place and the lower end of Regent Street are still in the hands of the pavior.

The "Cyroplane" is a new tripod head for photographic cameras or surveying instruments, which allows the camera, level or theodolite to be inclined without moving the feet of the tripod. The device will support a camera 18in. by 24in. in dimensions. The cyroplane is the invention of M. Simmonet and is made by M. Balbreck, 137 Rue de Vaugirard, Paris.

A Defective By-law.—At the City Summons Court, last week, Edward Winter was summoned under the new L.C.C. by-law for cleaning a window to the danger of passengers in Liverpool Street. A police-constable said he saw the defendant cleaning a window about 15ft. from the ground without any support but the ledge on which he was standing. The manager of the National Provincial Window-Cleaning Company said the defendant carried life-guards, which he used when necessary. He was standing in a safe place. The defendant raised an issue which revealed a weak point in the by-law. The policeman admitted that he was standing on a coping, but said there was no window-sill. Alderman Sir G. Faudel-Phillips read the by-law, and found that under that the offender must be standing on a window-sill; he dismissed the summons.

The Bath Surveying Committee met last week. Two builders, for alleged infringements of the by-laws, came before the committee, and among plans passed were those for alterations to the corner of Milsom Street, submitted by Mr. Mallett. It was reported that the houses up to and including No. 5 London Street were now in the possession of the committee, and the surveyor was instructed to commence pulling down the houses up to and including No. 2 London Street and lay out the new kerb line. From the Streets Improvement Committee it was reported that the surveyor had submitted an offer by Mr. Gifford to sell a strip of land adjoining Lansdown Road, at Lansdown Lodge, and rebuild the boundary walls, for the sum of £200. The offer was accepted, Mr. Young saying it was one of the best improvements they had had for a long time at small cost.

A Proposed Isolation Hospital at Ecclesall.—Mr. J. D. Webster, architect to Ecclesall Union Board of Guardians, is to prepare and submit a plan and specification for a hospital for isolating suspected infectious cases.



GOATHLAND CHURCH, YORKSHIRE, FROM THE SOUTH-WEST. DEMAINE AND BRIERLEY, Architects.

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Supplement to
THE BUILDERS' JOURNAL AND ARCHITECTURAL RECORD,
Wednesday, September 5th, 1900.

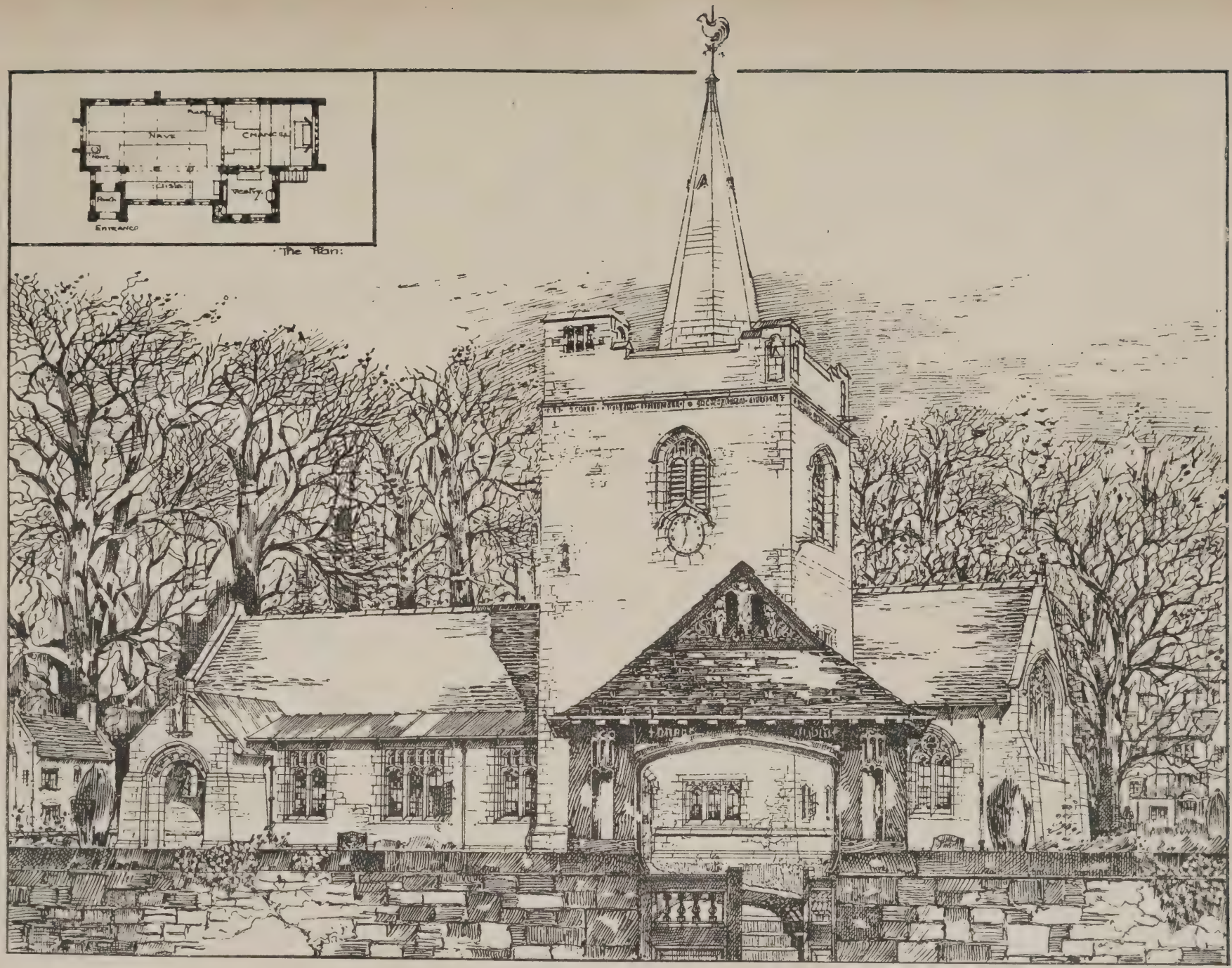


"THE SEARCH FOR ELDORADO." Enamel by ALEXANDER FISHER.



HOUSE AT WOKINGHAM. ERNEST NEWTON, Architect.

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ALL SAINTS' CHURCH, RUFFORTH, YORKSHIRE. DEMAINE AND BRIERLEY, Architects.

Keystones.

Greenan Castle, which stands on an isolated volcanic rock on the seashore three miles south-west of Ayr, has been undergoing extensive repairs for its preservation. The work will cost about £200.

Clayton Old Hall.—The Parks and Cemetery Committee of the Manchester Corporation have decided to expend £900 on the restoration of Clayton Old Hall, according to plans submitted by Mr. A. Darbyshire, of Manchester.

Greenhead Parish Church is being enlarged by the addition of a chancel and organ chamber, at a cost of £1,800. There will also be a new roof, wood block paving, wooden spire and archway over the west tower, and window, costing £1,000.

Ayr new Parish Church is to be extensively altered. It is proposed to entirely reconstruct the back of the church, with a view to the accommodation of a new organ, to cost £1,000, a chancel for the choir, and a new vestry. The total cost will be £1,500.

Mr. William Millar, author of "Plastering, Plain and Decorative," has resigned his position as teacher of plastering at the Polytechnic, Regent Street, W., to accept the appointment of examiner of plastering at the City and Guilds of London Institute.

A new Parish Room at Sawley, near Ripon, has been opened. The building is oblong, and is built of freestone, given by the Sawley Hall estate. Its dimensions are 28ft. by 23ft., the height being 16ft. The roof is slated. At the front is a balcony, supported on iron pillars.

A Memorial Window has been placed in Kinclaven parish church to the late Dowager Marchioness of Lansdowne. The three-light window is placed in the west end of the church. The style adopted is Free Renaissance. The work was executed by Messrs. Clayton and Bell.

Protection of St. Paul's Cathedral against Lightning.—The rearrangement of the system of lightning conductors on St. Paul's Cathedral, which has been carried out under the direction of Mr. Killingworth Hedges, M.I.E.E., is now practically complete. The system adopted is described in the BUILDERS' JOURNAL for April 25th last.

The new Théâtre Français.—The scaffolding of the reconstructed theatre is being slowly taken down and the outer portion of the building is complete. The interior is not so advanced. The painted ceiling of Dubufe, which was saved from the fire, will be replaced in the "foyer" in the course of a few days. The shelves of the library and the box office are quite ready, and the lift—a novel feature—will be tried in a fortnight.

A new Catholic Church at Lowestoft is being erected in Gordon Road. The building will consist of red brick with Costessey ware dressings, and will provide accommodation for 600 persons. The site was purchased for £1,600, and the cost of the building will be £9,000. It is 161ft. over all, 53ft. wide, 22ft. nave, and 13ft. aisles. It will also have a square tower and arcading supported by polished granite columns. Messrs. Baines, of London, and F. W. Richards, Lowestoft, are the architects, and the contractors are Messrs. G. E. Hawes and Sons, Norwich.

A Club is to be erected in Bank Street, Alexandria, Glasgow, for the Vale of Leven Constitutional Club, from plans by Messrs. Boston, Menzies and Morton, architects, of Alexandria and Greenock. The site is in close proximity to Alexandria Railway Station. The ground floor will be utilised for offices, billiard room for four tables, and lavatory accommodation. The upper floor will be occupied with a large reading and recreation room, committee room, and baths, while in the attic floor a house is provided for the caretaker. The buildings will cost about £2,300. The contractors for the work are:—Mason, Robert Bisland; joiner, James Shearer; slater and plasterer, James O'Conner; plumber, Thomas Taig—all of Alexandria.

A Statue of Edmund Cartwright, D.D., the inventor of the loom, is to be erected at Bradford. Mr. Henry Fehr has been commissioned to execute the work.

The Ruskin Exhibition at Coniston, owing to its still increasing popularity and in response to numerous requests, is to be open for another week, and it therefore will close on September 15th.

A new Lunatic Asylum near Basingstoke is proposed to be erected by the Hampshire County Council at Sherborne St. John. Permission has to be obtained from the Commissioners in Lunacy and the Secretary of State.

The Society of Designers will hold a number of meetings during the coming session in Clifford's Inn Hall as formerly. There will be about three lectures on as many branches of decorative design, and various other meetings of an informal character.

A Bronze Tablet to Sir H. Ponsonby has been erected in the north transept of Whippingham Church by the Queen in memory of her devoted private secretary. The memorial has in the centre a medallion portrait of the late General. On each side stands a knight in armour. The work was designed by the Countess of Gleichen.

The Rebuilding of the Grand Theatre, Islington, has been commenced by Messrs. Charles Dearing and Son, of the Clarence Works, Halliford Street. Mr. Frank Matcham, the architect, is endeavouring to have the work completed by November 30. The disastrous fire did not necessitate entire rebuilding, but it is estimated that the place will not be reinstated under £10,000.

The Proposed Memorial to Oliver Goldsmith over the grave in the Temple Churchyard has been met by the enquiry whether the exact spot where he was interred is known. The stone which is supposed to mark his resting-place was erected in 1860, but its situation is, it appears, to some extent conjectural. The register of burials only says, "Buried 9th April [1774] Oliver Goldsmith, M.B., late of Brick Court, Temple," and the tablet to his memory, erected in 1837 in the church itself, simply records the fact that he "was buried in the adjoining churchyard."

The Church Crafts League have issued a leaflet giving an account of its objects and methods. At the recent half-yearly meeting, held under the presidency of the Bishop of Rochester, Mr. Anning Bell and Mr. Mouat Loudan, the well-known decorative artists, and Mr. Harrison Townsend and Mr. Leonard Stokes, architects, were elected as artist members. Membership of the League is open to ordinary members on payment of a small annual subscription. Those desirous of further particulars should write to the secretary, Mr. Francis Burgess, at the Church House, Dean's Yard, Westminster, S.W.

Baxter's House at Acton, opposite St. Mary's Church, is being pulled down to make way for a branch office of the London, City and Midland Bank. It is said that Baxter, the well-known Nonconformist divine and writer, lived here after the Restoration. The back part of the building undoubtedly dated from the Stuart period. The front portion, facing High Street, although possessing its ancient gable, had been very much altered, and its brickwork painted white. The old garden has entirely disappeared, and the picturesque gable is shored up to prevent its falling while the workmen are engaged in putting up the new building.

A new Liberal Club at Winsford is being erected in Siddon Street by Messrs. Dickinson and Johnson, local builders, whose tender is £1,049. The work is stipulated to be completed by March next. The club is to contain a smoking-room, a billiard-room to hold three tables and a reading-room on the main floor; and a debating-room or public room above. In addition there is to be a well-laid-out bowling-green at the rear. The plans have been prepared by Mr. Rowland Stubbs, who is now a member of the Imperial Yeomanry serving in South Africa, and Mr. Blagg has been appointed in his stead as clerk of the works.

The Middlesex Hospital is undergoing extensive alterations.

A New Dispensary Building at Exmouth, Devon, is to be erected at once from designs prepared by Mr. Ernest E. Ellis, architect, The Strand, Exmouth.

"Builders' Journals Wanted."—The publisher will be pleased to send a copy of the current number of the "Architectural Review" to any reader in exchange for "Builders' Journals" of the following dates:—February 8th and 15th and April 19th, 1899.

Visits during the British Association Meeting at Bradford will be paid to Bolton Priory, Farnley Hall, which contains many of Turner's works, Ilkley, where are Saxon crosses and a Roman camp, Haworth, with its Brontë museum, Knaresborough, and the cave of Eugene Aram, Kirkstall Abbey, the Ackton Colliery, and other places.

Competition for Wesleyan Day Schools, Banbury.—In a limited competition by six architects the plans of Mr. W. F. Bird, of Midsomer Norton, Somerset, have been selected by the trustees. The author of the set placed second receives fifteen guineas, and the author of the third set ten guineas. The new buildings are to provide accommodation for about 500 children, and are expected to cost about £3,500.

The Tivoli Variety Theatre, London, has been undergoing various alterations recently. The buffet, between the main entrance hall and the Tivoli Restaurant, has been merged into the theatre, and the space utilised in making a grand entrance hall, 30ft. by 17ft., and a vestibule 27ft. by 9ft. Additional exits have also been made direct into the Strand. The grand circle saloon is newly decorated in the style of Louis XIV., and the ventilation greatly improved by adding an alcove, with a window opening direct into the open air, whilst an air shaft has been carried above the roof.

In the Cathedral of St. Paul at Calcutta a new episcopal throne has been placed as a memorial of Bishop E. R. Johnson's twenty-one years' tenure of the See. The woodwork is principally of teak on a white marble base, and is octagonal in form, with many niches, gables, and crocketed finials. Small statues, representing the four Greek and four Latin Fathers of the Church adorn the canopy, and the whole is surmounted by a poppy-head finial. All the carved work except the figures was executed in Calcutta, and a great deal of it was done by Chinamen. The figures were carved in London, and the designs were prepared by Mr. E. Thornton.

The Clergy and Artists' Association will hold their fifth annual Church Congress Exhibition at Newcastle-on-Tyne during the Congress week in the smaller hall of the Geographical Society (close to the Congress Halls), which has been lent to them by the authorities for the occasion. The exhibition will include sculpture, painting, glass (cartoons), architectural work, metal work, embroidery, &c., and the aim as before will be to bring before the public examples of the personal work of artists working in churches of suitable design, direction and feeling. The sending-in days at 6 Millbank Street, Westminster, S.W., the offices of the society, are September 17th and 18th, after which no submitted work can be received. Artists and craftsmen are invited to submit work.

The Byker New Police Station Competition.—A special meeting of the Watch Committee of Newcastle Corporation was held last week, to receive the report of Mr. F. H. Oldham, of Manchester, appointed at the request of the Committee by the President of the Institute of British Architects, relative to the plans sent in for the erection of a new police station at Headlam Street, Byker. There were twelve competitors. The report recommended that the architects' plan marked "Ad Rem" be accepted, that the second in place of merit was "Practical," and the third "N.E.B." On opening the sealed letters bearing the mottoes, it was found that Messrs. Cackett and Dick, of Newcastle, were the successful competitors; Messrs. Riddle and Brown, of Newcastle, had secured the second prize, of the value of £50; and the third, Mr. B. F. Simpson, receives £25.

Enquiries Answered.

The services of a large staff of experts, including all those engaged on "Specification," are at the disposal of readers who require information on architectural, constructional, or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Forming Stack Foundations.

ST. HELENS.—J. R. writes: "The accompanying sketch (not reproduced) shows a piece of ground on which we are about to erect a heavy chimney—about 1,000 tons, 65yds. high. The ground at the bottom of the excavation is soft sand, the water standing in a test hole nearly level with the top. We have bored down to water level of brook and it is still the same. (1) Is this good enough to build upon with, say, 4ft. of bag lime concrete? (2) If not, would any other thickness or quality of concrete do better? (3) Is it necessary to pile the hole for chimney foundation, and, if so, how would you distribute and what would be the size and length of piles? Some persons here assert that a soft foundation is good enough provided the bottom is all equally soft; is this so?"

This is evidently a case for bearing piles, as drainage may take place into the brook through the superincumbent weight of the stack or from natural causes. As the existence of a hard strata below the soft sand is not indicated (if such had been the case the foundation site might have been enclosed with sheet piles driven into the hard strata, thus preventing the escape of the sand) it is advisable to drive, say, fifty piles about 10in. or 11in. square and about 25ft. long when driven to such a depth as would bring their points, say, 5ft. below the bed of the brook; they should be longer if found to give too readily to a reasonable drop of the hammer. The piles to be spaced about 4ft. centres and the area of the ground to be about 900ft. super, excavated as shown in the accompanying sketch. The total thickness of the cement-concrete under the stack is 5ft.—4ft. over the heads of the piles. The heads are to be cut off below low-water mark in the pit; no heads and sills will be required. The ground to be excavated to 12in. below the top of the piles. In reply to the assertion that a uniformly soft foundation is good enough, this does not apply in this case or to such a structure as a chimney subject to larger forces than its own weight distributed over less than one-half of the foundation area resulting from the external pressure of the wind.

H. N. LEASK, C.E.

Ancient Lights.

STOURBRIDGE. — WORCESTER ENQUIRER writes: "I am proposing to build as close as possible to some existing ancient lights. Can I determine the position of the new buildings by setting off a line from the window sill at an angle of 45deg., and arranging the top of my building clear of this? Is it also necessary to give light horizontally as well as vertically at an ang'e of 45deg.?"

Our correspondent cannot determine the position of his new buildings in the way proposed. There is no conclusion of law that a building will not obstruct the light coming to a window if it permits the light to fall on the window at an angle of not less than 45deg. The amount of obstruction is always a question of fact that depends upon the evidence; but the fact that 45deg. are left unobstructed may, under ordinary circumstances, be considered *prima facie* evidence that there is not likely to be material injury. But the question always is, "Will the new building cause a substantial privation of light, sufficient to render the occupation of the premises uncomfortable; or prevent the occupier from carrying on his accustomed business as beneficially as he has previously done; or prevent the premises from being used for any other purpose for which they may be reasonably considered available?"

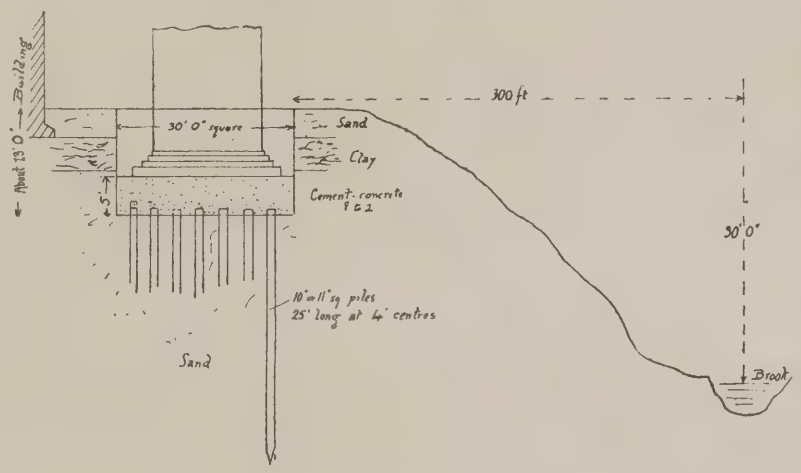
H. P. B.

Law as to Water-Chutes.

WICKHAM, HANTS.—T. R. K. writes:—"My next-door neighbour has *forcibly* removed my water-chute and the iron supports from my wall and thrown them over into my garden, doing much damage to the fruit trees. Have I power to prosecute him?"

Querist does not say where the wall is, but we shall assume it to be a boundary wall between his premises and his neighbour's. If he has a right to have a water-chute on the wall in question, and to discharge the water from his own premises through that chute on his neighbour's premises, then his neighbour has been guilty of a trespass for which an action will lie, and for which, if he did it wilfully or maliciously, and not under a reasonable supposition of right, he may be prosecuted summarily before a Justice of the Peace if the injury done does not exceed £5. If he did it unlawfully and maliciously, and the injury exceeds £5, then he may be indicted for a misdemeanour. Whether our correspondent has such a right or not will depend upon circumstances. If it has been granted to him or his predecessors in title by a deed executed by his neighbour or his neighbour's predecessors in title, or if the right has been exercised without interruption for twenty years, then his neighbour cannot dispute his right. It is also to be observed that even if his neighbour were justified in removing the chute and supports he would not be justified in injuring the fruit trees in the process, unless such injury could not, by reasonable care, have been avoided.

H. P. B.



[FORMING STACK FOUNDATIONS.

Duties of a Surveyor.

HEYWOOD.—F. F. writes:—"I am anxious to ascertain how far I am capable of undertaking the duties of a surveyor, being offered such a position under a small borough authority. (1) Can you give me any information as to how to pass the examinations, if any, of the Institute of Civil Engineers, and the books I should study to enable me to pass these? (2) What should I do to obtain a certificate as a qualified nuisance inspector and sewage works manager?"

(1) Detailed particulars of the examination may be obtained from the Secretary, Institute of Civil Engineers, Great George Street, Westminster, London, S.W. It is essential that candidates should possess a good general education and a sound knowledge of mathematics. The professional portion of the examination consists of theoretical and elementary applied mechanics, theory of structures and the strength and elasticity of materials, together with an optional subject, such as geodesy, hydraulics, theory of heat-engines, metallurgy, geology and mineralogy, stability and resistance of ships, thermo- and electro-chemistry, or electricity and magnetism. The following works may be studied with advantage:—Rankine's "Civil Engineering" (Griffin and Co.); Rivington's "Building Construction"; Ganot's "Physics" (Longmans, Green and Co.), and such other text-books as refer to the particular subject or branch of engineering you desire to take up. (2) Write to the Secretary, Sanitary Institute, Margaret Street, London, W., for a syllabus of the examination for "Inspectors of Nuisances." Before accepting a responsible post as borough surveyor, your best course would be to first obtain an appointment as assistant to the borough engineer of a large town, so that you may obtain sufficient practical knowledge and experience to fit you for future duties and responsibilities.

T. E. C.

Bacterial Purification of Sewage.

DUNDEE.—DRAINAGE writes: "Can you give me the name of any book describing the various systems for the bacterial purification of sewage, and the names of firms undertaking the fitting-up of the necessary tanks? The notes in 'Specification,' No. 4, are not sufficiently full for my purpose."

An excellent work on the subject is "Sewage, and the Bacterial Purification of Sewage," by Dr. S. Rideal (R. Ingram, Pleydell Street, Fleet Street, London, E.C.). There are many makers and patentees of systems and apparatus for bacterial sewage purification. The following firms, amongst others, make a speciality of fitting up sewage tanks or filter beds: Messrs. Adams and Co., 7 Old Queen Street, Westminster, London, S.W.; Messrs. Cameron, Commin and Martin, 7 and 8 Bedford Circus, Exeter (septic tank system); The Sewage and Effluent Water Filtration Company, Limited, 35 Waterloo Street, Birmingham (Lowcock's system); F. Pullen Candy, The Cutting, Redhill, Surrey (Candy's system); and The Magnetite Sewage and Water Purification Company, Limited, 33 Barton Arcade, Deansgate, Manchester.

T. E. C.

Ionic Order at Eleusis.

DERBY.—E. J. D. writes: "I should be obliged if you could give me any information about the Ionic Order at Eleusis illustrated in Mr. Phenè Spiers' 'Orders.' A plan of *a* temple at Eleusis is illustrated in Fletcher's 'History' (Plate 18, Plan No. 2), but this does not agree with the detail drawing by Mr. Phenè Spiers. A reference to any book to be found in the R.I.B.A. library would serve my purpose, but there are probably other students interested in this matter."

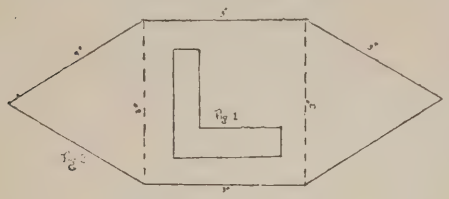
This example of the Ionic type was first published by the Dilettanti Society in the "Unedited Antiquities of Attica," 1817; and later in the works of Normand, Mauch and Spiers, who seem to have copied each other in turn. The fragments from which the Order has been drawn were discovered while excavating within the vestibule of a small Roman gateway leading to the sacred precincts of Eleusis. The caps and architrave stones are quite plain on one side, which seems to indicate that the columns were placed near or against a wall, but nothing, I believe, is known with certainty as to their original position. A plan of the gateway, with other details, will be found in the "Unedited Antiquities of Attica." The small temple referred to by "E. J. D." was outside the precincts, pseudo-Doric, of the Roman period.

J. A. M.

Names of Diagrams.

BOW, E.—E. G. writes: "What are the technical names of the two accompanying diagrams? I have heard No. 2 described as an oblong hektogen."

Fig. 1 is a recto-reflex rectangle. Fig. 2 is



UNUSUAL DIAGRAMS.

a hexilateral rhombus inscribed on a square centre lobe. The name given by querist does not completely define the figure. H. D.

Deadening Sound through Walls.

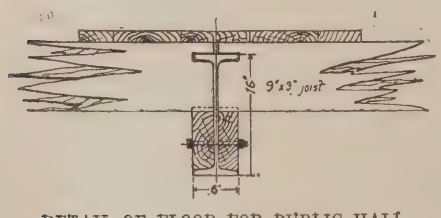
RUGBY.—DUBIUS writes: "What, in your opinion, is an effectual remedy for preventing sound through a party wall composed of two 4½in. walls with a 2in. cavity between? The cavity, as it is, seems to have no better effect upon deadening sound than a solid 9in. wall. Is there anything that could be fixed upon the face of the wall before papering, or can you suggest any other means of deadening the sound?"

It would have been better to have built the party wall solid; walls of less than 14in. should not be built with a cavity. We can only advise our correspondent to try covering his wall with felt, asphalt or Willesden paper; the best, but most expensive, method would be to fill the 2in. cavity with asphalt or one of the patent building compositions on the market. Probably if the wall in question had been built with an ½in. cavity filled up with building composition the trouble would not have arisen. A paper on "Sound in its Relation to Buildings," by H. W. Burrows, can be obtained for one shilling at the offices of the Royal Institute of British Architects, 9 Conduit Street, W.

Floor for Public Hall.

DUBLIN.—J. MAC writes: "I enclose a tracing (not reproduced) showing the plan of a public hall. I propose to put the joists (9in. and 3in.) lengthways, to rest on two box girders supported in the centre by two columns. Will this construction be safe for an audience of about 350 or 400 persons, allowing for dancing? The walls are of stone 2ft. 6in. thick."

I consider that, taking the floor at 1¾ cwts. per foot super, two 10in. by 5in. rolled steel joists placed side by side with a 12in. by ½in.



DETAIL OF FLOOR FOR PUBLIC HALL.

plate riveted on top would be more than sufficient to carry the load. The columns, if of cast iron, should be of 7in. diameter, 1in. metal, on the assumption that they are 12ft. long. The 9in. by 3in. wooden joist over 21ft. would make a very springy floor. Treadgold gives, according to "Molesworth's Pocket Book," 12in. by 3in. for 20ft. span. A much better construction would be to place a 16in. by 6in. rolled steel joist over the piers; they would then be about 7ft. apart, and no columns would be required. The accompanying sketch is a section through 16in. by 6in. girder.

BREES VAN HOMAN.

Mr. J. Farquharson, A.R.A., has been presented by the tenantry and other friends at Finzean, Aberdeenshire, with a solid silver palette and easel, in testimony of the donors' gratification on the occasion of Mr. Farquharson's election to the Royal Academy.

Law Cases.

Dispute between Surveyor and Builder.—The case of *Stevens* v. *Seaber* was heard at the City of London Court on August 29th. The plaintiff is a surveyor and claimed for £27 14s. 6d., the balance of an account due for work done. The defendant was a builder, and in 1890 he had certain outstanding contracts. He had disputes, and he came to the plaintiff and represented to him that he had a valid and substantial claim for extra work in connection with the contracts. Relying on his statements the plaintiff agreed to act for him. The first dispute went to arbitration, and the matter was decided against the defendant. At that time the defendant came to the plaintiff and said it was impossible for him to go on with his arbitrations without some funds, as the solicitor had refused to continue to proceed. The plaintiff advanced £9 to the defendant, who had since made payments on account, leaving the balance sued for due. The defendant's plea was under the Statute of Limitations, but the Deputy Judge found against him on all the points which had been raised, with costs, and refused to stay execution with a view to an appeal.

Ancient Lights Case.—On Wednesday last the case of *Hustler* v. *Farnsworth* came before the Vacation Judge on a motion by the plaintiff for an injunction to restrain the erection of buildings at Leeds so as to interfere with the light and air enjoyed by the tenant of the plaintiff's buildings. The plaintiff's tenant was a furniture dealer and upholsterer at Leeds, which business had been carried on since 1874 or 1875. Opposite had been a low building, about 20ft. high, of one storey. The light to the plaintiff's building was therefore good, and the plaintiff desired that that good light should continue. The street was 39ft. wide. The defendants had bought the land opposite, and had pulled down the low building, and begun to erect a building about 30ft. high. The question was: What light had the plaintiff been having? Mr. Birrell, Q.C. (for the defendants), said he relied on the question of lâcher; the new building was started seven months ago, and the plaintiff had had the plans. Mr. Badcock (plaintiff's counsel) observed that as soon as the building got 6ft. above the ground the plaintiff gave the defendants warning. On July 21st they first found out what the height of the new building was going to be, and they gave notice immediately. If his friend would undertake not to build until the motion came on, the plaintiff would be satisfied. After some other observations, it was agreed that the motion should stand over until the trial of the action, which should take place and be argued upon the footing that the building was of the same height as it was that day.

A Sinking City.—The Northwich Salt Compensation Board, which relieves property owners whose buildings have subsided through brine-pumping, last week adjudicated upon claims, of which seventy-one have been made during the last twelve months, amounting to £2,800 approximately. Grants aggregating £1,400 were made, while a considerable sum was devoted to commutations and purchase of sinking property, a policy which will gradually reduce the claims.

An Art Gift to Liverpool.—At the meeting of the Library, Museum and Arts Committee of the Liverpool Corporation on Thursday, Sir W. B. Forwood presiding, it was agreed to accept a gift of art treasures valued at over £30,000 offered by the executors of the late Mr. Hugh Frederick Hornby. The collection includes a library of art books published within the last hundred years, valuable engravings, autographs, &c., and it is to be located as a separate collection for the benefit of the art-loving public of Liverpool. On the death of the survivor of the executors the sum of £10,000 will be payable to the authorities to assist in providing a building in which to store the collection, so that it may be exhibited to the public.

Bricks and Mortar.

APHORISM FOR THE WEEK.

"'Tis the keystone
That makes the arch: the rest that there are put
Are nothing till that comes to bind and shut.
Then stands it a triumphal mark, then men
Observe the strength, the height, the why, the when
It was erected; and still walking under,
Meet some new matter to look up and wonder."
—BEAUMONT AND FLETCHER.

Our Plates. THE two churches by Messrs. Demaine and Brierley, of York, show how dignified a simple treatment can become when in competent hands. A "Men Who Build" article dealing with the work of these architects was published in our issue for July 25th last. The design by Mr. Alexander Fisher was executed in translucent enamels set in a frame of beaten and polished steel. Mr. Ernest Newton's design for a house at Woking is a reserved piece of domestic work, very pleasing.

Discordant Buildings. IN a recent number we commented on the new guard-house at the Tower. Our remarks received the attention of Mr. Labouchere in "Truth," and, later, of the London correspondent to the "Birmingham Daily Post." In a letter to this newspaper "W. J. P." says:—"When your London correspondent has done with the 'Cockney Monstrosity' I should like him to come down to Birmingham and start a crusade against the same evil. He will find plenty of scope for his energy, and plenty of excuses for losing his temper. I can sympathise with his indignation at the sacrilegious treatment of the Tower of London, but we are suffering almost as much in Birmingham in proportion to the size of the place. We have red brick and terra-cotta wedged in between buildings of stone, and without the slightest regard to locality or consistency with the surroundings. From the way in which Birmingham has recently been covered with this red brick and terra-cotta, one would almost think that builders and architects had some special interest in pushing forward these materials on every conceivable opportunity. About the most glaring attempt of the kind occurring recently is, I think, the proposal to rebuild the Temperance Hall in red brick and terra-cotta. It is such men as these who, if they had their way, would rebuild Westminster Abbey with red brick and terra-cotta. I am convinced that there is only one way of waging war against this baleful practice of covering the country with 'monstrosities.' That is for a stricter supervision to be exercised over the erection of important buildings. I hope the day will come when such matters will have to be submitted to a duly constituted authority, not, as they are now, simply as regards height or projection and design, but in relation to surroundings, and that no building should ever be sanctioned which soured the harmony of existing surroundings." We may note by the way that the "Daily Mail" and the "Daily Chronicle" have followed our lead in declaiming against the new guard-house at the Tower.

The Proposed Ruskin Memorial. ON page 62 of last week's issue we dealt with the proposal to erect a portrait medallion of John Ruskin in the Poets' Corner at Westminster Abbey. In a letter to the "Times" newspaper Sir Edward J. Poynter, President of the Royal Academy, says: "Human nature demands, and always has demanded, from time immemorial, that some visible record should be preserved of the illustrious dead, and sacred buildings have among Christians by common consent been selected as the most honourable and appropriate abiding-place for such memorials. No one more than Ruskin has appreciated the exquisite works of art which this sentiment has been the means of producing. The world, unfortunately, has not kept up a succession of Donatellos or Mino-da-Fiesoles, and our great crop of heroes, 'when

each succeeding year brought forth a new one, came at an unlucky time for the art which was only too solidly to perpetuate their memory; hence the 'incoherent fillings' which everyone deplores. But if, as a committee, by the selection of the artist to be employed we have been careful that what is placed in the Abbey shall be neither obtrusive nor in bad taste, we shall have done what is necessary to safeguard the atmosphere of beauty and sanctity which still clings to that most ill-treated of buildings, and we shall have satisfied what is a very general feeling as to what seems most appropriate to Ruskin's memory." In a further letter to the same newspaper Mr. Sydney C. Cockerell says: "'Modern Painters,' the book by which Ruskin is most widely known, was originally to have been called 'Turner and the Ancients,' and is, as need scarcely be said, devoted to a study of Turner and of the Old Masters. It is in association with the works of these men, if anywhere, that Ruskin would have been proud that his features should be held in remembrance. The director and one of the trustees of the National Gallery are on the Memorial Committee. With their aid it ought not to be difficult to change the destination of the medallion to the Turner Room or to some other part of a building in which every friend of Ruskin and every student of his books would rejoice to see it."

The Coventry Guildhall.

THE mediæval hall of the old Coventry Guilds was recently wired for the electric light, and a committee has just fitted the building with several brass electroliers and frosted globes. At the last meeting of the City Council a strong protest was made by a majority of the members against the incongruous character of the fittings, as being quite out of keeping with the archaic style of the hall. The ex-Mayor (Mr. Alderman Fowler) declared the fittings were only suitable "for an East-end gin palace." In face of such opposition, the chairman of the committee which undertook the lighting promised that the Council should have the opportunity of removing the electroliers, although they would have to be paid for. This is evidently the work of some over-progressive gentlemen whose feeling for fitness and harmony is rather warped by nineteenth-century "up-to-dateness" and spick-and-span ideas of beauty.

An Historical Scottish Ruin Sold for £41.

ON Monday in last week at Edinburgh the remains were sold of the interesting historic house in the ancient and royal burgh of South Queensferry, on the Firth of Forth. It is a dilapidated, red-tiled building, and is known as Queen Margaret's Palace, and also as the Covenanters' House. The former name it owes to its supposed association with Queen Margaret, who succeeded Macbeth on the throne of Scotland. The building is in the vicinity of the Bink's Rock, the old landing-place of the ferry used by Malcolm Canmore and his Queen in their journeyings across the Forth, and, according to tradition, it was made use of by the "Saintly Queen" of Scotland when stormstayed on her way from Edinburgh to Dunfermline. Unfortunately, however, it is very doubtful, to say the least, whether the present building, or any portion of it, was in existence in the eleventh century. Indeed, it seems to belong to the early part of the seventeenth century. But the ground on which it stands was part of the ground conveyed by Malcolm Canmore, at the instigation doubtless of his pious wife, to the Abbots of Dumfermline, who again gave it to the Carmelite Friars. The building occupies about 45ft. by 30ft. of ground, and consists of three storeys—a ground flat and three flats above. About fifteen years ago it was condemned as unfit for occupation, and since then it has been allowed to fall into a still worse state of dilapidation. Last winter the burgh authorities gave public notice that owing to the building having become "waste and ruinous and a receptacle for filth," application would be made to the Court for a warrant to sell it, failing its being put into a state of repair within three months. The owners, however, seem to have given up all right and interest in it. Warrant to sell was granted by the Court, the reserve price being fixed at £20. At the auction last week the building and ground were sold for £41.

Mural Paintings at Marlborough House.

ADVANTAGE is being taken of the absence of the Prince and Princess of Wales from London to thoroughly clean and renovate the splendid paintings with which the upper walls and ceiling of the great Central Saloon at Marlborough House are decorated. These pictures deal mostly with the subject of Marlborough's great fights and are painted on the plaster direct. Some years ago these pictures and some of those on the wall flanking the great staircase had been neglected and had to be restored at considerable cost, many figures having practically to be repainted. On the present occasion nothing in the way of restoration is either in contemplation or necessary, but careful cleaning was thought highly desirable. The lower portion of the walls of the saloon are hung with tapestries, and these, too, will be carefully cleaned before the return of their Highnesses.

The Roman Bastion.

GREAT interest still centres around the recent discoveries of the old Roman bastion at the rear of St. Giles's Church, Cripplegate, and the old Roman wall within the Session House in the Old Bailey. The old City wall above the bastion, which was greatly damaged by the great City fire of a few years ago, is being repaired, and the repaired portions are being coloured to give the work an appearance of antiquity. The Rev. Prebendary Baiff, M.A., Vicar of St. Giles's, Cripplegate, who, with Mr. Deputy Baddeley, is taking a great interest in determining the course of the old Roman fortification here and elsewhere, has a most interesting theory with regard to the old culvert that was found at the base of the Roman bastion at the rear of his historic church. He believes that the culvert was a covered way for communication from within the City walls to an outer barbican situated beyond them, and shown on a reproduction of a valuable ancient map that hangs in the rev. gentleman's study. The discovered culvert is of red brick, and about 4ft. in height, and it converges from clearly-defined opposite points within the City walls to a covered chamber at the central part of the base of the bastion and branches off in the direction of the barbican. The Roman walls varied in height, and some discovered portions are only 9ft. high. The newer Roman walls, as calculated by Pennant, were 3 miles 165ft. in circumference, 22ft. high, and guarded by forty lofty towers.

Manchester Improvement Scheme.

THE Improvement Committee of the Manchester City Council has decided to recommend the inclusion in the new Corporation Bill, in addition to powers to carry out the Corporation Street improvement, a clause to enable them to remove St. Peter's Church. The question of the desirability of removing some of the older churches in the city has been mooted from time to time for twenty years, and the churches more particularly referred to were St. Mary's, St. Ann's, and St. Peter's. St. Mary's, which was built in 1753, and which had become very dilapidated, was demolished a few years ago, and the space has been converted into a pleasant garden furnished with seats. Various alterations and improvements have been carried out at St. Ann's, which, it may be stated, was consecrated in 1712. The main reason urged by those in favour of the removal of these old churches was that the population of the parishes had been reduced owing to residential property having to make way for offices, warehouses and other places of business, and the inhabitants having gone to live in the suburbs. With regard to St. Peter's, it is interesting to note that the foundation-stone was laid in December, 1788, and the building consecrated in 1794. The church stands in the centre of St. Peter's Square. It is a cruciform building of stone, and was built from designs by Mr. James Wyatt, with nave, transepts, and two north and two south porches approached by short flights of steps. Originally there was neither dome nor spire, but a dome was added in 1822, and it contains a clock and one bell. Sitting accommodation is provided for 1,000 worshippers. Over the communion table is a fine painting by A. Caracci representing the "Descent from the Cross." Not a few would be sorry to see the venerable pile demolished, but personal feelings and antiquarian tastes must needs give way if the removal of the church be regarded by the local authorities as a matter of public necessity.

Old Paris Mansions.

THE few remaining mansions of a bygone day are slowly disappearing from Paris. It was announced the other day that the old Hôtel de Luynes would shortly be pulled down, and the Hôtel de Chevreuse, on the Boulevard Saint-Germain, near the corner of the Rue du Bac, was also destined to destruction. The work of pulling down the former has just commenced. It had already suffered severely. A wing went when the Boulevard Saint-Germain was constructed, and then the opening of the Boulevard Raspail did away with the stately park in which it stood. It was built last century by the Duc de Luynes, who made of it a princely residence. Its splendid rooms, fine woodwork, the superb paintings (which cannot be saved) adorning its stairs, and the spacious gardens, which at one time extended to the Rue de Grenelle, made it justly famous. It passed into the hands of the Duc de Sabran, who restored it about thirty years ago, and added the wrought-iron gateway. The Dowager Duchesse de Chevreuse and the Marquise de Tholozan, her granddaughter, were the last proprietors.

Miniature Stone Carving.

AN example of miniature stone carving was exhibited recently at a bazaar at the Nottingham Mechanics' Hall. It is the work of Mr. William Porter, a monumental stonemason, of Nottingham, and represents, as a section complete in every detail, the east end of a cathedral. The entire structure does not exceed 3ft. in height, and is in late Gothic style of architecture, from an original design by Mr. Porter. Caen stone is the material used, together with marble in the pillars and base, and there is a window of stained glass. The whole is surmounted by a clock tower, the four faces respectively showing Greenwich, Calcutta, New York, and Sydney time. The clocks are worked from a single apparatus with concealed machinery, which is not the least important feature of the entire work. The model occupied ten years in execution, during which time Mr. Porter was following his profession in Australia, and is said to be a very excellent piece of workmanship.

Glasgow High School: Results.

IN the building construction and drawing classes at the High School of Glasgow first and second class certificates were given out at the end of the session for class work. The following were duly awarded:—Elementary stage, 12 first class and 21 second certificates; advanced stage, 5 first class and 7 second certificates; first honours stage, 1 first class and 1 second certificate; second honours stage, 1 second class certificate. The following prizes were earned under the prize scheme, 1899-1900:—No. 11, combined results:—Elementary:—1st, John McCoag (prize); 2nd, W. W. Silver; 3rd, W. McPherson. Advanced:—1st, John Sievwright (prize); 2nd, W. McCaig; 3rd, Alexander Robertson. First honours:—1st, James Reid (prize); 2nd, W. Ingram. Second honours:—1st, J. S. Crichton. No. 12, Examination answers.—Elementary:—1st, W. W. Silver (prize); 2nd, John McCoag and 3rd W. McPherson equal. Advanced:—1st, John Sievwright (prize); 2nd, Alexander Robertson; 3rd, W. McCaig. Honours:—1st, James Reid (prize); 2nd, J. S. Crichton; 3rd, W. Ingram. Of all the elementary students who were presented at the examination in May not one failed. There were only four failures in the whole department, these occurring in the higher stages, and of all the students who sat at the examination more than 50 per cent. passed first class.

DECORATION AND FURNISHING.

By FRANK MURRAY.

I.—COLOUR NOTES.

IN a brief note of this kind it will not be possible or needful to undertake the proof of an axiom on which the fundamental laws of harmony are based, and I must ask my readers to accept the proposition that all colour is derivable from three elemental primaries, viz., red, yellow and blue. Before proceeding to consider our subject in detail it will be necessary to understand clearly the composition of those infinite varieties of tones which both Nature and Art present to us, and the relationship which the colours of the palette or pigments bear to the three theoretical primaries spoken of above. A short time spent on this premise will help more than anything else to a definite knowledge of the laws ruling harmony in colour.

There is no such thing obtainable as a perfectly pure primary; it is, indeed, a matter of impossibility to define any absolute standard with exactitude. The purest primaries are those of the spectrum, and the pigments named from their resemblance to these elementary hues are always alloyed with one or more complementary tones, that is to say, with one or more of the other primaries. Having obtained three pigments as near in colour to the three primaries as our palette affords, let us suppose them applied to a wall surface in a simple geometric pattern, each colour being separated from its neighbour by a narrow defining line in white or black. The general effect will be found to be one of great brilliancy and cheerfulness, with a tendency to crudeness. If we qualify the assertiveness of the pigments by mixing with each a small proportion of the other two, a new element is brought into play, each colour will exhibit sympathetic affinities with its neighbours, and an additional richness of tint due to the complex harmony of its own composition.

The more the original tone is modified by the complementaries the more refined the harmony, and up to a point the richer the effect; but after that stage is passed the tone of each of the original hues is so subdued by the intermixture of the complementary colour that the hues gradually approach each other in tone, and the most subdued contrasts finally merge in absolute neutrals.

Analysis of Colours.

Having affirmed these propositions, our next stage will be the analysis of the colours of our palette and the relation of the pigments composing it to the scientific primaries spoken of above. We shall find each pigment is made up of at least two, and very generally three, of the pure primaries, in widely varying proportions.

We may take as an example for analysis the well-known blue pigment called indifferently French or ultramarine blue. By comparison with other pigments, and with the spectrum, we find the colour of this pigment to be a composition or mixture of the three primaries, the blue being greatly in excess, qualified by an appreciable quantity of red and a slight trace of yellow. The same method applied to the principal pigments gives results which will be conveniently shown in the following table:—

Vermilion	Nearly primary; strong yellow partial hue; no blue.
Light red	Strong yellow partial hue; slight blue.
Venetian red	Yellow partial not so strong; slight blue.
Indian red	Strong blue partial; very slight yellow.
Crimson lake	Blue partial; very little yellow; pure transparent base.
French blue	Strong red partial; yellow less.
Prussian blue	Strong yellow partial; no red.
Indigo	Large admixture of red and yellow partials.
Chrome yellow middle ..	Nearly primary; slight blue partial.
Yellow ochre	Large admixture of red and blue partial hues.

The above synopsis of the colour composition of a few of the principal pigments merits the most careful examination. By its aid we are able to lot out and assign to each a place in a scale of relationship to the fundamental primaries, and to arrive at an exact knowledge of the characteristics which differentiate them so markedly.

The quality to which I would particularly direct attention is a richness or fulness of hue, most perceptible in those pigments into the composition of which red, yellow, and blue enter. Conversely, there is no instance in which that richness is at all obvious when any one of the three primaries is absent; we may, therefore, justly conclude that fulness and harmony in colour are dependent upon the presence of the three elemental hues in combination, and the converse of the proposition may be held to be equally well established.

It is on this simple basis that the great law of harmony in colour is founded. The most elaborate treatise on the subject could but be little more than an extension of the position, and I feel confident that nearly everything useful and practical that can be embraced in the limits of this paper will be found to be a development of this law of harmonic combination.

Advancing a step nearer to a practical application of the principles above enunciated, we will proceed to suggest some experimental essays.

By taking three pigments that bear the closest relationship to the pure primaries, the following examples (each representative) will illustrate the principles of harmonic composition. We will begin these instances with a colour scheme involving the use of two primaries as dominant colours with the third latent. Suppose we select cobalt blue and cadmium yellow for the two primaries; by a judicious introduction of madder red as the complement in the triad of original colour, a delightful harmony of subdued contrast in orange and warm blue would result.

1. CONTRASTING PRIMARIES.

Blue (Cobalt) Plus Cadmium and Madder. — Yellow (Cadmium) Plus Cobalt and Madder.

Resulting Harmony. { Soft Warm Blue } contrasted with { Soft Toned Orange.

2. CONTRASTING PRIMARIES.

Yellow (Cadmium) Plus Cobalt and Madder. — Red (Madder) Plus Cadmium and Cobalt.

Resulting Harmony. { Soft Warm Green } contrasted with { Neutral Orange.

These are only slight illustrations of the principles upon which combinations may be produced *ad infinitum*, all being significant of the fundamental law that every hue shall express in its own composition a sympathy with and indebtedness to the three primal notes of the chord—red, yellow and blue.

So far I have dealt with the theoretical basis of colour harmony, and now propose offering some

Practical Suggestions

on the arrangement of schemes and the compounding of colours.

The infinite number of hues produced by the combination of the three primaries are very conveniently arranged in two classes—secondaries and tertiaries. Having already shown at length the constitution of the primaries, we can proceed to define the secondary as that tone which is produced by the compounding of any two primaries, and a tertiary is the rich blending produced by an admixture of the three primaries. There are three classes of secondaries, arrived at by the compounding of red and blue—result, purple; red and yellow—result, orange; and finally a combination of yellow and blue, which produces a green.

The secondaries may therefore be summed up as orange secondaries, purple or violet secondaries, and green secondaries. It should be noted that these secondaries never pass one into another: any great disproportion of the compounding hues destroys the distinctness of the secondary quality, and they revert to more or less slightly modified primaries. We may state in passing that a number of the pigments are of this order.

As previously mentioned the harmonic tone resulting from any compound of the three primaries is named a tertiary, and it is at once obvious that an infinity of hues are thence derivable. For convenience they may be arranged in six or more classes, according to the predominance of either or both of the primary colours, and may be nominated thus:—

One primary predominating	Red Tertiaries Blue „ Yellow „
Two primaries predominating ..	Orange Tertiaries Green „ Violet „
Three primaries balancing	Citron Tertiaries Russet „ Olive „
Nearly neutrals, slight predominance of either red, yellow, or blue ..	Brown Tertiaries Cold grey „ Warm grey „

We have now in our hands in a brief form what may be called the anatomy of colour. It is, of course, the barest outline, but I believe it will be found to include the fundamental propositions needed for comprehending the mechanism of the inter-relations of colour tone.

I propose to set down next in order a series of

Tone Combinations

to illustrate the foregoing remarks.

We may then at this stage regard ourselves as in possession of a number of tones which may be arranged in a great variety of ways.

These characteristic tones are easily recognisable.

	PRIMARIES.	
Red.	Blue.	Yellow.
	SECONDARIES.	
Oranges.	Greens.	Purples.
	TERTIARIES	

Red tertiaries, Blue tertiaries, Yellow tertiaries, Orange tertiaries, Green tertiaries, Purple tertiaries, Citron tertiaries, Russet tertiaries, Olive tertiaries, Brown tertiaries, Cool Grey tertiaries, Warm Grey tertiaries.

Every one of these tones is capable of an infinity of modification in shade, still retaining the characteristic of its tone.

It is indifferent which selection of the significant classes of tones be taken for experiment. Every member of them may be used in combination with any or every other one, so long as the great harmonic law be kept in view that *any two neighbouring tones, or tones so near as to affect one another, must contain the complete chord of red, yellow and blue, either singly or in combination*, and that one of these tones must be a full tertiary.

We may place as brilliant and pure a red as the palette affords against a green, yellow or blue, if either of these latter contrasting tones be harmonised by the infusion of the other tones of the chord. To retain a brilliant red contrasted with blue, the blue must be infused with both red and yellow, the red to establish a latent sympathy and the yellow to complete the chord.

1. Yellow dominant combined with violet and olive green.
2. Green „ „ „ orange and brown.
3. Russet „ „ „ citron and cool grey.
4. Blue „ „ „ green and olive.
5. Red „ „ „ violet and brown.
6. Violet „ „ „ citron and yellow.

By increasing the proportions of the partials each successive scheme becomes softer and more subdued in effect, gliding imperceptibly into delicate neutrals. Some most delightful effects may be obtained inside the scales of the neutral tertiaries. For instance, a harmony in brown may be introduced, running through the most delicious golden and chestnut tones to a cool and exquisite neutral.

It is obvious that each tone in the table of tertiaries is in itself a complete harmony. The juxtaposition of such hues can never be inharmonic, and there is in the multitude of possible combinations scope for what we may, without any straining of the sense, call emotionally expressive colour. Though in decorative schemes discords can be and are purposely introduced, they are so only to serve the purpose of enhancing the beauty of the complete chords, or to impart a character to the composition by departures from the normal canon; to add interest and emotional force, if such an expression may be allowed. The æsthetic laws that rule the world of graphic and musical art have their exact analogies in the equal sphere of colour which completes the celestial triad.

It remains to offer some practical suggestions on the selection and mixture of those pigments which will be found most useful in decorative art. The pigments may be conveniently arranged

in the form of a chart or schedule, and will conclude the brief series of notes which the space at our disposal allows us to offer.

In the Mixing of Colours

it is recommended that every effort should be made to get the tint required with the fewest colours. As a rule, paint so prepared is more permanent, and the tints have better quality of tone.

A little consideration will effect a great deal in this direction by using brilliant primary tones in conjunction with the neutrals. As an instance, a wide range of subdued rich greens may be made by the simple addition of the chromes to black. Blues of great brilliance and richness may be elicited from ultramarine by the addition of a slight trace of lemon chrome. Working on the same principle, very intense and rich reds will be found in the mixture of the tertiary reds with madder or crimson lake.

Prussian blue should be avoided. It is a colour that the decorator will exclude from the larger range of his tones. Though in the very dark greenish blues and deep blackish neutrals it is a valuable colour, its use should be limited to these tones.

SCHEDULE OF PIGMENTS.

Reds.—*Vermilion.*— Opaque, brilliant red, not good for mixing with other colours unless the final tone is required to be distinctly red. An indispensable colour. *Light Red.*—Semi-transparent, good for qualifying other colours when subdued tertiaries are wanted, as it contains an excess of yellow. *Venetian Red.*—Similar in quality to the above, except that the yellow partial is not so strong. *Indian Red.*—Very powerful colour; must be used with great care in mixtures. It contains blue in excess, and is apt to impart a livid effect to any combination of which it forms part, owing to the strong staining power and defect of yellow in its composition. *Crimson Lake.*—Transparent, brilliant red, with a strong infusion of blue; useful in compounding reds and purples; should not be used for the more delicate tertiaries.

Blues.—*Prussian Blue.*—Brilliant, transparent blue, strong yellow partial, no red; a very powerful colour, but not to be widely used. It destroys the delicacy in mixtures, and ought rarely to occur in tertiary tones. *French Blue.*—Rich, deep blue, with a very just balance of partials; the most useful blue for decorative purposes. *Indigo.*—A very deep, transparent blue, with a large admixture of partials, yellow being in excess of red; not, much used in decorative work on a large scale but an exceedingly useful colour.

Yellows.—*Chrome, Pale and Middle.*—A strong opaque yellow with blue partial; its best uses will be found in combination with the neutrals; its opacity, its secondary quality, and its power render it unsuitable for delicate tones, except in the case mentioned in the text. In combination with black or brown it then gives an exceedingly good range of tones. *Yellow Ochre.*—Transparent yellow with a very just balance of partials; very suitable for the compounding of tints; one of the best yellows on the palette. *Roman Ochre.*—Similar to the above, but more neutral in tone. *Raw Sienna.*—A good transparent yellow, with a strong infusion of partials; good for nearly all purposes. *Lemon Yellow.*—Very opaque yellow, best in combination with the neutral browns and greys.

Oranges.—*Orange Chrome.*—Strong opaque orange, not good for combination with delicate colours; affords brilliant but good tone with strong transparent colours and with the neutrals. *Burnt Sienna.*—Transparent neutral orange; a very useful colour in all combinations. *Burnt Roman Ochre.*—Not so transparent as the above, but a most useful pigment in nearly all cases.

Greens.—*Emerald Green.*—Bright opaque green, rarely used; it combines very badly with other pigments, but is useful to the production of very brilliant green blues. *Terra Vert.*—Neutral green, semi-transparent, very useful in the production of tertiary tones.

Browns.—*Burnt Umber.*—Rich warm brown, useful in strong tones, but apt to become livid. *Raw Umber.*—Soft, delicate, neutral yellowish-brown; one of the most useful pigments on the palette. *Vandyke Brown.*—Purplish brown, transparent, very powerful and generally useful colour, but apt to get livid if used in excess in mixtures.

Blacks.—*Ivory Black.*—Transparent, nearly neutral. *Lamp Black.*—Opaque, nearly neutral.

At this point it will be well to consider two characteristic differences between the two great classes of hues. Firstly, it will be found that the secondaries are deficient in richness and harmonisable quality, due, of course, to the absence of the third complementary partial in their composition. In the next place, as stated above, a secondary is always of its own original class, and never passes into either of the others, in contradistinction to the tertiary hues, which range through every one of the infinite gradations of tone and change, from primary to primary.

(To be continued.)

Professional Practice.

Aberdeen.—The Albert Hall, Huntley Street, Aberdeen, has just been decorated. Mr. William Philip, painter and decorator, 76 Huntley Street, has been engaged on the work for more than two months, and the panels at the west end of the hall have been painted by Mr. Adam Tyler, Schoolhill, Aberdeen. The walls have been treated in a rich, deep crimson tone subdued with dark fleur-de-lys ornaments at intervals of about a foot apart. The ceiling is kept light in tone, with a view of giving a feeling of space and freshness, the tone being a silver grey, with the mouldings picked out in several complementary colours to harmonise with the panels, which have been richly decorated with conventionalised floral ornaments. In a series of cartouches are the names of the poets Scott, Keats, Tennyson, Rosetti, Shelley, Wordsworth, Coleridge and Burns. Mr. Tyler's three panels at the west end of the hall are enclosed in three spaces, separated by painted pillars to harmonise with the pillars round the sides of the hall. The central panel—12ft. by 9ft.—is representative of Music. The other panels represent Art and Poetry. Round the central panels there is a decorative border formed of the branches of trees. All the woodwork of the hall has been grained and varnished. Mr. Philip's design was accepted by the directors of the hall from several competitive designs.



Glasgow.—A company has been formed to acquire a block of buildings in the centre of Glasgow, in Argyle Street, for the purpose of being remodelled and converted into the home of the Glasgow Central Stores, Limited. The site of the new stores is bounded by Argyle Street on the north, Dunlop Street on the east, Turner's Court, &c., on the west, and the new street opposite St. Enoch Station on the south. It is intended to entirely rebuild the property, except a small section facing Dunlop Street, which was rebuilt not many years ago, and which only requires remodelling. It is proposed to utilise the first floor facing Argyle Street for the purposes of luncheon and tea rooms, which will be accessible from the stores, and also have a separate entrance for the general public from Argyle Street. There will also be a hotel in the premises. The site has a frontage to Argyle Street of 179ft., to Dunlop Street of 115ft., to Turner's Court, &c., of 122ft., and to the street between the company's building and St. Enoch Station of 142ft. There will be six floors, including basement and attics. Plans for the rebuilding of the property have been



MODEL OF THE NEW TOWN HALL AT LYNTON. READ AND MACDONALD, ARCHITECTS.

prepared by Messrs. Ernest Runtz and Company, architects and surveyors, London. The cost is estimated at—

Cost of property as it stands	£160,000
Cost of rebuilding	50,000
Fitting up premises	10,000

Liverpool.—In a few weeks the red brick building known as the Gordon Smith Institute, opposite the Sailors' Home, at the corner of Paradise Street and Hanover Street, will be formally opened. The institute is the gift of Mr. Samuel Smith, M.P., to the Liverpool Seamen's Friend Society, of which the hon. gentleman is president, and has been erected at a cost of £20,000. The building is in the Elizabethan style, and is to serve as a centre for the work both of the Seamen's Friend Society and the Strangers' Rest. The portion of the building nearest to the Sailors' Home will contain, on the ground floor, a spacious and well-appointed general reading-room for sailors and firemen; and on the first floor a reading-room, comfortably furnished, for officers and engineers. To the latter will be annexed a room in which shipmasters can transact business or meet people by appointment. The roof of this wing of the building will be flat, and laid out as a summer garden, commanding a view of several busy thoroughfares. The opposite end of the building will be used by the Strangers' Rest, with a comfortable and well-lighted reading-room and rooms above for the various social agencies carried on in connection with the society. In the centre of the Institute accommodation is provided for the Seamen's Friend Society's staff, including a library, superintendent's room, and offices. The chief feature of this part of the building, however, is on the ground floor—a hall, lighted from both ends, capable of seating 400 persons. This is to be used for meetings and entertainments. The western end, where the platform is placed, is a large bay. On the first floor is a somewhat smaller hall for the use of the Strangers' Rest, together with various class-rooms. The architects are Messrs. Walker and Strong.

Shere, Surrey.—The Hall and Institute illustrated on the previous page were designed by Mr. Felix Clay, architect, of 19 Buckingham Street, Strand, W.C., and shows how pleasing a result can be obtained by simple means. The hall, 64ft. by 26ft. 6in., is approached from a vestibule, having on the left a reading room 17ft. by 20ft., and another apartment on the right the same size. The hall has a stage at its upper end, with a retiring room 16ft. by 14ft.

Sparkhill, Birmingham.—The Yardley School Board have erected new schools in College Road, Sparkhill, and these were opened last week. There are commodious and well-lighted rooms for boys, girls and infants, and a cookery centre. Accommodation has been provided for 360 boys, 360 girls and 410 infants, and the cost of the work is estimated at between £13,000 and £14,000. The schools have been erected by Messrs. Harley and Sons, of Smethwick, from plans prepared by Mr. R. F. Matthews, architect, Birmingham, and are of red brick with buff terra-cotta ornamentations. The buildings are divided into three main halls, one in each department, five class rooms each having been provided in the girls' and boys' sections, with provision for two additional ones in each department in future, and six class rooms, each to accommodate sixty, in the infants' portion of the schools. The flooring, with the exception of the corridors, is composed of wood blocks, the latter, alike with the playgrounds, being of asphalt. The provision for warming the buildings is Haden's low-pressure system, and the natural ventilation principle has been selected. A caretaker's house has also been erected.

Lynton Town Hall.—The model of this building (which has recently been completed from the designs of Messrs. Read and Macdonald, A.R.I.B.A., architects, of London, W.) was made by Mr. W. Furneaux with great care and ability. Full particulars of the building will be found on page 59 of our issue for August 22nd last.



MODEL OF THE NEW TOWN HALL AT LYNTON. READ AND MACDONALD, ARCHITECTS.

New Patents.

These patents are open to opposition until October 9th.

1899.—Door Handles.—15 331, A. JONES, Warwick House, Bangor, N. Wales. The handle is made in two parts, one fitting within the other. When squeezed, a lever lifts the latch on the inside of the door, allowing it to be opened.

Acetylene Gas Generators.—17,243. G. KELLAWAY, Hotel Road, St. Austell, Cornwall. This generator has two carbide holders, either of which can be charged while gas is being consumed at the burners, and one water and gas holder. The apparatus automatically feeds itself with water from the main, and it is claimed that there is no waste, owing to the interior having no communication with the atmosphere.

Waste Fittings.—18,698. T. W. ROGERS, 27 and 28 The Triangle, Bournemouth. The mouth of the waste pipe is tapered outwards and the holes in the grating that fits in it are equal to, or exceed, the area of the pipe, so that there is a good flush. The grating is fitted with a metal disc having a rubber face on the under side: this disc acts as a plug and carries a pin that fits in the grating.

Lightning Conductors.—19,678. K. W. HEDGES, 1 Emery Hill Street, Westminster, S.W. One feature of this invention is the method of joining conductors together at junctions. The tinned copper wires are enclosed in a mould, into which lead or some fusible metal is poured, binding all together. The invention also includes a means for making good earth connections.

Blocks for Lining Sewers, &c.—19,722. D. T. CLEGG, 44 Tonman Street, Manchester, and H. N. BROOKE, Fieldhouse Works, Huddersfield. Each block (preferably made of vitrified or other stoneware) has a spigot at one end fitting into the corresponding hollow in the adjoining brick, so forming a key and keeping the proper alignment. Dovetail grooves are also provided, thus locking the blocks longitudinally and radially. It is claimed that one course of these blocks is equal to two or three courses of bricks, besides which labour is saved in laying them.

Prism Plates for Windows.—22,496. BRITISH LUXFER PRISM SYNDICATE, LIMITED, 16 Hill Street, Finsbury, E.C. (communicated by O. H. Basquin, Berlin). The glass plate has on one side a series of prisms, the two base angles of each being 50 degs. and 70 degs. This means that when the plate is fixed vertically one or other of the angles of each prism will refract the light.

1900.—Enamels.—10,039. G. APPIANI, Trevise, Italy. The following are the constituents of a whitish enamel containing no tin:—Calcined sand, 19 parts; minium or litharge, 13 parts; kaolin, 28 parts; common salt, 4 parts; soda, potash or other alkalies, 3 parts; quartz or calcined marble, 23 parts.

The following specifications were published on Saturday last, and are open to opposition until October 15th. A summary of the more important of them will be given next week. The names in italics within parentheses are those of communicators of inventions.

1899.—12,656, WORRALL, fences and gates. 13,764, WILLIAMS AND PAYNE, sliding window sashes. 13,765, WILLIAMS AND PAYNE, window casements. 16,265, DARGUE, generation of acetylene gas. 16,287, VAN PRAAG AND HARKER, acetylene generators. 16,411, HUNTER AND MITCHELL, appliance for cutting Z, T, and other bars to any bevel. 16,607, SMITH, spring roller blinds. 19,013, WHITELOW (*Kestner*), means for humidifying the air of rooms. 19,020, WILBY, electric arc lamps. 19,204, RENOUF, joints for tubing. 19,275, SORENSEN, apparatus for generating acetylene gas. 19,358, LE MESURIER, street and other paving made of moss litter. 19,881, DAVIS, roughened or grip surfaces of glass. 20,048, ROGERS, apparatus for the manufacture of acetylene gas. 20,061, BLAIR, BLAIR AND BAILLIE, fluid-pressure joints on doors, pipes, &c. 20,145, SEVENOAKES' combination electric light fittings. 20,271, ROBINSON, apparatus for making earthenware sinks. 20,318, STAFFORD, ratchet drills. 20,349, HALL AND AXTEN, draught excluders for doors. 20,428, BROOKE, fittings for heating apparatus. 20,435, BRINDLEY AND ROWLEY, machinery used in the manufacture of tiles and bricks. 20,447, BEARDS, means of attachment between cap or back plates and sheet metal lock and latch cases. 20,641, MACKEAN, incandescent gas burners. 24,218, LAKE (*Freeman*), smoke preventing and consuming devices for steam boilers.

1900.—4,082, BROWN, hoisting and conveying apparatus. 4,495, NESBITT, wall and ceiling decoration. 6,234, THOMPSON (*McCullum, Blakney and Bartlett*), water-supply and heating apparatus. 7,754, BULLOCK, gas pressure reducing and regulating apparatus. 9,030, WYNN, PERKINS AND GIRDWOOD, smoke-preventing apparatus for steam boilers. 9,837, WADSWORTH, machine for cleaning files or rasps. 10,226, SAVAGE, SAVAGE AND WEST, apparatus for closing and securing doors. 10,955, STEVENS, imitation wood and process of making it. 10,994, HADDAN (*Adams and Westlake Company*), acetylene gas generators. 11,369, DELIN, burners for incandescent gas lighting. 12,169, BLUTHNER, apparatus for smoothing or polishing wood. 12,251, JANDUS, filters. 12,252, JANDUS, filters and fittings for them. 12,317, TACHARD, jointless flooring. 12,446, ALBRECHT, brick for ceilings.

Masters and Men.

The Cheltenham Building Trade Dispute has been settled, the arbitrator, Mr. O. J. Williams, Registrar of the County Court, having just made his award. At the end of October last the Amalgamated Society of Gas Workers, Brickmakers, and General Labourers, gave notice to the Master Builders' Association for an advance of 1d. per hour in the wages of builders' labourers, so as to raise the wages from 5d. an hour, as paid at present, to 6d. Thereupon the Masters' Association gave a counter notice for a reduction of the wages to 4½d. an hour, and as the men refused to recognise this counter notice a deadlock ensued, and at the expiration of the original notice the labourers came out on strike, their demand not having been complied with. After the strike had lasted six weeks, the Mayor (Alderman Norman) successfully intervened and smoothed the way for arbitration both on the notice and on the counter notice. The Magistrates' clerk, at the Mayor's request, having been selected to determine the question of the validity of the counter notice, and he having decided that point against the men, the arbitration was conducted, when Mr. R. R. Skemp appeared to represent the employers and the men's case was advocated by Mr. J. W. Betteridge, secretary to the Amalgamated Society. The arbitrator, after taking time to consider the arguments and statements placed before him, has now decided that the standard rate of wages for builders' labourers in the town shall remain as at present, 5d. an hour, and he has further adjudged that the expenses of arbitration and award shall be borne in equal shares by the parties thereto.

Building Trade Disputes at St. Helens.—After having existed for a period of fifteen months the strike of the St. Helens bricklayers has now come to an end, the matters in dispute between them and the masters having been satisfactorily arranged, and it is anticipated that the arrangement arrived at will be such as will obviate a similar difficulty for a considerable time to come. In November, 1898, the bricklayers served notices upon the secretary of the Master Builders' Association that they desired an alteration in the working rules. This embraced an alteration in the existing rate of pay, which was then 9d. per hour, the men applying for an advance of a halfpenny, the limitation of apprentices, and several minor matters in reference to which some little friction existed. The usual negotiations took place some time before the expiry of the notice in May, but no satisfactory arrangement could be arrived at, the masters not feeling that the men were justified in applying for the advance asked for. At the end of May last year the men came out, virtually on strike, though we are informed that they had actually given the one day's notice required in the trade to terminate engagements. Practically the whole of the men obtained employment in other districts, and in many cases the masters had to rely upon their apprentices to carry on their work for them. In June last, after the strike had been in progress twelve months, the men withdrew their demand for the advance of a halfpenny per hour, and it was hoped other matters about which there was any difference would be speedily settled. Indeed, an announcement was made that the strike was actually at an end. This did not prove to be the case, however, the stumbling-block being the limitation of apprentices. The rule as it existed was that there should not be more than one apprentice to every three men and not more than six in a firm, and the men desired that the number of apprentices to be employed should be further limited. The masters agreed to an alteration of the rules that there should not be more than five apprentices in a firm, and to this the men assented, thus bringing the strike to an end.—There is no alteration in the position so far as the joiners' lock-out is concerned. We understand that the masters' attitude is that the rules provide that six months' notice shall be given for a change of working rules, and that the men have broken this rule in their action with respect to the "foreign" finished joinery. Nevertheless, they are content to accept the notice as if it had been made according to rule, and consider the matter in November next, together with the men's demand for a halfpenny an hour advance in their wages, for which they have asked. The contention of the masters is that the foreign finished joinery is not made by joiners, but by trained machine men, who are paid by piece-work, a condition that does not prevail with ordinary joiners, and hence that the stipulation as to trades union rates of wages does not apply. However, there the matter rests at present, and it is not easy to foresee what the ultimate outcome will be.

Engineering Notes.

Tramway Extensions at Liverpool.—On Saturday a new line serving the residential country districts of Seaforth, Waterloo, Crosby, and Blundellsands was opened for traffic. The new line, which is between two and three miles in length, has been provided by the Liverpool Overhead Railway Company.

New Railway Station at Newmarket.—During the hearing of an application for a new hotel near the railway at Newmarket Brewster Sessions last week, it was stated that the Great Eastern Railway had purchased from Colonel Harry McCalmont land nearer the racecourse than the present station, on which to build a new railway station estimated to cost £55,000.

Slot Electricity Meters for Battersea.—Battersea householders will shortly have electric light in their homes by the penny-in-the-slot system. The generating station is being rapidly built, and the parish will in a very short space of time be supplied. The roads in the district are being opened to lay down the wires, and it will be the first parish in London in which electric light will be installed with the slot.

Strengthening Southwark Bridge.—The process of strengthening the foundations of the northern pier of the central arch of Southwark Bridge is now complete and the structure made as secure as ever before. The operation, which consisted of throwing in vast quantities of stones and sand, was necessitated by the strong scour of the tide having washed away some of the earth in which the pier is set.

Electric Trams in the Lake Country.—A scheme is on foot to introduce electric trams with overhead trolleys into the English Lake District, under the Light Railways Act. It is being promoted by a London company, in con-

junction with the Windermere and District Electric Supply Company, but a large proportion of the residents think the scheme is a most undesirable one. They say that it would spoil the main roads between Windermere and Bowness, and also between Windermere and Ambleside for driving, cyclists, and pedestrians. An improved service of omnibuses or motor cars would meet all requirements, as the resident population is small, and it is only in the summer months that there is any demand for additional modes of locomotion.

Builders' Notes.

The Glenboig Union Fire Clay Company, Ltd., have been awarded a gold medal for their exhibits of fire-clay goods at the Paris Exhibition, 1900.

The Results of the May Examination in Building Construction by the Science and Art Department show that 50 per cent. of the candidates in Honours from the City of London College succeeded in passing, as against 55½ per cent. last year.

Building Operations in Norwich, in spite of the bricklayers' strike, seem to be progressing. Messrs. Caley's huge factory in St. Stephen's Back Street is a prominent feature in the view from the Castle Hill. Messrs. Chamberlin have erected a warehouse in Dove Street. Close by, on the other side of the street, other buildings have been put up. The new Arcade Stores, at the Back-of-the-Inns, has effected a much-needed public improvement. The new Norfolk and Norwich Savings Bank at Orford Place is now fairly well advanced.

Veneers as Wall Decorations.—At the auction sale of Messrs. Edward Chaloner and Co., at Liverpool, two logs of African mahogany were recently sold for £1,536. They formed one tree, and were bought for the purpose of being cut into veneers for the decoration of the palatial residences of some of the merchant princes of the United States of America. The veneers are used in the place of wall-papers. The prices realised for the two logs were respectively 10s. 3d. and 7s. 3d. per superficial foot, which is a record for African mahogany logs in the rough state, as imported.

A German Cement Combine.—The unsatisfactory condition of the German cement industry has induced the representatives of the various works to consider the question of forming a general syndicate for the whole of Germany. The works associated with the existing cement union estimate their production for the current year at 6,400,000 tons of cement and the consumption at only 4,100,000 tons. The anticipated over-production will, however, be increased by the output of the new cement works, which is calculated at 2,610,000 tons for the year. In these circumstances it is proposed to form a general syndicate both for the home trade and the export branch. It is intended to limit the production of the works belonging to the union to the average quantity sold during the past three years, with the addition of 60 per cent. of the possible greater output due to recent improvements in working, whilst the production of the new works is suggested at 60 per cent. of their full capacity. As the latter object to this restriction, further negotiations are pending with a view to the constitution of the proposed general syndicate.

Workmen's Dwellings for Liverpool.—The Deputy City Surveyor of Liverpool, Mr. F. T. Turton, has been directed by the Insanitary Property and Artisans' Dwellings Committee of the Corporation "to obtain from the Tramways Committee full information as to the land and buildings in the possession of that committee which will not be required after the completion of the change from horse to electric traction, and to report whether any and which sites could be utilised by this committee for the erection of labourers' dwellings, having regard to the limit of distance prescribed by the Local Government Board." Another resolution is in the following terms:—"That with the view of ascertaining whether the tenants of the various dwellings under the control of this committee are residing near to the places where they usually work, the deputy surveyor obtain through the superintendent and the deputy superintendent information on the subject from the respective tenants, and afterwards tabulate the same, and have the distances calculated, and then report the result to this committee."

Brick-Making in India.—A correspondent of "Indian Engineering" states that the best work on brick-making in India is the Section on Building Materials in Vol. I. Roorkee C. E. College Series. The expense incurred in making machine-made bricks is not commensurate with the advantages obtained; manual labour is so cheap, easily obtained in India, that the use of machinery does not pay. Bricks made of well pugged clay, table moulded and burnt in a kiln, are good enough for any brick-masonry work in India, the great drawback of machinery being its immobility. As a rule, in India bricks are manufactured at or very close to the site of the work on which they are to be utilised. In case machinery were made use of, a central brickfield would have to be established and the manufactured bricks carried to site of work; this carriage would then add materially to the cost of the bricks. The great difficulty generally experienced with hand-made bricks is to get the arises or edges sharp and well defined, and the only way to obtain this is to have the moulds well made in the first instance and very carefully watched while in use; any mould found to be in the slightest degree cracked or damaged should be at once rejected.

The Teak Trade of Northern Siam.—From the report of Mr. Black, British Consul at Chiang-mai, or Zimme, in Northern Siam, for the past year, it appears that trade with Burma was less than in the previous year, owing to smaller deliveries of teak from the Siamese Salween districts to Moulmein. Last year these amounted to 17 824 cubic tons, valued at £79,314, against 26,479 cubic tons, valued at £100,657, delivered at the registration station of Kado, on the Salween. On the Siam side the amount of teak floated down to Bangkok was 25,326 cubic tons, valued at £96,250, being slightly less than in the previous year. Thus the total value of the teak exported from Northern Siam last year was £175 584. The decrease last year was not at all due to decline in the production in the forests, but to a deficiency in the rainfall, which prevented the streams and rivers by which the timber is floated down from rising sufficiently to carry it away, so that no timber was floated out to the main stream from many of the tributaries. Hence, if the rains this year prove heavy, the arrivals of teak will exceed those of any previous season. The cost of getting the teak out grows more and more expensive on account of the scarcity of labour. The British capital invested in the teak industry in Siam is two millions sterling.

New Companies.

George Priest's Pottery and Stoneware Manufacturing Company (Cardiff), Limited.

This company was registered on August 21st with a capital of £14,000 in £1 shares to acquire the business carried on at Wyndham Crescent, Canton, Cardiff, by G. Priest, and to carry on the business of brick, tile, pipe, pottery, earthenware, china and ceramic ware manufacturers, &c. The first directors (to number not less than three nor more than seven) are H. Knill, W. Mathias, A. E. Glaves and G. Priest.

Anglo-Roumanian Company, Limited.

This company was registered on August 21st with a capital of £32,000 in £1 shares to carry on in Servia and Roumania or elsewhere the business of window glass, table glass, mirror, bottle, glass and china ware, box, barrel, cask, and case manufacturers and merchants, ironmongers, &c. The first directors (to number not less than three nor more than seven) are W. Bailey, W. A. Bailey, R. B. Fraser, H. S. Pratt and Isodore E. Ellenbogen.

New Malden Development Syndicate, Limited.

This company was registered on August 21st with a capital of £2,000 in £1 shares to acquire land at New Malden or elsewhere and to carry on the business of land and property owners, builders, contractors, agents, surveyors, &c.

Hygienic Sanitation, Limited.

This company was registered on August 24th with a capital of £10,000 in £1 shares to acquire the business of sanitary and general engineers and contractors. The first directors (to number not less than three nor more than seven) are to be appointed by the subscribers.

Aberdare Electric Lighting Company, Limited.

This company was registered on August 23rd with a capital of £2,000 in £1 shares to carry on the business of an electric light company in all its branches. The first directors (to number not less than three nor more than seven) are to be appointed by the subscribers.

Finchley Electric Light Company, Limited.

This company was registered on August 22nd with a capital of £3,000 in £1 shares to carry on at Finchley or elsewhere the business of an electric light company in all its branches. The first directors are to number not more than five. M. W. Woods is a permanent director.

Twentieth Century Land Syndicate, Limited.

This company was registered on August 21st with a capital of £2,000 in £100 shares to carry on the business of landowners, builders, contractors, financiers, &c. The first directors are H. L. Diprose, W. J. Hubbard, C. H. Mason, R. Morris and W. H. Stilgoe. Registered office: 20 Essex Street, W.C.

Port Talbot Iron and Steel Company, Limited.

This company was registered on August 21st with a capital of £10,000 in £50 shares to acquire mines, quarries and collieries, and to carry on the business of iron and coal masters, iron and steel manufacturers, ironfounders, &c. The first directors (to number not less than three nor more than five) are to be appointed by the subscribers.

Phelps's Metal, Limited.

This company was registered on August 22nd with a capital of £10,000 in 10s. shares to acquire the business of a company of the same name and to carry on the business of iron-founders, ironmasters, steelmakers, smelters, grinders, engineers, tinplate makers, builders, &c. The first directors (to number not more than five) are to be appointed by the subscribers. Registered office: Suffolk House, Laurence Pountney Lane, E.C.

Hudson and Company, Limited.

This company was registered on August 22nd with a capital of £20,000 in £1 shares to acquire and carry on the business of timber and mahogany merchants, sawmill proprietors, cabinet and general wood turners, sawyers, &c., carried on by J. H. Howarth and C. A. Walker at 13, 15 and 17 Garden Street, Leeds, as Hudson and Co. The first directors (to number not less than two nor more than five) are J. H. Howarth and C. A. Walker, each of whom may retain office for life. Registered office: 17 Garden Street, Marsh Lane, Leeds.

Kandalax Wood Company, Limited.

This company was registered on August 2nd with a capital of £100,000 in £1 shares, of which 80,000 are preference shares, to acquire the Actiebolaget Kuusamo and to carry on in all or any of their respective branches the businesses of planters, forest owners, sawyers, timber merchants, sawmill proprietors, shippers, joiners, carpenters, builders, millowners, &c., and any other businesses connected with the same. The first directors (of whom there shall be not less than three nor more than seven) are C. A. Stewart, V. Olsson, F. R. Cheeswright, W. Olsson and W. R. Lenanton.

Bishop, Pratt and Company, Limited.

This company was registered on August 24th with a capital of £15,000 in £1 shares (4 000 preference) to acquire the business carried on at 7 Wormwood Street, E.C., as Bishop, Pratt and Company, and to carry on the business of builders' merchants in all its branches. The first directors (to number not less than three nor more than five) are J. R. E. Pratt, E. F. Bishop and G. B. Corbett.

H. L. Dean and Company, Limited.

This company was registered on August 24th with a capital of £2,000 in £1 shares to acquire the business carried on by H. L. Dean, trading as H. L. Dean and Company, at Longton, Staffordshire, and elsewhere, and to carry on the business of iron merchants, machinery brokers, ironfounders, engineers, brickmakers, dealers in building materials, &c. The first directors (to number not less than two nor more than five) are G. Dean and H. L. Dean.

Smith's Dock Trust Company, Limited.

This company was registered on August 11th with a capital of £100 000 in 50,000 £1 ordinary shares and 5,000 £10 preference shares to build, construct or acquire any dry docks, slipways, pontoons, floating docks, gridirons and other works and conveniences, to deal with the same in such manner as the company shall deem expedient; as mechanical, general and electrical engineers, brass and iron founders machine-tool makers, smiths, ironmongers' furnishers; as millwrights, iron and steel converters, woodworkers, builders and contractors, painters and decorators, metallurgists, water-supply engineers, art metal workers, upholsterers, general house furnishers, &c. The first directors (of whom there shall be not less than three nor more than seven) are E. Smith, H. Eeles, C. O. Hall, L E. Smith and G. S. F. Edwards.

Driver and Company, Limited.

This company was registered on August 15th with a capital of £50,000 in £1 shares to adopt and carry into effect an agreement made between G. Y. Mercer and T. J. Wall and this company for the acquisition of the business of timber merchants, &c., carried on under the style or firm of Driver and Co. at Southampton, to carry on in all or any of their respective branches the businesses of slate and cement importers and merchants, veneer cutters, sawmill proprietors, cabinet makers, wood turners, moulding manufacturers, lath renders, manufacturers of wood railway keys and sleepers, wood pulp manufacturers and merchants, carpenters, wheelwrights, manufacturers of and dealers in wooden articles of every description, builders' merchants; as brick, tile and terra-cotta manufacturers; to establish and maintain creosoting works, &c. The first directors (of whom there shall be not less than two nor more than five) are G. Y. Mercer and T. J. Wall.

Town and General Estates, Limited.

This company was registered on August 16th with a capital of £50,000 in 49,950 £1 preference shares and 1,000 1s. deferred shares for the acquisition of certain lands and other property; and, further, to construct, maintain, improve, develop, work, control and manage any waterworks, gasworks, reservoirs, roads, tramways, electrical works for the supply of power, heat or light, telephones and telephonic works and apparatus, hotels, clubs, furnished or unfurnished flats, restaurants, baths, &c.; as builders and contractors, decorators, general merchants, and dealers in stone, sand, lime, bricks, timber, hardware and other building requisites; as brick, tile and terra-cotta manufacturers, &c.; to lay out land for building purposes and to develop it. The first directors (of whom there shall be not less than three nor more than five) are to be elected by the signatories to the memorandum of association: R. G. Theyne, P. H. Hetherington, J. H. McCashin, H. H. Hull, F. W. Allen, G. Barrett, and E. Mayer. Managing director, F. M. Armstrong. Registered office: 11 Cornhill, E.C.

Phos Acetylene Gas Company, Limited.

This company was registered on August 24th with a capital of £7,500 in £1 shares to adopt an agreement with F. W. Harker and D. J. Van Praag for the acquisition of certain patents, and to carry on the business of manufacturers and suppliers of acetylene gas. The first directors (to number not less than three nor more than five) are E. S. Sawyer, F. W. Harker and D. J. Van Praag; the last two named are managing directors. Registered office: 59 60, Chancery Lane, W.C.

TENDERS.

Information from accredited sources should be sent to "The Editor." Results of tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the Work.

CLEETHORPES.—For the erection of electric-power station, chimney shaft, car sheds, workshops, &c., in Pelham Road, for the Great Grimsby Tramways Company. Mr. John Glenn, C.E., architect. Mr. J. Fereday Glenn, surveyor, 11 Queen Victoria Street, London, and 346 Cleethorpes Road, Grimsby:—

	Power station.	Depot.	Total.
Thompson & Sons	£7,987	£6,059	£14,046
Frere & Co.	7,809	5,845	13,645
Hewins & Goodhand	7,500	5,440	12,940
H. Marrow	6,522	4,951	11,473
Wilkinson & Houghton, Grimsby*	6,310	5,003	11,313

* Accepted.

CLUTTON, SOMERSET.—Accepted for the erection of a further six cottages on the Greyfield Estate, for the Earl of Warwick, Mr. W. F. Bird, architect, Midsomer Norton:—

T. Keeling, Timsbury ... £840

CLUTTON, SOMERSET.—Accepted for the construction of a water storage reservoir and the laying of cast-iron distributing mains, fixing hydrants, &c., for 46 cottages on the Greyfield Estate, for the Earl of Warwick. Mr. W. F. Bird, Civil Engineer, Midsomer Norton:—

T. Keeling, Timsbury ... £638

CLUTTON, SOMERSET.—Accepted for the laying of a main sewer and the construction of a scum tank and bacteria filters, for 46 cottages on the Greyfield Estate, for the Earl of Warwick. Mr. W. F. Bird, Civil Engineer, Midsomer Norton:—

T. Keeling, Timsbury ... £466

HENDON.—For private street works and bacteria filter, for the Urban District Council of Hendon. Mr. S. Slater Grimley, engineer and surveyor:—

Colin Deep Lane Works.

Thos. Adams	£3,883 0 0	Nowell & Co.	£3,121 11 0
Neave & Son	3,448 0 0	R. Ballard, Ltd., Child's Hill*	2,895 0 0
Mowlem & Co.	3,689 0 0		

Sewage Outfall Works, Bacterial Filter No. 3 (Labour only).

Thos. Adams	£715 5 6	R. Ballard, Ltd., Child's Hill*	£563 0 0
Neave & Son	573 0 0		

[Council find all materials.] * Accepted.

INVERKIP, N.B.—For the construction of a storage reservoir, &c., for the District Committee. Mr. James Murray, C.E., County Buildings, Paisley:—

W. G. Flett	£1,809 12 0	Peter Bow	1,509 9 11
Hugh Hastie	1,166 1 0	Cunningham & Sons, Kilmalcolm*	1,140 17 6
James Keanie†	915 2 6		

* Accepted. † Too late.

LICHFIELD.—For additions to workhouse, Trent Valley Road, for the Guardians of the Poor of the Lichfield Union. Mr. W. H. Woodroffe, architect, 214 Great Dover Street, London, S.E.:—

H. Smith & Sons	£6,212 10 0	Parnell & Son	£4,781 0 0
F. N. Stephens	5,895 0 0	Lowe & Sons	4,617 0 0
T. Smith & Sons	5,098 0 0	W. Harvey Gibbs, Birmingham*	4,350 0 0
Dorse & Co.	4,905 0 0		
Willcock & Co.	4,850 0 0		

* Accepted.

LONDON.—For temporary annexes, Church Lane, Tooting, for the Wandsworth and Clapham Guardians. Mr. Cecil A. Sharp, architect, 11 Old Queen Street, Queen Anne's Gate, S.W.:—

Contract No. 1.

Foster Bros.	£10,388	Akers & Co.	£7,426
Leslie & Co.	9,103	Wall & Co.	7,400
J. B. Potter	8,299	Lascelles & Co.	7,250
Martin Wells	7,693	R. A. Jewell, North Street, Wandsworth*	7,134
F. & H. F. Higgs	7,590	Huntley Bros.	6,898
E. Wall	7,590		
F. G. Minter	7,573		

Contract No. 2.

Foster Bros.	£8,175	Akers & Co.	£5,223
Leslie & Co.	6,366	Wall & Co.	5,189
J. B. Potter	5,899	Lascelles & Co.	5,175
Martin Wells	5,676	E. Wall	4,944
F. G. Minter	5,323	Huntley Bros., Tamworth Road, Croydon*	4,651
F. & H. F. Higgs	5,247		

* Accepted.

LONDON.—For the erection of shops and residences at the corner of Dawes Road and Hannel Road, Fulham, for Mr. F. Batty. Mr. W. Thomas, surveyor, 12 Waldemar Avenue, Fulham, S.W.:—

S. Knight	£1,945 0	Swan & Son	£1,675 0
T. Bendon	1,712 0	E. Wall*	1,424 5

* Accepted.

RETFORD.—For the rebuilding of Ship Inn Cottage and stables for the Home Brewery, Daybrook. Messrs. Eyre & Southall, architects, Retford:—

G. Fenton	£1,577 0	G. Hurst	£1,411 10
T. Hopkinson	1,486 10	F. Fenton*	1,405 0

* Accepted. [All of Retford.]

RETFORD.—For new stables, loose boxes and carriage houses for the White Hart Hotel. Messrs. Eyre & Southall, architects, Retford:—

G. Fenton	£1,120	T. Hopkinson	£1,050
C. Jones	1,096	G. Hurst*	1,017

* Accepted. [All of Retford.]

SEDGLEY.—For additions and alterations to Hurst Hill Schools, for the Sedgley School Board. Mr. S. Henry Eachus, architect, Wolverhampton and Birmingham. Quantities by Mr. Vale, Wolverhampton:—

Lindsay Jones	£2,698	Hilton & Caswell	£2,636
Willcock & Co.	2,622	Cave	2,585
Ham	2,627	Skett	2,504
Herbert	2,605	Mark Round, Dudley*	2,350

* Accepted.

CURRENT PRICES.

FORAGE.

		£	s.	d.	£	s.	d.
Hay, best	per load	4	0	0	4	7	6
Sainfoin mixture	do.	3	10	0	4	10	0
Clover, best	do.	4	5	0	5	0	0
Beans	per qr.	1	8	6	1	9	9
Straw	per load	1	8	0	1	18	0

OILS AND PAINTS.

Castor Oil, French	per cwt.	1	11	6	1	12	8
Colza Oil, English	do.	1	10	3	—		
Copperas	per ton	2	0	0	—		
Lard Oil	per cwt.	1	17	0	—		
Lead, white, ground, carbonate	do.	1	3	10	—		
Do. red	do.	1	0	4½	—		
Linseed Oil	do.	1	13	3	—		
Petroleum, American	per gal.	0	0	6⅜	0	0	6½
Do. Russian	do.	0	0	6 3/16	0	0	6¼
Pitch	per barrel	0	8	6	—		
Shellac, orange	per cwt.	2	19	0	—		
Soda crystals	per ton	3	0	0	3	2	6
Tallow, Town	per cwt.	1	4	0	1	7	9
Tar, Stockholm	per barrel	1	6	0	—		
Turpentine	per cwt.	1	6	0	—		

METALS.

Copper, sheet, strong	per ton	85	0	0	—		
Iron, Staffs., bar	do.	10	0	0	11	10	0
Do Galvanised Corrugated sheet	do.	13	0	0	—		
Lead, pig, Spanish	do.	17	12	6	—		
Do. do. English common brands	do.	17	17	6	—		
Do. sheet, English, 3lb. per sq. ft. and upwards	do.	21	0	0	22	0	0
Do. pipe	do.	23	0	0	—		
Nails, cut clasp, 3in. to 6in.	do.	12	0	0	13	0	0
Do. floor brads	do.	11	15	0	12	15	0
Steel, Staffs., Girders and Angles	do.	8	10	0	9	0	0
Do. Mild Bars	do.	9	7	6	9	15	0
Tin, Foreign	do.	136	10	0	137	0	0
Do. English ingots	do.	140	10	0	141	0	0
Zinc, sheets, Silesian	do.	23	10	0	—		
Do. do. Vieille Montaigne	do.	24	5	0	—		
Do. Spelter	do.	19	6	0	19	10	0

TIMBER.

SOFT WOODS.

		£	s.	£.	£	s.	d.
Fir, Dantzic and Memel	per load	3	0	0	4	0	0
Pine, Quebec Yellow	do.	4	7	6	6	0	0
Do. Pitch	do.	3	5	0	3	15	0
Laths, log, Dantzic	per fath.	4	10	0	5	10	0
Do. Petersburg	per bundle	0	1	1½	—		
Deals, Archangel 2nd & 1st	per P. Std.	12	15	0	18	0	0
Do. do. 4th & 3rd	do.	13	5	0	—		
Do. do. unsorted	do.	11	0	0	12	10	0
Do. Riga	do.	6	15	0	8	10	0
Do. Petersburg 1st Yellow	do.	15	0	0	16	10	0
Do. do. 2nd „	do.	10	15	0	13	15	0
Do. do. Unsorted „	do.	8	15	0	13	0	0
Do. do. White	do.	11	5	0	11	15	0
Do. Swedish	do.	10	15	0	22	10	0
Do. White Sea	do.	13	5	0	17	15	0
Do. Quebec Pine, 1st	do.	13	15	0	23	15	0
Do. do. 2nd	do.	18	15	0	—		
Do. do. 3rd &c.	do.	9	0	0	9	15	0
Do. Canadian Spruce, 1st	do.	10	10	0	11	15	0
Do. do. 3rd & 2nd	do.	7	5	0	9	10	0
Do. New Brunswick	do.	7	5	0	8	0	0
Battens, all kinds	do.	8	5	0	9	10	0
Flooring Boards, 1in. prepared, 1st	per square	0	12	0	0	13	3
Do. 2nd	do.	0	8	0	0	9	3
Do. 3rd &c.	do.	0	9	6	—		

HARD WOODS.

Ash, Quebec	per load	3	17	6	4	10	0
Birch, Quebec	do.	3	12	6	3	17	6
Box, Turkey	per ton	7	0	0	15	0	0
Cedar, 1in., Cuba	per ft. sup.	0	0	3	0	0	3½
Do. Honduras	do.	0	0	3 3/16	—		
Do. Tobasco	do.	0	0	3½	—		
Elm, Quebec	per load	0	12	6	5	10	0
Mahogany, Average Price for Cargo, Honduras	per ft. sup.	0	0	4 1/16	—		
Do. African	do.	0	0	4 1/16	—		
Do. St. Domingo	do.	0	0	6 3/16	—		
Do. Tobasco	do.	0	0	4 3/16	—		
Do. Cuba	do.	0	0	4 3/16	—		
Oak, Dantzic and Memel	per load	3	15	0	5	7	6
Do. Quebec	do.	4	12	6	5	0	0
Teak, Rangoon, planks	do.	8	10	0	14	10	0
Wainscot, Riga (Baulk)	do.	3	15	0	5	15	0
Do. Odessa Crown	do.	3	15	0	5	15	0
Walnut, American	per cub. ft.	0	1	8	0	3	2

The Monument to Nelson's Hardy, on the summit of Blagdon Hill, in Dorset, one of the most commanding landmarks on the south coast, has been restored from the public funds collected for that purpose. The tower had fallen into a dangerous state of dilapidation, and an appeal was made to place it in a proper state of repair before handing it over to the National Trust for the Preservation of Places of Historic Interest. As an evidence of the extent of the repairs necessary it may be said that more than fifty tons of Portland stone were utilised, all of which had to be hauled by traction engines to the summit. The tower is now in a perfect state of repair, and with a little attention will survive many generations.

COMPLETE LIST OF CONTRACTS OPEN.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
	BUILDING.		
Sept. 7	Benwell, near Newcastle-on-Tyne—School	School Board	J. W. Thompson, 63 Grey Street, Newcastle-on-Tyne.
„ 7	Cromer—Coastguard Station	Admiralty	Watch Room, Coast Guard Station, Cromer.
„ 7	Lancaster—Premises	Mr. E. Johnson	J. Parkinson, 67 Church Street, Lancaster.
„ 7	Rothes near Elgin—House		10 Seafield Square, Rothes.
„ 7	Cardiff—Materials	Guardians	A. J. Harris, Queen's Chambers, Cardiff
„ 8	Leicester—Roofing	Corporation	A. Colson, Millstone Lane, Leicester.
„ 8	Skelmersdale—Chimney	Urban District Council	Surveyor, Town Hall, Skelmersdale.
„ 10	Walsall—House	School Board	Bailey and McConnal, Bridge Street, Walsall.
„ 10	Halifax—Church Restoration		B. Lee, Sexton, Cinder Hills.
„ 10	Ilford—Bandstand	Urban District Council	H. Shaw, 7 Cranbrook Road, Ilford.
„ 10	Stradbroke, Suffolk—Alterations	East Suffolk County Council	H. Miller, 16 Museum Street, Ipswich.
„ 10	Bromley, Middlesex—Alterations	Managers of the Poplar and Stepney Sick Asylum District	J. and S. F. Clarkson, 136 High Street, Poplar.
„ 10	Rollesby, Great Yarmouth—Alterations	Guardians of the East and West Flegg Poor Law Incorporation	A. S. Hewett, Bank Chambers, 23 Regent Street, Great Yarmouth.
„ 10	Yetholme, near Edinburgh—Additions		T. P. Marwick, 43 York Place, Edinburgh.
„ 11	Worcester—Engine House	Corporation	T. Caink, Guildhall, Worcester.
„ 11	Hastings—Convenience	Corporation	P. H. Palmer, Town Hall, Hastings.
„ 12	Walthamstow—Floor	Urban District Council	H. Spalding, 15 Queen Street, Cheapside, E.C.
„ 12	Spilsby—Wall	Rural District Council	T. A. Busbridge, District Surveyor, Spilsby.
„ 13	Fulham—Additions	Guardians	D. Matthews, 650 Fulham Road, S.W.
„ 14	London, N.W.—School	Managers of Aske's Haberdashers' School	Widnell and Trollope, 20 Tothill Street, Westminster, S.W.
„ 15	Wigton—Rebuilding	Maryport Brewery Company	G. Armstrong, 24 Bank Street, Carlisle.
„ 17	Cardiff—Law Courts	Corporation	Town Clerk, Town Hall, Cardiff.
„ 17	Richmond, Surrey—Infirmary and Nurses' Home	Guardians	A. J. Wood, 17 The Green, Richmond, Surrey.
„ 17	London, S.E.—Stables	Vestry of St. Mary Magdalen, Bermondsey	F. Ryall, Town Hall, Spa Road, Bermondsey.
„ 17	Pembroke Dock, Wales—School	School Board	G. Morgan and Son, 24 King Street, Carmarthen.
„ 17	Walsall—School	School Board	Bailey and McConnal, Bridge Street, Walsall.
„ 18	London, E.C.—Enlarging Telegraph Factory	Commissioners of H.M. Works	Secretary, H.M. Office of Works, &c., Storey's Gate, S.W.
„ 18	Warrington—Sanatorium	Corporation	Borough Surveyor, Town Hall, Warrington.
	ENGINEERING.		
Sept. 7	Madron, Cornwall—Sewerage and Water Supply Works	Urban District Council	F. Latham, Engineer, Penzance.
„ 7	Chippenham—Septic Tanks	Rural District Council	A. H. Lapham, Surveyor, Corsham.
„ 8	Bradford—Refuse Destructors	Corporation	Mr. McTaggart, Corporation Depôt, Hammerton Street, Bradford.
„ 8	Nelson, Lancs.—Dynamo	Corporation	A. Allen, Gasworks, Nelson, Lancs.
„ 10	Southampton—Electric Crane	Harbour Board	W. Bowser, Harbour Offices, Town Quay, Southampton.
„ 10	Witton, near Birmingham—Bridge Works	Trustees of Mr. James Dakin	J. E. Willcox, Union Chambers, 63 Temple Row, Birmingham.
„ 10	Dartford—Fire Engine	Urban District Council	W. Harston, High Street, Dartford.
„ 10	Reigate—Pumping Machinery	Rural District Council	R. B. Grantham and Son, 23 Northumberland Avenue, W.C.
„ 11	Southampton—Electrical Plant	Guardians	W. H. Mitchell, Son, and Gutteridge, 9 Portland Street, Southampton
„ 11	Hitchin—Engine and Pump	Urban District Council	W. O. Times, Council Offices, Corn Exchange, Hitchin.
„ 11	Norwich—Boiler		A. E. Collins, Guildhall, Norwich.
„ 11	Oldham—Boilers	Electric Light Committee	A. Andrew, Gas and Water Offices, Oldham.
„ 11	Birkenhead Landing Stage Additions	Corporation	O. Brownhidge, Town Hall, Birkenhead.
„ 11	Chesham, Bucks—Reservoir	Urban District Council	J. Taylor, Sons and Orimp, 27 Great George Street, Westminster, S.W.
„ 12	Palma, Balearic Isles—Lighting	Corporation	Commercial Department, Foreign Office, S.W.
„ 12	London, N.E.—Electrical Plant	Hackney Electric Lighting Committee	R. Hammond, 64 Victoria Street, Westminster, S.W.
„ 12	Harrington, Cumberland—Pier Extension	Harbour Board	J. Eden, 58 Port Street, Workington.
„ 12	London, W.—Motors	Hammersmith Vestry	Clerk, Town Hall, Hammersmith.
„ 16	Minehead, Somerset—Improving Sea Front	Urban District Council	F. W. Roberts, Engineer, Taunton.
„ 17	Jassy, Roumania—Waterworks		Technical Department, Communal Council Office, Jassy.
„ 18	Ewesley, Northumberland—Reservoir	Tynemouth Corporation	Borough Surveyor, Tynemouth.
„ 19	Plumstead—Electric Plant	Vestry	J. B. Mitchell, Vestry Hall, Maxey Road, Plumstead.
„ 19	Belper—Reservoirs	Rural District Council	J. Erith, Engineer, Baslow.
„ 22	Horton, Surrey—Dynamos	London County Council	R. W. Partridge, 6 Waterloo Place, S.W.
„ 22	Horton, Surrey—Pumping Machinery	London County Council	R. W. Partridge, 6 Waterloo Place, S.W.
„ 26	Uganda—Steel Trestle Viaducts and Traveller	Railway Committee	Crown Agents for the Colonies, Downing Street, S.W.
„ 26	Ulverston—Water Mains	Rural District Council	W. F. Y. Molineux, 3 Benson Street, Ulverston.
	IRON AND STEEL.		
Sept. 7	Ashton-in-Makerfield—Pipes	Urban District Council	J. W. Liversedge, Surveyor, Ashton-in-Makerfield.
„ 8	Edinburgh—Rails and Fishplates	Magistrates and Council	Colam and Cooper, 1 Parliament Square, Dublin.
„ 10	Reigate—Pipes	Rural District Council	R. B. Grantham and Son, 23 Northumberland Avenue, W.C.
„ 26	The Hague, Holland—Socket Pipes		M. Nydoff, Noblestreet 18, The Hague, Holland.
„ 27	Ulverston—Pipes	Rural District Council	W. F. Y. Molineux, 3 Benson Street, Ulverston.
	PAINTING AND PLUMBING.		
Sept.	Shrewsbury—Painting	Water Committee	W. C. Eddowes, The Square, Shrewsbury.
„ 11	Blackrock, co. Dublin—Painting Artisans' Dwellings	Urban District Council	Engineer, Town Hall, Blackrock.
	ROADS AND CARTAGE.		
Sept. 10	Jarrow—Road Works		Borough Surveyor, Grange Road, Jarrow.
„ 10	Ryton-on-Tyne—Cartage	Urban District Council	J. P. Dalton, Surveyor, Ryton-upon-Tyne.
„ 11	Egremont, Cheshire—Asphalte Paving	Wallasey Urban District Council	W. H. Travers, Public Offices, Egremont.
„ 11	London, N.—Street Improvement Works	Stoke Newington Vestry	R. Brown, Vestry Offices, Stoke Newington.
„ 11	Ripley, Derby—Street Works	Urban District Council	R. Argile, Oxford Street, Ripley.
„ 11	Bromley, Kent—Making-up	Urban District Council	Surveyor, Council Offices, Bromley, Kent.
„ 12	Twickenham—Improvement Works	Urban District Council	F. W. Pearce, Town Hall, Twickenham.
„ 13	Grays, Essex—Materials	Urban District Council	A. C. James, Surveyor, Grays, Essex.
„ 15	Mansfield—Street Works	Corporation	R. F. Vallance, White Hart Chambers, Mansfield.
„ 17	Colchester—Roadmaking	Roads and Drainage Committee	H. Goodyear, Borough Surveyor, Colchester.
„ 19	Kingsbury, Middlesex—Granite	Urban District Council	Surveyor, Council Offices, Kingsbury, Middlesex.
	SANITARY.		
Sept. 7	Pudsey, Yorks—Sewerage Works	Urban District Council	J. Jones, Council Offices, Pudsey, Yorks.
„ 8	Audenshaw, Lancs.—Sewers	Urban District Council	J. P. Wilkinson, 47 Arcade Chambers, St. Mary's Gate, Manchester.
„ 8	Roxeth, Harrow Draining	Burial Board	Cowell and Shaw, 49 Finsbury Pavement, E.C.
„ 8	Aughnacloy, Ireland—Drainage		G. P. Hatton, Church Street, Dungannon.
„ 10	Reigate—Sewage Works	Rural District Council	R. B. Grantham and Son, 23 Northumberland Avenue, W.C.
„ 10	Glemsford, Sussex—Sewer	Urban District Council	Surveyor, Council Offices, Glemsford, Sussex.
„ 11	Bromley—Sewers	Urban District Council	Surveyor, Council Offices, Bromley, Kent.
„ 11	Ripley, Derby—Sewer	Urban District Council	R. Argile, Council Offices, Ripley.
„ 12	Greenwich—Sewerage Works	Board of Works	Clerk, 141 Greenwich Road, Greenwich.
„ 12	London, N.W.—Sewers	Hendon Rural District Council	J. A. Webb, Stanmore Hill, Stanmore.
„ 17	Londonderry—Sewer	County Borough Council	City Surveyor, Guildhall, Londonderry.
„ 18	Eastleigh, Hants—Sewerage Works	Urban District Council	Lennon & Blizard, Lansdowne House, Southampton.
	TIMBER.		
Sept. 21	Hull—Timber	Corporation	A. E. White, Town Hall, Hull.
„ 22	Horton, near Epsom—Fencing	London County Council	R. W. Partridge, 6 Waterloo Place, S.W.

COMPETITIONS OPEN.

DATE OF DELIVERY.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	BY WHOM ADVERTISED.
Sept. 15	Cardiff—Asylum	£105	Borough Engineer, Town Hall, Cardiff.
„ 27	Willington Quay—Store	£10	Secretary, Industrial Society, Limited, Willington Quay.
„ 27	Ashford, Middlesex—Schools		E. Brooker, Ashford, Middlesex.
„ 30	Devizes—Hospital	£20, £10	O. Sheppard, Clerk to Joint Committee, Devizes.
„ 30	Musselburgh—Town Hall	£26 5s. and £15 15s.	Town Clerk, Council Offices, Musselburgh.
Oct. 30	South Shields—Municipal Buildings	£200, £100, £50	J. M. Hayton, Town Clerk, Court Buildings, South Shields.
Nov. 30	Swansea—Harbour Offices	£100, £50	T. Strick, Harbour Offices, Swansea.
No date.	Riviera—Villa for Sir William Ingram	£78 15s., £26 5s., £5 5s.	"Architectural Review."

THE BUILDERS' JOURNAL & ARCHITECTURAL RECORD

September 12, 1900. No. CCXCII.

Effingham House, Arundel Street, Strand, W.C.

An Architectural Causerie.

South Africa after the War: Architectural Prospects.

It is probable that every man in England who is dissatisfied with his progress and his prospects (and who is not?) has had the idea pass through his mind during recent times that he might do well to "keep his eye on South Africa." So deeply and widely has the mind of the British people been stirred by the events of the past year that it is inevitable that a degree of emigration fever should be found to exist, and that, it is to be feared, rather out of proportion to the degree to which circumstances warrant emigration. The writer does not pretend to such a knowledge of political economy as to offer an authoritative opinion on the question, but it seems a reasonable proposition that the venture of emigration may be found to be governed by similar laws to those which apply to other human speculations. Now, it is a common maxim for most speculations that you should buy when people are selling and sell when people are buying. Might it also be said that you should emigrate when people are not emigrating—and conversely? If there be anything in that, there is a good reason why anyone should *not* go to South Africa in the near future. Hundreds of all classes of the community have made up their minds to go, and hundreds who have already gone as volunteers and reservists have made up their minds, if possible, to stay. That there is a very considerable number of young architects who have a mind to try their fortune with the rest is testified to by the fact of the writer's having received by post every now and then during the past few months requests for his opinion on the prospects of the profession in the new colonies. Now that we seem to be within measurable distance of the end of the war (Christmas-time is spoken of as about the date when Johannesburg and Pretoria should begin to be re-peopled), would-be emigrants are doubtless thinking of the purchase of their travelling kits. Therefore a little note of warning may now be not untimely.

There is no doubt, then, that the end of the war will see a rush back to Johannesburg and Pretoria on the part not only of the former inhabitants, but also of many newcomers. Then may be expected renewed commercial activity all over South Africa, a rise in the markets, and even perhaps a bit of a boom. Building activity is sure to revive with the rest. But do not let architect-emigrants deceive themselves. There are already architects who have established some sort of connection in South Africa in numbers more than sufficient to do all the work likely to be required for a year or two at any rate. And in spite of all warnings the returning stream is sure to carry with it a certain considerable proportion of new architects. How are they all to obtain work? It must not be forgotten that the coming boom, be it a big one or a small one, is one in anticipation of which the good people of South Africa both built and planned for months before the crisis came—nay, for years. The bolder and more hopeful among them have been building since shortly after the last boom faded away three or four years ago. The more cautious have contented themselves with having plans made by their architects, and from these a large crop of new buildings may be expected to begin to grow as soon as Civil Law is resumed. It is not, therefore, the newcomer architects who will benefit first, but those who were already established when the war broke out.

It is a maxim that can hardly be too often reiterated, and one which, if taken to heart, would save much disappointment, that unless a man has positive assurance of certain specific work to be put into his hands when he gets there, he need not rush off in the expectation of easily picking up a practice. One knows what Johannesburg has been in the past (and Johannesburg is here taken as the type of the whole of South Africa), and what it was round about its "booms" one is confident in predicting it will be again. There will be hundreds of wild-cat schemes. There will be thousands of the off-scourings of the world's surplus population to take part in them. There will be reckless gambling on a scale to put Monte Carlo to the blush. There will be feverish excitement, and an inevitable "slump" later on, at a date impossible to predict. That is, if the expected "boom" comes. If it does not come soon, one can but imagine the bitterness of the disappointment and the disjointing of many long and carefully-prepared schemes. At any rate, with so many things making for a condition of unrest, it is only the man about whom something is already favourably known who will be entrusted with the spending of good money. Let the man who has no influence beware of throwing himself rashly into the vortex. Influence has always told just as surely in South Africa as at home—even more so, on account of the ordinary natural business caution on the part of men with money to spend, a caution that will be readily understood when the character of the population is taken into account.

But for those who will be content to begin as draughtsmen it should not be so hard to find employment. Competent assistance has always been difficult to get, and salaries have been high. But there is this to be said on the other hand, that the history of South African affairs has always been distinguished by intermittency. It has been a tale of "booms" and "slumps" ever since the goldfields were discovered. We may fairly hope for a more steady, if a more chastened, modicum of prosperity in the future, but still it seems unlikely that the element of *variety* (shall we say?) will be altogether eliminated. This may mean periods of wearing idleness for the unfortunate assistant. And it should be borne in mind that a South African depression affects the whole sub-continent at once. The assistant who finds himself "reduced" may not hope to obtain other employment, as at home, by trying in the next street, or in the next town, or even, for that matter, in the next colony. He must wait idle, or turn his hand to something else, "until the times do alter."



CHANDOS HOUSE, QUEEN ANNE STREET, LONDON, W. BY ROBERT ADAM.

Further, let me quote once again the well-known South African paradox. Nothing, says the paradox, is ever certain about South Africa except its absolute uncertainty. This is sometimes varied by saying that one should always expect the unexpected to happen there. Whichever you prefer, it amounts to as much as that no one can predict anything of the future of the country, be he inclined to try in a pessimistic or an optimistic vein. And the writer fully expects that whatever shred of argument this dictum leaves to the foregoing remarks will also be demolished by the obvious imputation to which he is laying himself open—that of interested motives. "He is a Johannesburg architect," will be said, "so of course he wants to discourage other architects from going out." The writer can but protest his innocence and his honesty. After all, he is only advising caution. Moreover, he does not flatter himself that he is able in the smallest degree to dam the tide, the inevitable rush to South Africa of soldiers, sailors, tinkers, tailors, apothecaries, plough-boys, thieves—and architects, that is bound to take place. His obscure "Don't" would be as little regarded as *Punch's* famous one has been in a more vital matter.

Then let those who have made up their minds to go by all means go. And those whose minds are in process of being made up in one direction or the other (to whom alone all this is addressed) may find an interesting article in the August number of the "Fortnightly Review," by Mr. H. A. Bryden, on the prospects of future settlers. Mr. Bryden appears to be none too hopeful, though he does not conceal the fact that the country has many advantages. But he points out that the country requires a long period of steady development before much can be expected of it. The gold industry he considers to be a factor of which too much account can easily be taken, as the mines are bound to be worked out some day, and the other resources of the country are as yet for the most part untried. Well, of course, he may say that of the mines. It is a vague statement, and the same might have been said at any time during the past two centuries of the coal industry in Britain, and, indeed, possibly was said. Mining experts are by no means agreed as to the probable life of the South African gold-fields, so we may pass that part of Mr. Bryden's paper. The mines are likely to last our time at any rate. The one part of his paper which seems of most value to possible settlers is that which contains the suggestion of a hint as to where they may look for an immediate index to the future prosperity of South Africa. He very justly points out that it is a new agricultural population which is wanted, to keep in check and to leaven the unprogressive Boer population, and so to establish a permanent progressive population with a real stake in the country. In short, it is the best class of *settlers* that is wanted, not birds of passage, as so many of the former inhabitants might be styled. Now, the one thing most of all required for farming in South Africa, as elsewhere, is a good water supply; and this, also as elsewhere, but especially in South Africa, cannot be got without considerable outlay of capital for the construction of pumps and storage-dams. It is unlikely that many men of the class to make good agricultural settlers will have command of the requisite capital. Where is the money to come from? Mr. Bryden throws the onus of finding it on the broad shoulders of the Government. Therefore his index to what may be expected to happen is conveyed by this question—What will the Government do to assist settlers? The question is very pertinent, and its answer should be looked for before making up one's mind whether or not to emigrate. It should be looked for by farmers, but equally by people of "all trades." And equally by architects.

J. B.

On Reflection.

The Intercepting Trap.

We print on another page of this issue some Canadian comments upon the use of the intercepting trap in schemes of house drainage. Our readers will probably be astonished, not so much at the diversity of opinion, as at the backward state of sanitation in our great colony which these reports appear to indicate. True, our sanitarians have not yet discovered the best method of ventilating sewers, for indeed ventilation, whether of rooms or sewers, appears to be the most difficult subject with which the modern engineer has to deal; yet we thought by this time it was a generally accepted principle that the house-drainage system should, as far as possible, be separated from the main sewerage scheme. But apparently the Canadian system in the past has been to ventilate the main sewers by means of "breathers" or gratings at ground level in the front gardens, and it is hardly surprising, therefore, that our Canadian confrères are desirous of altering a condition of things that is both dangerous and unpleasant. At the same time to make the soil pipe the means of venting the sewer air does not by any means lessen the danger, for only the water seals of the water-closets and gulleys prevent the ingress of sewer air into and round about the house. If, as several of the writers point out, the tops of the soil pipes are frequently choked by frost, any pressure of the sewer gas will force the water seals and enter the house. This new evil would probably be worse than the original trouble. If the sewers are to be ventilated, they must be ventilated below the disconnecting trap, so that no possible danger of sewer gas forcing its way into the house system may be apprehended.

Architectural Rhetoric.

In these days we have all around us men who are rightly dissatisfied with modern architecture, and if an analysis is made it will be found that they are divided into two classes. The men in the one class talk and work; the others talk only. Now, however much good may have been accomplished through the zeal of extremists—and in some cases an enormous benefit has been conferred by these men—it must ever remain true that it is those who occupy the mean or middle position to whom we must look for substantial improvements, just as the character of the middle class of a nation may be taken as the barometer of the nation itself. In the matter of architecture especially we have clever exponents of what constitutes art in building, of the rules affecting æsthetics, of the sublimity displayed by the early builders, and of the base monstrosities of the modern architect. These exponents love to idealise, and this is where one finds fault with them: the result is that their teaching, excellent as it may be in essence, is thrown to the winds, as those to whom it is especially addressed at once seize upon its idealism, find it wanting when put to the practical test, and so dismiss the whole as mere rubbish. Congresses of all kinds are happy fields for the rhetorician: there he can air his theories to fellow spirits, though the resultant effect on the misdoers against whom these speeches are directed is remarkably meagre. To the real Englishman there is nothing like roast beef, there is nothing like common sense. It is of no use for an orator to stand on platforms—whether self-elevated or not—and tell the people in the pit below that they ought not to stay there, but should come up to his level, because the people look at the distance and either lose heart or fail to appreciate his superiority. To do any real good the orator must come down a long way and give his hearers a hand up. To apply this to building, take the case of the jerry builder. It is useless to discourse to him on art, on the necessity for a house to be expressive of its purpose, on the relation of solid and void: if you do this he will class you as unpractical, and practicality is one of his strong traits. No, tell him all those things when he has discarded his old methods, but first convince him with actual fact that his house will be much better without those terra-cotta dressings, without that senseless carving, without that tawdry ornament; and that by putting the money thus saved into better bricks, better carpentry and better mortar he will be benefiting himself, besides those who will live in his house (though this will not trouble him much). The same idea is applicable to the more important "architect": he wants educating without doubt, but let him have spoonsful of your architectural medicine at a time; if you want him to swallow a whole bottleful at once the chances are that he won't take any, and you will alienate him still further from the true principles of his art.

A Medley of Materials.

Every architect naturally tries, when he has the opportunity, to introduce some novelty into his building, and in attempting this he has been very prolific in the employment of various kinds of building materials for his exterior. Sometimes it is red brick with yellow courses, very often red brick and terra-cotta, then wood and plaster, stone and brick, &c. But it is the mixture of stone and granite with which we wish particularly to deal now. These materials are being constantly used at present in towns and cities for such buildings as banks and hotels, and in nine cases out of ten the result is most inharmonious. Granite is an excellent building material, and so is stone, but they should not be mixed haphazard. In the buildings referred to it is a very common practice to insert granite columns and pilasters at the sides of doors or windows, the rest of the structure being carried out in some light-coloured stone: the effect is most unpleasing when the building is new, and even after considerable weathering and toning down is still discordant. It would be a great improvement if buildings were more often erected of one material throughout, and even if this practice were carried to excess (which, however, is most improbable) the monotony would be less objectionable than the restless and incongruous effect caused by the miscellaneous use of various building materials, of which examples are to be found throughout the kingdom.

A Foolish Custom.

A most foolish custom is still kept up at Freiburg, in the south-west of Germany, on the birthday of the reigning Grand Duke of Baden. The tower of the minster at Freiburg is 400ft. high, and the custom is for steeplejacks to climb to the top. In the ascent the men have to leap from stone to stone, and as the space between these is considerable in some cases, it will be seen what an idiotic practice this is: one miss and the man would be dashed to the ground. When the top is reached a pistol is fired and then the descent is made, each man receiving five shillings from the State and getting a good dinner. Three men went up the tower the other day, and one of them performed acrobatic feats on an iron bar fixed about half-way up. Steeplejacks' work is never to be played with in this manner. In the ordinary course it is dangerous enough, and one wonders that not more accidents occur; but to deliberately make ascents like that mentioned above is foolhardy in the extreme. Because the custom is an old one there is no reason to continue it; that men have been fools is sufficient fact in itself—to copy them is greater folly.



THE PAVILIONS OF THE POWERS SEEN FROM BEYOND THE PONT DE L'ALMA. DRAWN BY F. HAMILTON JACKSON, R.B.A.

THE PARIS EXHIBITION.

By F. HAMILTON JACKSON.

III.—THE PAVILIONS OF THE POWERS AND THE COLONIES.

(*Continued from page* 75, No. CCXC.)

THE pavilions of the Powers form one of the great attractions of the Exhibition, and are picturesquely grouped in two parts of the grounds. First, in the Rue des Nations, which stretches along the side of the Seine, between the Pont des Invalides and the Pont de l'Alma, over the ground which used to be the Quai d'Orséy; and below the Trocadéro, above the Pont de Jéna, while a few are on the other side, near to the Eiffel Tower. The second section consists principally of pavilions of Colonies of different nations, and is quite as interesting and picturesque as the first. On the side of the Rue des Nations towards the Seine, starting from the Pont des Invalides, one passes first the pavilion of Italy, then those of Turkey, the United States, Austria, Bosnia, Hungary and Great Britain; then comes a space, on the other side of which rises the pavilion of Belgium, followed by Norway, Germany, Spain, Monaco, Sweden, Greece and Servia. Returning on the other side, the pavilion of Roumania comes first, followed by Bulgaria, Finland, Luxembourg, Persia, Peru and Portugal, while Denmark finishes the list. The various and incongruous buildings group with great picturesqueness from the other side of the river, and while some of them appear to be as strange as their designers could make them, others are composed of portions of historical buildings either reproduced by means of casting or reduced proportionately so as to fit together into a more or less homogeneous whole. The pavilion of Italy is externally, perhaps, the most imposing of all. The design is a sort of mixture of the Ducal Palace and St. Mark's, Venice, with well-defined levels, a gilded central dome crowned by an eagle with outspread wings, and smaller domes at the angles. Large windows with elaborate geometrical tracery are placed in the centre of each façade and light the interior well, which consists of one great hall in which are displayed examples of Italian manufacture. The walls, both internally and externally, are lavishly decorated with painting and gilding. The Turkish pavilion is in general effect white with decorations of tiles. It has one large dome and several small ones, a great tower at one angle and picturesque projections and recessions in the upper storeys. A large porch with pointed arch and voussoirs of coloured bricks gives character to the façade, and the domes are covered with aluminium, apparently. Details have been taken from many buildings at Constantinople and the celebrated mosque at Broussa, from the old Seraglio and the Seraskierat, from the Grand Bazaar, the fountain of Sultan Ahmed and several mosques. The American pavilion consists mainly of a great dome of not very pleasant proportion, on the summit of which a gilded eagle spreads its wings, and a porch in advance, after the manner of a triumphal arch, above which is a group of "Liberty upon the car of progress." Four galloping horses are guided by two children symbolising intellectual and physical progress, and in the chariot stands a young woman, no doubt the American young woman entirely emancipated. Between the columns below is an equestrian statue of Washington, a replica of the bronze offered to France by the women of America. Some paintings on the façade are quite as bad as the worst of the French paintings, and very much like them. Other paintings are within in the cupola. The Austrian pavilion is of ordinary Renaissance design, something like a Pall Mall club, but not quite so good, and does not call for remark. The next is that of Bosnia, with a cheerful blue and white impression, relieving itself against the grey of the Austrian building, and still more brightly against the dark Hungarian tower on the other side. It has a strong tower (recalling the times when the dwellings of the nobles were little fortresses), balconies made at Serajevo, and a loggia. Within are paintings by Mucha representing the history of Bosnia from Roman times, which have been highly praised. Next comes one of the most imposing pavilions, that of Hungary, picturesque in outline, sombre in colour, and made up of reproductions of portions of historical buildings most ingeniously fitted together to form one whole. The picturesque tower which dominates the composition is that of the citadel of Comorn, twice taken by the Turks, and retaken in 1597 by the Imperialists. Beneath it is a pointed arched passage, and from the angle a Virgin and Child look towards the river. This tower is attached to a fragment of the castle of Vajd Hunyad in Transylvania, which forms the façade towards the Seine. It is Gothic in style, and has three projecting octagonal turrets with peaked roofs, which form a striking whole with the great tower. The western façade consists of a reproduction of the choir of the Gothic church of S. Michael of Coutorhohely and the façade of a rococo house at Eperies. The side facing the Rue des Nations is a reproduction of the great gateway of the abbey of Yak, with a storey above—a very fine Romanesque work. Other portions have been taken from this abbey to form the interior court, while rooms have been copied from other historic Hungarian buildings, and a most interesting exhibition of historical and other objects of Hungarian art workmanship fills the glass cases in them. Next comes the pavilion of Great Britain, rather dwarfed by the Hungarian at one side with its great tower and the immense Belgian pavilion on the other. Its object has not been to impose, but to give an impression of what an English home, "a haunt of ancient peace," is like. The façade towards the river is a reproduction of that of Kingston House, Bradford-on-Avon, and the rest of the building is designed in the same manner, that of the seventeenth century, known as Jacobean. The long gallery within is adapted from that at Knole, and the plaster ceiling of the dining-room is copied from that of the Reindeer Inn, Banbury. In the entrance-hall are some fine tapestries made from Burne Jones's designs, by whom also are several pictures in the saloon, including the "Laus Veneris." The other rooms and the staircase are hung with very fine English pictures by Reynolds, Romney, Gainsborough, Turner and others, and Lord Cheylesmore's mezzotints decorate the corridor. The rooms have been furnished so as to serve as a residence for the Prince of Wales in case he should visit the Exhibition, and the furniture has been made by various well-known firms. In one of the bedrooms are some embroideries and other objects which were shown at the last Arts and Crafts Exhibition. The Belgian pavilion, which faces the English at the other side of an open space, is a reproduction of the famous town hall at Oudenarde, one of the most elaborate and fanciful of later Gothic edifices, an example of what has been called lacework in stone, in which the art of the carver and the exuberance of his imagination have almost passed the bounds of what is admirable, replacing the restraint and simplicity which should characterise all great art with assertiveness of craftsmanship and some confusion of detail. The central tower is crowned with a pierced and crocketed belfry, which contains a carillon and terminates in a crown, upon which a figure stands holding the banner of Flanders. The rooms within are decorated with carved woodwork and tapestries, and in some of them are views of Belgian towns painted upon the walls, while one has been fitted up as a reading and writing room for the Belgian pressmen. On the first floor is a reproduction of the famous coloured chimney-piece, while the walls are painted. Next comes the pavilion of Norway, a wooden erection painted red, with white woodwork round the windows and very sharp pinnacle roofs to the roof-turrets, which rise from green-tiled bases, a colour which appears again in the ground of the quaint decoration of fishes. Within is an exhibition of fishing implements and drawings of various fisheries, with a reduction of Nansen's *The Fram* and the implements used by him and his companions, and other objects and models. Again a small space, through which one may see the picturesque tower of the pavilion of Finland, and the lofty German pavilion attracts one's eye. The tower of this pavilion is crowned with a spire, the weathercock of which rises higher than the top of that of any other

nation. The architecture is a sort of *résumé* of German architecture of the Renaissance, details from different towns and periods being combined, in some parts with excellent effect. The walls are white in general tone, decorated with many paintings of symbolic and poetic subjects, such as Fire, Air, Water and Earth, Siegfried and other subjects from the Nibelungen Lied which symbolise the various elements. On several of the façades are ingeniously designed oriels of several storeys, and the entrances are arranged beneath wide arches, while large windows light the staircase and principal rooms. The hall which contains the staircase is spacious and lofty, and the pattern on the walls is very good, though a little over stiff for a repeating pattern, and the same may be said of some of the other rooms. The friezes and ceilings also are well intentioned, but the spirit of English design has not been caught, though evidently aimed at—only the mannerism. The paintings are not successes, though the work of celebrated German artists; they represent "Man's Fate," his life from birth to death and Resurrection, and the passions and plagues which are the bane of man, Avarice, Hatred, Envy, War, &c. On the first floor four rooms are decorated in the rococo style of the Palace at Potsdam, and the first is a reproduction of the Library of Frederick the Second. There are six pictures by Watteau lent by the Kaiser in these rooms, which are much admired, and a number of stained-glass windows are inserted in various rooms, which show a want of understanding of the material and how to use it. The Spanish pavilion is in the Plateresque style, that charming form of Renaissance design which developed itself in Spain, with rich framings of columns and arabesques around doors and windows, and a pretty courtyard with a two-storeyed arcade, beneath which the staircase mounts to the first floor. A square tower pierced by broad arches stands in advance towards the river and is crowned with a graceful pierced parapet. Within is a splendid collection of tapestries, armour and objects of historic art selected by the Spanish Queen herself from the treasures of the royal palaces. These magnificent tapestries are only taken out twice a year in Spain, when they are hung in the galleries of the royal palace at Madrid. The pavilion of Monaco is an imposing building consisting of a lofty crenellated tower attached to an Italian palace, which is ornamented with frescoes of the labours of Hercules, in reference to its ancient name, Portus Herculis. The tower is a reproduction of the ancient piratical nest from which the Grimaldis used to sally forth to prey upon Mediterranean commerce, and is surrounded with an elegant pillared loggia on the first floor. The pavilion now houses the scientific collections of the Prince, who has devoted himself specially to investigating the life of the ocean depths, and the productions of the Riviera. The strange Swedish pavilion comes next, a wooden construction covered with shingles highly varnished, without any architectural feature except the central tower, which itself is a curious mixture of complete and incomplete effect, and with spider-like galleries and webs of hanging pennons. This pavilion is certainly the most *outré* of the constructions in this part of the grounds. The pavilion of Greece comes next. It consists of a central cupola of slight curve, with four towers filling the angles of a Greek cross formed by low-pitched naves, the whole lighted by groups of narrow windows, and with a long colonnaded portico on each side, while towards the Seine is another of semi-circular form, the whole composition rising to the central lantern in a very effective manner. The pavilion of Servia, which is close to the Pont de l'Alma, is of somewhat the same plan, but the central lantern is higher and there is a portico of double columns along the principal façade, while the effect is at the same time more pretentious and more barbaric. Returning on our steps, on the other side of the way are the pavilions of Roumania and Bulgaria, neither of which are very interesting, though the latter has some exceedingly strange decorations, both as to form and colour, and in the former are some most interesting objects of ecclesiastical art and antique jewellery. Next comes the pavilion of Finland, which is perhaps the most original of all, and has several very good features about it. It is a long hall, with an apsidal end and two large tunnel-like doorways, one in each side, within a gable. The roof overhangs, and the hall is lighted by skylights and a row of low windows under the eaves. Between the great doors rises a tower of very quaint shape, which is terminated by a spire bearing a circular diadem half way up it, a motive which is repeated on flèches which pierce the roof above each pillar dividing the windows and at the extremities of the ridge. Bears and huge pine cones form the external ornamentation, with rude rosettes, and the coloration assists the aspect of savageness and strangeness. After this come the pavilion of Luxembourg, a reproduction of part of the ancient town hall, now the grand ducal palace; that of Persia, which contains on the second floor a reproduction of the Palace of Ispahan; those of Peru, of Portugal, and, finally, of Denmark. This last gives the impression of a citizen's house of the seventeenth century—a half-timbered house with larger triangular pieces inserted, upon which are carved rosettes and other ornaments. It has ranges of windows or open galleries, which give character, and each storey projects the width of the two beams, upon which are carved such ornament as one sees at Hildesheim in a similar position. The door is stained green and approached by steps, being recessed beneath a balcony, with picturesque effect.

(*To be concluded.*)

OLD BUILDINGS AROUND WIGAN.

THE pen drawings by Mr. Frederick J. Barnish printed on this page and the three that follow illustrate the style of building in the older districts around Wigan. Timber and stone are the materials chiefly used; but the stone buildings are generally of a somewhat later date. Bamfurlong Hall may be taken as a good example of local timber work. The date, 1577, together with the initials I A, may be found on the sill piece above the stone bay.

The smaller manor- and farmhouses mostly date from the seventeenth century, and the same traditions seem to have been preserved. The walls are of small roughly-squared local stone of a yellow-grey colour, which weathers to a brown-green in the roofs; these latter are formed of slabs laid in diminishing courses. The curious, though not altogether useless, custom of whitewashing the window reveals and mullions tends to give additional character externally, while brightening the long low rooms within. The pierced ventilator illustrated is of local squared stone from the Appley Bridge, Billinge or Parbold quarries.



DRAWN BY FREDERICK J. BARNISH

THE TRADES UNION CONGRESS.

THE thirty-third Trades Union Congress opened in the Town Hall, Huddersfield, last Monday week. There were about a million and a quarter trades unionists represented by 388 delegates from 140 trades and labour organisations.

The Chairman, Mr. F. Chandler, said there never was a time when the hearty co-operation of all workers was more required than to-day, not only if they wished to secure a reasonable proportion of the reforms which the Congress advocated, but to preserve those rights and privileges which for years they believed they enjoyed, but which were in danger of being whittled away by recent decisions in the courts.—The Mayor of Huddersfield (Alderman Hellawell), on behalf of the Corporation, gave the Congress a cordial welcome to the borough. —Sir James Woodhouse, M.P., associated himself with the hearty welcome which had been extended to the delegates by the Mayor. No good would arise from the impatient denunciation of those who did not at once agree with their opinions. Mere denunciation of capital and capitalists could not lead to any good. After all, the greatest victory which workers could achieve was to raise the character of their organisations. Above all things he would urge the delegates to encourage temperance, because intemperance was still the greatest curse and the bitterest enemy of the British workman.

Mr. William Pickles (House and Ship Painters and Decorators), chairman of the Huddersfield

Trades Council, was then unanimously elected president of the Congress. The following were elected as the Standing Orders Committee :—Messrs. A. H. Gill (Bolton), J. Haslam (Miners' Federation), C. Fenwick, M.P. (Northumberland Miners), J. R. Clynes (Oldham) and J. Jenkins (Cardiff).

Mr. Woods presented the Parliamentary Committee's report, which was taken as read. In it the Committee stated that to anyone who



AN OLD FARM NEAR WIGAN. DRAWN BY FREDERICK J. BARNISH.

had carefully observed the proceedings of several of the congresses it must be apparent that some alteration in the standing orders was necessary.

At the resumed meeting on Tuesday the chair was taken by Mr. William Pickles.

The President, in his address, said ten years ago the problem was, "How best to determine the rights and duties of the working classes in the existing social order?"; but one would think, judging from the resolutions agreed to at the last two or three congresses, that trade unions had gravely decided that the existing social order was not worthy of such adjustment, for they had pledged themselves to a programme which, if carried into effect, would entirely sweep away the present capitalistic basis of society and substitute for it a collectivist basis. That was a very serious step, which brought them into antagonism with the teaching of such men as Herbert Spencer and many of the modern disciples of Charles Darwin. He then entered into a lengthy argument, frequently quoting extracts from Darwin and Lubbock, as to the struggle for existence in animal and vegetable life and also primitive man. They must not delude themselves into the belief that there was not a kindred struggle taking place in human society. Survival of the fittest did not necessarily mean survival of the best; it meant that those creatures which could best adapt themselves to their surroundings would be the survivors. He thought he was justified in saying that in all forms of social evolution the economic factor was the dominant one, and that it was the factor which conditioned the struggle for existence and thus determined which should be the fittest to survive. The most noticeable aspect of present-day industry on the capitalist side was the tendency towards the joint-stock principle. The capitalist had learnt that, however beneficial competition was for the community, it was bad for himself, so instead of competing with his fellow-capitalist he joined hands with him, and together they could economise both in number of factories, in the amount of machinery, and also in the number of workers required; in other words, they could decrease the cost of production, and by eliminating competition could force up selling prices, thus gaining a power over the community which was greater than their class ever possessed in the past. The most noticeable feature on the workers' side was co-operation and specialisation in production, and, through the extensive use of machinery, a greater dependence upon the machine owner for the means of livelihood. The greed of the capitalist was unbounded, and would ultimately prove to be the undoing of the system against which the workmen were grumbling. This kind of monopoly must needs become intolerable, and the community must in self-defence adopt the simplest remedy, which was collectivism. The capitalist had socialised production and the people would socialise ownership and distribution. The rapid development of municipal enterprise was a further evidence of progress towards collectivism.

The third session was held on Wednesday in the Town Hall, Huddersfield, under the presidency of Mr. W. Pickles.

The standing orders having been suspended, the delegates from the American Federation of Labour were given an opportunity of addressing the Congress.

Mr. S. J. Kent said he believed that the interests of the man in America toiling for his livelihood and the interests of the worker in Great Britain were identical. The future of the United States, in his opinion, depended much more upon securing comfortable homes for their people than upon the maintenance of a large standing army.—Mr. John M. Hunter described the progress of the trade union movement in the West, where they had been so successful that nearly all the workers were organised. This had been brought about by their refusing to buy any article that was not manufactured by a trades unionist. The miners were the only men in America who had an eight-hours day all over the country, and that boon had been obtained solely through the action of the trade organisations.

The standing orders having been suspended, the delegates from the Co-operative Union, Limited—Mr. Vivian (London) and Mr. Booth (Huddersfield)—were allowed to address the Congress, and a vote of thanks to them was afterwards passed. The discussion on the amendment of the standing orders was then resumed, and a long discussion took place on a proposal to give the Parliamentary Committee power to rearrange and place on the programme of the Congress only such propositions as were generally acceptable as coming within the objects and aims of trades unionism. Eventually the amendment was agreed to.

At the meeting on Thursday, the following resolution was agreed to: "That, in the opinion of this Congress no scheme dealing with old-age pensions will be satisfactory to the whole of the workers in this country which seeks to subsidise existing pension societies or which connects pensions with any institution that will mark them with the stigma of pauperism, that the only legislation that will solve the problem presented by age and poverty in modern industrial life is that which recognises the pension as a civic right, which may be claimed by any citizen on reaching a given age, and instructs the Parliamentary Committee to take such steps to make this question of such prominence as to become one of the most pressing subjects at the next general election."

The following resolution was passed: "That, in the opinion of this Congress, it is desirable that many amendments to the clauses of the Workmen's Compensation Act, 1897, should be made, and that the principle of the Act should be extended so as to include all accidents in all trades and occupations both on land and sea, and that the Parliamentary Committee are hereby instructed to prepare legislation in order to give effect to the above resolution."

A resolution moved by Mr. Ben Tillett urging the Government to pass a compulsory Conciliation Arbitration Act and the appointment of a judge and court with authority to enforce awards by fines and imprisonment of persons refusing to accept the award of such court was negatived.

At the meeting on Friday, Swansea was chosen for the meeting of the Congress next year.

Messrs. John Weir (Dunfermline Miners) and Pete Curran (London Gasworkers) were chosen as the British delegates to attend the Convention of the American Federation of Labour, to be held at Louisville, Kentucky, later in the year. The following joint resolution was agreed upon :—"That this Congress is of opinion that one of the difficulties in dealing with the housing problem is the pressing need for a better and cheaper service of workmen's trains on all railways, so as to enable all classes of workpeople to travel cheaply and quickly between their homes and their places of employment; and this Congress instructs the Parliamentary Committee to do all in its power to support the Bill prepared by the National Association for the Extension of Workmen's Trains, which has been introduced into the House of Commons by Mr. S. Woods, which Bill makes provision for the issue of cheap return tickets to all classes of workpeople, by all trains up to eight o'clock in the morning, at the following fares :—Twelve miles, return fare, 2d.; 16 miles, 3d.; 20 miles, 4d. The tickets to be available for the return journey by any train carrying third-class passengers; and that all trades unionists support only those candidates who are favourable to the above reforms."

On the motion of Mr. T. Smith (Barking) the Congress passed a resolution that the time had arrived when the hours of labour should be limited to eight per day in all trades and occupations in the United Kingdom, and calling upon trades unionists to make this one of the test questions at all parliamentary and municipal elections.

A consolidated resolution in regard to the housing of the working classes, calling upon the Government to introduce legislation making provision for dealing with the owners of unhealthy houses, extending the time for the



BEBINGTON CHURCH, CHESHIRE. DRAWN BY FREDERICK J. BARNISH.

repayment of loans to 100 years, and instituting fair-rent courts, was carried.

At the concluding meeting on Saturday a resolution was passed for reaffirming the conviction of the Congress that the raising of the age standard was one of the necessary reforms in the interests of the whole community. A resolution was also agreed to "That this Congress views with alarm the changes recently

made by the Government in the education system, and emphasises the importance to the working classes of the right hitherto enjoyed by them of being enabled to educate their children in the higher grade schools up to seventeen and eighteen years of age, the limits still allowed to Scotch children, and resolves that the Government be strongly urged to withdraw the order limiting the age to fifteen years, so as to allow equal educational opportunities for English and Welsh children to those enjoyed by Scotch."

THE INTERCEPTING TRAP.

EXPERTS' OPINIONS ON ITS EFFICIENCY.

OUR contemporary "The Canadian Architect and Builder" has been collecting the opinions of a number of well-known Canadian architects, engineers, plumbers and physicians on the efficiency of the intercepting trap as a means of preventing the entrance of sewer gas into the house-drainage system; and we take the liberty of giving below a *résumé* of these opinions. Messrs. Burke and Horwood (Toronto) say:—"The entire absence of a trap in house drains advocated the abolition of main traps on house sewers, and I succeeded in inducing the town of Brockville to adopt my recommendation. The system has now been in operation for twelve years, and has proven entirely satisfactory. The sewer system is well ventilated by means of the house sewers, notwithstanding the fact that the manholes are completely closed over by ice and snow during the winter months. The so-called sewer gas should not be produced in a properly constructed and properly ventilated sewerage system, and the foul smells so offensive in many of the cities are unknown in Brockville, Brantford and other places where the separate system has been adopted and main traps on house drains omitted."

Mr. C. H. Rust (city engineer of Toronto) says:—"I am of opinion that it would be necessary to have all of the pipe inside the street line of iron and laid very carefully under rigid inspection. Under these conditions a portion of the sewer gas would probably find its way out through the ventilating pipe at the top of the houses, but the greater portion would probably still follow the lines of least resistance and pass in or out of the manhole gratings in the centre of the street. As, however, the private drains of this city are practically all laid and are very numerous, it is not practicable to make the



BAMFURLONG HALL, FROM THE MOAT. DRAWN BY FREDERICK J. BARNISH.

is the ideal system. There are two difficulties in the way, however. The first is that the great majority of drain connections are now trapped; the second is that houses vary very much in height, so much so that the top of the soil pipe in one house might be below the level of the upper storey windows in the adjoining house. This would be a source of danger in the case of the wind blowing towards the higher house, and the danger would be especially great if but few houses were trapless, as the bulk of the sewer air would then pass through the drains and soil pipes of these houses, concentrating the sewer air in that certain locality. If legislation could be obtained to abolish all traps and make the tops of all soil pipes extend above any window or future window, the scheme might be feasible. Of course it would be very unsightly to have a tall outlet upon the roof of a low house, and we doubt if such a thing could be carried out."

Mr. Willis Chapman (Toronto) says:—"In a properly designed sewerage system main traps are not necessary. The so-called breathers are in my opinion a menace to the health of the citizens. The only practical method of properly ventilating street sewers is through the house soil pipes, each of which should have a free opening from the main sewer to a point above the roofs of the buildings. In 1888 I change at this date, especially as the sentiments of the people would probably be against having a direct ventilation of the sewer through their houses, no matter how well it may be done and no matter how safe it may actually be."

Mr. M. B. Aylesworth (Toronto) says:—"I am glad to express my opinion as to the advisability of omitting the trap from private drains at connection with street sewers. On all work done in accordance with modern usage that trap, with its hideous "breather," is not only useless to the house plumbing, but an evil to the street sewer, in retaining gases which would harmlessly escape through the thousands of soil pipes if permitted."

Mr. W. H. Meadows (plumbing inspector, Toronto), says:—"Allowing that some of the traps have become unsealed and soil pipe terminus becomes choked from hoar frost, sewer air must enter the house, as it cannot escape otherwise. Then, again, when buildings are of uneven height, one soil pipe of a low building may be discharging sewer air under a window of a tall building, and it would be useless to run long lengths of pipe above the roof, as they would close up with hoar frost. These and many other reasons might be called disadvantages, and the one or two in its favour called advantages—should they be placed in the scales the omission of main trap would not be in it. Some people claim that the main trap becomes foul; this should not be if the trap is made and set properly, for there is the same amount of (and sometimes more) water to keep it clean than keeps the drain clean. All things considered, I think it very bad policy under the circumstances to omit the main trap."

Mr. J. Rawson Gardiner (Montreal) says:—"If all soil pipes of a town run through the roof and have all their joints secure the trap can be dispensed with and thereby procure ventilation of the sewers over the housetops and also save the cost of the trap. There is also no doubt that the simpler the drainage system is made the better and more efficient it is and less chance of syphonage, provided that it is sanitary. In the event of the trap being done away with I would suggest that all drainage be placed under a compulsory pressure test, as neither the smoke nor peppermint test is altogether satisfactory, in my opinion."

Mr. Andrew T. Taylor (Montreal) says:—"I have always insisted very strongly on the necessity of an intercepting trap between the house and the main sewer and then thoroughly aërating the house system by fresh air inlets and the house soil pipe, carried the full diameter up to 3ft. or 4ft. above the top of roof. If the main drainage system were properly and sufficiently ventilated there would not be so much need of the intercepting trap, but I know of no system which does this perfectly."

Mr. J. W. Hughes (Montreal) says:—"The advocates of the intercepting trap do not deny the necessity of sewer ventilation, but they attempt to provide for it in detail instead of as a whole, and so defeat the object they wish to attain. Conditions exist in northern climates during that portion of the year when snow is on the ground that completely neutralise the effect of the perforated manhole covers over the street sewers, and during such time, in cities where the intercepting trap is in general use, the main sewers are without ventilation, and a serious condition of affairs exists, as the buildings being heated to a greater degree than the outer air has a cupping action, and draws the air from the sewers into them, beneath the frozen and almost impervious top soil and paved roadways where the soil is porous. This is sure to occur, even when the buildings are situated a considerable distance away from the main sewers. Sewers breathe! Under certain conditions the air will rush into them; again it is being expelled with considerable force. Atmospheric conditions partly account for this, but the varying quantities of solid and liquid matter constantly entering and leaving them has an important bearing on the question. Any attempt to bottle up the sewer air will end in failure; such being the case, proper breathing places must be provided, and what place so suitable as above the roofs of the buildings, where the wind will disperse the foul gases and the light and air disinfect them?"

Professional Practice.

Huddersfield.—The "Commemoration" Stone of the new temperance hall in Princess Street, to take the place of the Victoria Hall in Buxton Road, was laid last week. The building is arranged for club premises in the basement, with an entrance from Princess Street, and contains large billiard-room for four tables, reading-room, caretaker's room, lavatories and meeting rooms. On the ground floor, with entrances from Princess Street and Page Street, there is a hall 41ft. 8in. by 72ft. 6in., with raised platform and orchestra, two committee rooms, lavatories and corridors. On the first floor (which is provided with staircases from the front corridor and Page Street entrances) the gallery is arranged on each side and back end. Secretary's rooms are provided on each side of the orchestra, and a meeting room, 32ft. 9in. by 24ft. 9in., with a suite of lavatories, are arranged to the front. The building will be heated throughout with hot water. The hall has seating accommodation for 686 persons. The following contractors are entrusted with the work, viz.:—Messrs. John Radcliffe and Sons, masons' work; Messrs. Wood Bros., joiners' work; Messrs. Milnes and



PIERCED VENTILATOR IN A FARM GABLE AT APPLEY BRIDGE.

Garside, plumbers' work; Mr. T. B. Tunnacliffe, slaters' work; Mr. W. E. Jowitt, plasterers' work; Mr. Allen Jackson, painters' work; Messrs. Henry Brook and Co., Limited, iron-founders' work; Mr. John Cooke, concreters' work; and Messrs. Tomlinson and Milan, Limited, hot-water engineers' work. The work is being carried out from plans prepared by Mr. Ben Stocks, architect, St. Peter's Street, Huddersfield. The cost is estimated at about £5,000.

Llangarren.—The parish church has lately been reseated and restored. The old-fashioned high-backed seats have given place to modern pews; a boarded floor has been superseded by a new block flooring; and a vestry, made from some of the old wood of the church and screened off with iron rods attached, is situated in the north aisle. The former chancel tiles have been removed, and new ones (the gift of the architect, Mr. Seddon, of London) substituted. The chancel seats have been made out of the old oak by the contractor, Mr. Robert Clarke, Commercial Road, Hereford, who has also re-made the old-fashioned Jacobean pulpit. The font has been removed from the centre of the church to near the door, and two stoves, which looked unseemly in their original positions, have been placed one at each end of the sacred structure. The roof, moreover, has been cleaned, and snow-boards have been provided. These alterations have been carried out at a cost of between £400 and £500.

Mellor.—A stained-glass window has been added to the Wesleyan Church at Mellor. The window measures 16ft. by 10ft. The figures were designed by the late Sir Edward Burne-Jones and the work executed by the firm of the late William Morris. In the centre of the window is the figure of Christ, with the cross and chalice, representing love and self-sacrifice; on either side of this representation are figures of SS. Matthew, Mark, Luke and John, with the traditional emblems above them. In their hands are scrolls bearing selections from their respective writings. In the central part of the tracery above the lights is the figure of our Lord in judgment, whilst in the minor openings of this same part of the window are adoring angels, &c. The window has been executed under the superintendence of Mr. Dearle, of the Morris Company. A new chancel has also been erected, containing a new Communion table of solid oak by Messrs. Harry Hems and Sons, of Exeter. A pulpit of alabaster and carved oak and choir stalls have also been erected. A new organ is to be erected at a cost of £600, and the work has been placed in the hands of Messrs. Willis, of London.

Perth.—Some time ago a scheme was set on foot by the Police Commission for the erection of a number of blocks for housing the working classes, and a piece of ground at the corner of the Old High Street and Milne Street was secured for the erection of houses for working men. Plans were prepared by the burgh surveyor, and two blocks were proceeded with. The building, which is now nearing completion, comprises twenty houses in each of the two blocks. The structure is plain, but substantial, the front elevation being built of red sandstone from Corncaple Quarry, Dumfriesshire. Each block is three storeys high. There are three classes of houses, ranging in rental from £8 10s. to £5, and, notwithstanding this low figure, they have every modern convenience. Each of the houses have two apartments—a kitchen and a parlour. In the higher-rented class the kitchen is 14ft. in length, exclusive of a bed recess 9ft. square. The height of the room is 9ft. 10in., and the length about 13ft. There are tiled fireplaces in the rooms, while the kitchens are fitted up with ranges with self-heating ovens. The only difference between the £8 10s. and the £7 10s. houses is that there are no fireplaces in the rooms of the latter. All the houses, of course, will be supplied with gas and water. There is wash-house accommodation, two tubs and a large boiler being connected with each wash-house. The whole of the open court, which is of considerable dimensions, is concreted. In all probability the dwellings will be ready for occupation in the course of a few weeks. There are still another two blocks to be erected. The following were the contractors:—Mason work, Mr. Michael Kerrigan; joiner work, Mr. D. Crichton; slater work, Mr. Daniel M'Lauchlan; plumber work, Mr. A. J. Davidson; iron work, Mr. William Hume; plasterer work, Messrs. John Peebles and Sons; painter work, Mr. P. K. Donald, Blairgowrie. The clerk of the works is Mr. Alexander Robertson.



A FARM AT APPLEY BRIDGE, NEAR WIGAN. DRAWN BY FREDERICK J. BARNISH.

Seaforth.—A new Congregational Church has just been opened. The new church adjoins the school chapel and has frontages to Elm and Gladstone Roads. It is Modern Gothic in style, with a nave 38ft. 3in. wide, with arched arcades on either side, ambulatory aisles, transepts, and also an end gallery over the vestibule. The church will seat nearly 600 people, including the choir, which is arranged in stalls on a raised dais in front of the rostrum. The organ chamber is in an arched recess at the back of the rostrum, with trackers brought underneath, so that the organist is in front of the rostrum and in close proximity to the singers. The entrance to the church is by two porches in Elm Road front, with wide vestibules under the gallery. The total length is 70ft. 6in. The church may be entered from the present school chapel or from Gladstone Road by a side door. In this part there is a deacons' vestry, a minister's vestry and lavatory, also a wide passage, which will be used as an assembly room for the choir. Over the deacons' vestry is the church parlour, which is approached by way of the gallery of the school chapel. The exterior treatment is in common brick, with Whiston stone dressings, and the roof is covered with American unfading green slates. The jambs, mullions and tracery are of stone. There is a gallery window of five lights, with traceried and cusped flings to the arch in the Elm Road gable-end. The clerestory and transept windows have also traceried heads. All are filled with lead glazing and clear cathedral glass. The interior has the surface of the walls finished in plaster and the joiners' work in pews, rostrum, choir stalls, &c., is of American canary whitewood, stained green and varnished. The roof is pitch pine unvarnished, with shaped and trussed principals, and is open to the ridge and sheathed on the underside of the spars with boarding. The flooring is in pitch-pine boards, laid solid on sleepers embedded in a concrete floor, and the outer porches are tiled. The ventilation is combined with the heating arrangements, with air inlets connected with hot-water radiators. One feature of the heating arrangements is the placing of radiators on the base of the clerestory windows, with a view to stopping down draughts. Hopper vents are fixed in the windows and there are louvred exits in the apex of the gable and controlling doors by which to regulate them. The church will be illuminated by the electric light. It has been about twelve months in course of erection. The architect is Mr. J. H. Cook, St. George's Crescent, Liverpool. Mr. James Holme, Hicks Road, Seaforth, was the general contractor, with the following sub-contractors:—Joiners' work, Messrs. Haugh and Pilling, Liverpool; slating and plastering, Messrs. Henry Johnson and Sons, Liverpool; masonry, Mr. John Green, Everton; plumbing, Messrs. Joseph Fowles and Sons, Liverpool; heating, Messrs. Dargue and Griffiths, Liverpool; electric lighting, the Liverpool and District Electric Lighting Company. The communion table and chair were supplied by Messrs. Jones and Willis, Liverpool; seat rugs by Messrs. Dix, Liverpool; and matting for aisles, carpets, &c., by Mr. A. C. Weeks, of Seaforth. The building has cost about £4,850. An organ by Messrs. Hele, of Portsmouth, will be placed in the church.

Weston-super-Mare.—The public library and museum, which has been erected as a memorial of the Queen's Diamond Jubilee, was opened last week. The site of the building, which occupies a commanding position in the Boulevard, was originally acquired with the view of erecting thereon a suitable memorial of the 1887 Jubilee, but the movement failed. A definite scheme was formulated in connection with the Diamond Jubilee whereby it was proposed to erect a free library, museum and picture gallery at a cost of £6,000. With a sum of £3,250 it was decided to erect one half of the projected building, the remaining portion to be added at some future occasion. The work has been carried out on the joint plans of Mr. H. F. Price and Messrs. S. J. Wilde and Fry, and has been executed by Mr. Charles

Addicott. The building has been treated in the Renaissance style, the materials employed being local bluestone, as far as the plinth level, and red Cattybrook brick relieved by freestone dressings and carvings. On either side of the entrance, placed in a spacious niche, are handsomely executed groups of sculpture, emblematic of "Literature," "Science" and "Art," whilst the commemorative character of the building is emphasised by an effective scheme of carving immediately above the entrance. Upon the ground floor are situated the reading room, reference and lending library departments, ladies' room, librarian's apartment, and the usual offices, whilst the museum and picture galleries are located on the upper floor.

THE ORDNANCE SURVEY.

A BLUE-BOOK just issued gives a report of the progress of the Ordnance Survey up to March 31st last. The report states that during the year 1899-1900 good progress has been made with the various services on which the Ordnance Survey is engaged. A special survey, on a very large scale, of barrack sites on Salisbury Plain has been carried out for the War Office. A special revision on the 1-500th scale of Admiralty property at Chatham has been carried out for the Admiralty. For the last two or three years the Ordnance Survey has made special surveys for the Congested Districts Board in Ireland on repayment. This year the amount of this work has been unusually large. The preparation of special maps and the supply of ordinary maps for the Land Registry have increased very rapidly. As regards the ordinary work of the Ordnance Survey, the revision of Great Britain has advanced so rapidly that it has been found possible to reduce the force employed on this service without risk of delaying the completion of the present revision beyond the estimated time. The staff which has been spared from Great Britain has been transferred to Ireland, with a view to accelerating the resurvey of that country, which has proceeded very slowly owing to the laborious nature of the work. The revision of the 1in. map of Great Britain is complete, and the whole of that map is now published in a uniform style and revised up to a recent date. Since its commencement the survey has been organised upon a military basis and carried out under military superintendence. The chief supervision, from the Director-General downwards, has been vested in officers selected from the corps of Royal Engineers. The 13th, 14th, and 16th Companies of Royal Engineers were raised for the Ordnance Survey in 1824 and 1825, and the 19th Company was added in 1848. These companies have been continuously employed on the survey to the present time. Two complete survey sections, each commanded by an officer, have been despatched to South Africa, and a third section has been got ready for despatch if required. The party of two officers and six non-commissioned officers and men despatched to Wei-hai-wei have completed the survey of that place, and the non-commissioned officers and men have recently rejoined the Ordnance Survey. Three non-commissioned officers of the Ordnance Survey are still employed on the survey of Bermuda for the War Office. This survey is nearly completed. A party of one non commissioned officer and four men has been sent out to Gibraltar to carry out a revision of the survey of that place for the War Office, and three non-commissioned officers and men have been provided for service with boundary commissions on the Niger and Gold Coast.

Sacrilege at Chester Cathedral.—The workmen engaged on the restoration of the St. Oswald's transept of Chester Cathedral, which is being carried out to commemorate the late Duke of Westminster, noticed on Saturday morning that their too's had been removed, and an enquiry led to the discovery that the Cathedral had been entered in the night by burglars who had used the workmen's tools to break open the collection boxes. The burglar, or burglars, entered the building by smashing a stained-glass window in the Canons' vestry.

A A. PRIZE LIST.

THE following is the prize list of the Architectural Association for the session 1899-1900:—

A.A. Travelling Studentship, value £25 and silver medal, C. H. F. Comyn; A A. Medal, S. Towse; Hon. Mention, J. E. Forbes; A.A. Essay Prize, J. MacLaren Ross; Architectural Union Company's Prize (value £10), P. J. Turner; Banister Fletcher Bursary and Medal, Arthur Stratton; Andrew Oliver Prize, F. C. R. Palmer; Arthur Cates Scholarship, L. W. Ensor.

Lectures (Division I.):—C. M. Crickmer (prize, value £1 1s.), B. D. Tracey, H. W. Currey.

Lectures (Divison II.):—C. H. Gage (prize, value £2 2s.), F. B. Chester, J. D. Hunter.

Studio (Division I.):—M. Skinner (prize, value £1 1s.), S. H. Goodwin (prize, value 7s. 6d., and certificate).

Studio (Division II.):—A. A. Carder (prize, value £2 2s.).

The students placed in order of merit below include also those who entered for single lectures. These students do not, therefore, compete with those in the foregoing list, all of whom took up a complete course of lectures in a division, and thus became eligible for the prizes offered to the students taking the highest place in a division.

Lectures (Division I), Greek and Roman Orders:—S. V. North (book prize), C. M. Crickmer, H. Greenly. Elementary Construction:—C. M. Crickmer (book prize), H. H. Dawson and J. R. Tyndall (*æq.*), H. W. Currey. English Architecture:—C. M. Crickmer (book prize), H. Greenly, H. J. Gravenor and A. Dicken (*æq.*). Mediæval and Renaissance:—C. M. Crickmer (book prize), H. Greenly, A. Dicken. Elementary Physics, Formulæ and Calculations:—L. W. Ensor (book prize), A. Potter, E. O. Payne. Plane and Solid Geometry:—L. W. Ensor (book prize), E. O. Payne, B. D. Tracy.

Lectures (Division II.).—Materials, their Nature and Application:—C. H. Gage (book prize), T. Bee, R B. Rowell. Construction:—T. Bee (book prize), C. H. Gage, C. L. Fleming-Williams. Drainage and Water Supply:—E. L. Wratten, R. Findon, C. E. Varndell. Ventilation, Lighting, and Heating:—T. Bee, C. H. Gage, J. G. Walker. Professional Practice:—T. Bee, P. B. Dannatt, R. Findon.

Elementary Class of Design:—A. Durst (prize, value £3 3s., and bronze medal), A. A. Carder (certificate), M. J. Dawson (hon. mention). Advanced Class of Design:—H. M. Cautley (prize, value £5 5s., and bronze medal), J. E. Forbes (certificate), C. H. F. Comyn (hon. mention).

Extra Subjects.—Quantity Surveying:—J. T. Burt, R. B. Rowell, J. H. Watkins. Mensuration, Land Surveying and Levelling:—H. E. Rider (book prize), W. A. Jeckells, H. J. C. Marshall.

New Baths at Cheltenham have been built by the Corporation by reconstructing the Montpellier Baths. The external appearance of the baths has undergone but little alteration. In the interior the large swimming bath remains. The private baths are in an adjoining and communicating building of two storeys, and access to the baths will be by means of a hydraulic lift. On the ground floor are the first-class baths, with dressing rooms attached. These comprise two immersion baths, a 6ft. bath combined with shower and spray, and a large plunge bath. On the floor above are two first-class and three second-class baths, access to which is obtained from a corridor 70ft. long and 5ft. wide. The two first-class baths consist of 6ft. nickel-plated horizontal baths, with shower and spray baths adjoining, while the second-class baths are ordinary 6ft. porcelain baths. All the bathrooms have marble mosaic floors. There are also baths of the third class on the ground floor, but separated from those of the first class on the same floor, the entrance to them being from the rear. They consist of three 6ft. baths and three washing or spray baths, and are neatly fitted up, with comfortable dressing rooms adjoining.

Builders' Notes.

The London Office of Williams Brothers and Company, of Chester, has been removed to 18 Hart Street, Bloomsbury, W.C.

The death of Mr. William Shaw, a well-known Richmond builder, occurred in Newbiggin last week, in his 80th year.

The British Institute of Certified Carpenters visited Apsley House last Saturday, by permission of His Grace the Duke of Wellington. Thirty-seven members attended.

The Farnley Iron Company, Limited, of Leeds, have been awarded a gold medal for the fireclay goods—glazed bricks and sanitary ware—exhibited by them in Class 72, and also a gold medal for their best Yorkshire iron exhibited in Class 64, at the Paris Exhibition.

An Insanitary Marylebone Area is to be swept away, consisting of a squalid triangle of small dwellings bounded by Lisson Street, Bell Street and Burne Street, inhabited by about five hundred people. The matter has gone before the London County Council to be dealt with under the Housing of the Working Classes Act.

Fined for Building without Notice.—At Tipton last week Thomas Tranter, builder, of Tipton, was summoned by the District Council for a breach of the by-laws by commencing the erection of four houses on land off Waterloo Street without giving notice to the Council of his intention to do so and submitting the plans for approval. Defendant was fined 20s. and costs.

Builders' Stock Burnt.—Last week the works of Messrs. Schofield and Mills, builders, &c., in Allotment Street and Burritt Street, Rochdale, were destroyed. Messrs. Schofield and Mills had in their works pitch-pine doors and other woodwork for twenty houses which they are erecting. A large quantity of new furniture had also been placed in the works. These goods were consumed. The heat was so intense that cottages opposite the works were scorched. Part of the end wall in Allotment Street fell outward. The damage, which will amount to £1,600, is only partly covered by insurance.

Amalgamation of Blackpool Brickmakers.—For some years past brick-making in Blackpool has been an important industry. There have been times when it was utterly impossible to regulate the supply commensurate with the demand. Also it has been a difficult matter to keep the whole of the brick kilns working. The recent increased cost of coal, an important matter in itself, the unsatisfactory credit system, and the great amount of competition which has sprung up on all hands, have all tended to bring about some understanding amongst the whole of the brickmakers in the town who produce machine-made bricks. The manufacturers have now decided that all bricks shall be ordered through one agent or central office, at a uniform price per thousand agreed upon. Mr. J. Lowes, of Warbrick Road, has been appointed manager and secretary, offices have been taken at 17 Birley Street, and the firms included in the "combine" are Messrs. Cardwells, Moister and Fenton; Wilson Bros. and Oakland, Limited, Moss Side, Marton; Joseph Fielding and Sons, Blackpool; Jas. Cardwell and Bro., Blackpool; William Eaves and Company, Blackpool; W. and R. Fenton, Blackpool; the Woodland Grove Brick Company, Limited, Blackpool; and F. Saville, South Shore. The total output of bricks of these firms is estimated at about two millions per week. The association is styled the Blackpool Brick Exchange, and it will commence operations on September 22nd.

The "Anglo-Saxon Guide to the Paris Exhibition" will be useful to anyone visiting the show. This book of 248 pages is very cheap at 1s. nett, and is published by Boot and Son, Limited, of 24 Old Bailey, E.C. The guide is illustrated, and contains a great amount of information about the Exhibition and Paris generally. A good feature is the introduction of a list of the British awards.

Bricks and Mortar.

APHORISM FOR THE WEEK.

But Ptah only answered, "Let them build, sister, let them build." And Neith answered, "What shall they build if I build not with them."—RUSKIN.

Our Plates. THE German, Hungarian, and English pavilions are described in the article on the pavilions at the Paris Exhibition which begins on p. 103 of this issue: the Algerian pavilion will be dealt with in the concluding part of the article, which will appear next week. The chalice by Mr. H. Wilson is a good specimen of the beautiful work produced by this well-known architect and art-craftsman: the church at Brighton for which it is intended is practically completed, though certain extensions are contemplated. Mr. Drury's design for a lamp standard shows how elegant these can become when in capable hands: the arrangement of the figures is most pleasing.

Restoring Some Early Frescoes. THE ancient wall paintings on the vault of the apse of St. John's Chapel in St. Mary's Church, at Guildford, have become badly decomposed, and are now being restored under the direction of Professor Church, who has already done much for the preservation of the frescoes in the Palace of Westminster. It is understood that the Professor has prepared a special mixture for dealing with the paintings, which is being applied by means of a spray, as was done in the case of the Westminster frescoes. The paintings which are now being operated upon at Guildford date from the early part of the thirteenth century, and are believed to be the work of William the Florentine, who was one of the Court artists of King Henry the Third, and to whom is ascribed the decoration of certain apartments in Guildford Castle, where the King resided.

The Palace of the Popes. MR. H. W. BREWER, in a letter to the "Daily Graphic," says: "The French Government are about to protect and restore the ancient palace of the Popes at Avignon, and it is quite time that some steps should be taken to repair and remove some of the disfigurement of what is perhaps the most remarkable palace of the Middle Ages. May I express the hope that this will not result in some French architect being turned loose into the grand old building to exercise his views of Gothic architecture, and what it was, or, according to his ideas, ought to have been. This kind of work may be seen at Mont Saint Michel, and the result is simply disastrous. The most mutilated fragment of genuine thirteenth or fourteenth century Gothic work is infinitely preferable to the smartest and most expensive nineteenth-century copy, especially when the old work has been destroyed to make way for the spurious imitation. . . . The old palace at Avignon was built during the very best period of Gothic architecture, and it is truly a grand work. The walls, which are enormously lofty and about 12ft. thick, enclose several open courts and a great number of vast apartments, which were all more or less mutilated when the building was converted into a barracks in 1812. They are described in Wood's 'Valley of the Rhone,' which, by the way, contains the best description of Avignon I have come across. The palace is rather grand than ornamental, and the architecture is very English in character! Indeed, it might be an Edwardian castle, and, like many English castles, it is situated upon the bank of the river, instead of upon a hill."

Excavations at Waverley Abbey. THE site of Waverley Abbey, near Farnham, has been the scene of some excavations which have produced interesting results. The abbey was founded in 1128 by William Gifford, Bishop of Winchester, the site selected being a most beautiful one, surrounded on three sides by pine-clad hills, and with the winding Wey running by the side of the abbey walls. The abbey buildings covered an area of about sixty acres, but comparatively little of the grand pile now remains. Scattered here and there about the meadows are fragments of the old buildings, for the most part hidden by thick masses of ivy or sombre yews, which give them a picturesque appearance. The best preserved portion is the dormitory, with its interesting crypt, and the remains of the refectory with three lancet windows in the south wall. The excavations have been taken in hand in the hope of tracing the complete ground plan of the original building, and the results so far have been very satisfactory. Many interesting discoveries have been made, including the bases of handsome columns, large paved doorways, tiled floors, fragments of ancient glazed pottery, leaden pipes which supplied the abbey with water from the Ludwell Spring near by, and large quantities of human bones.

A Great French Prison. AT a distance of about eight miles from Paris is situated the vast new prison of Fresnes-les-Rungis, which takes the place of the recently demolished Mazas, Grande Roquette and Sainte Pelagie prisons in the French metropolis. Fresnes Prison is not built on the radiating or star form, but consists of four immense rectangular blocks, with a fifth block for an infirmary. It is mainly on the cellular system and contains 1,824 cells. But, as there is also provision for 400 prisoners in association, the establishment can receive 2,224 prisoners, besides many of their officers. One of the special features is the abundant provision for the entrance of sunshine and air, not only in the halls and corridors, but also in the cells. The windows in the latter are of most unusual size for a prison, being about 4ft. square, and on a fine day the sunshine streams down from the lofty skylights—the prison being four storeys in height, or five tiers of cells besides the basement—and the air both in cell and passage has free course. Underneath the prison are large cellars and store chambers for materials and goods of all kinds. Tramways, for the conveyance of food and stores, run along the immense passages, each of which is about 1,000ft. long. Lifts ascend and descend from storey to storey. At night the electric light is everywhere. Electric power also works machinery of various kinds in the bakeries and wash-houses. A very large hall is used alternatively as chapel and schoolroom, with a fine altar and sacred figures at one end and also a few paintings on the walls. The architect of this great new prison was M. Henry Poussin. The rectangular block system (as at Wormwood Scrubs, London) was chosen because it is found to be better adapted for light and ventilation than the radiating plan, for in the latter some of the walls and windows, where the wings approach the centre, are necessarily involved in comparative shadow or closeness.

Royal Architectural Museum. MR. MAURICE B. ADAMS, hon. secretary to this institution in Tufton Street, Westminster, recently wrote to the "Times" newspaper as follows:—"An effort is now being made to inaugurate a development of this museum for the further increase of its usefulness, and with this end the co-operation of all interested in architecture, sculpture, and the applied arts is solicited. Your readers are not invited to assist in a lifeless project or interest themselves in a dead cause. The museum comprises a unique collection mainly of mediæval examples founded under the presidentship of the late Mr. Beresford Hope by Sir Gilbert Scott, Professor Ruskin, and others associated with the so-called Gothic revival. Whatever may have been the shortcomings of this movement, there remains no doubt as to the widespread influence of the zeal and enthusiasm which animated its originators and their immediate pupils. The best buildings of the present day owe much of their merit to the example of Pugin, Street, Butterfield, Pearson, and Sedding. The Royal Architectural Museum, thus founded to enable students and art workers to study the best examples of applied sculpture and architectural ornament, is associated with one of the most prosperous art schools in the kingdom, and by this success of the classes the institution has for some years been maintained. For over a quarter of a century I have acted as hon. secretary, so that my knowledge of the difficulties in keeping this most valuable collection together is of long standing. We have recently been enabled to erect more studios in extension of the premises and it is desired to augment the mediæval specimens with more examples of Classic work as well as of Renaissance design, so as to bring the collection more in line with the requirements of the day by making it more comprehensive and complete. As an assurance of the practical character of this endeavour to render the museum more efficient and up to date, I may mention that among the vice-presidents Messrs. Aston Webb, A.R.A., John Belcher, A.R.A., G. F. Bodley, A.R.A. and George Frampton, A.R.A., have been elected this season, while the presidential chair, vacated by the death of the Duke of Westminster, has been filled by the election of the President of the Royal Institute of British Architects, Mr. William Emerson."

A.A. Papers. THE following is the list of papers to be read before the Architectural Association during the coming session:—Oct. 5.—Annual General Meeting. President's address and distribution of prizes by W. Howard Seth-Smith, F.R.I.B.A. Oct. 26.—"French and English Cathedrals" (illustrated by lantern views), by Francis Bond, M.A., Hon. A.R.I.B.A. Nov. 9.—"The Legal Position of the Architect," by L. L. Macassey. Nov. 23.—"The Use of Rolled Joists in Construction," by A. T. Walmisley, Hon. A.R.I.B.A. (The members of the Institution of Junior Engineers have been invited to attend this meeting.) Dec. 7.—"Colour in Architecture seen through an Artist's Glasses," by A. Wallace Rimington. 1901.—Jan. 4.—"Hints on the Preparation of Studentship Drawings," by Beresford Pite, F.R.I.B.A., and R. Weir Schultz. Jan. 18.—"Flats," by Edwin T. Hall, F.R.I.B.A. Feb. 1.—"Cretan Architecture," by D. T. Fyfe. Feb. 15.—"Gothic Architecture and the Basis of its Beauty," by E. S. Prior. March 1.—"The Paris Exhibition, 1900," by E. W. M. Wonnacott, A.R.I.B.A. March 15.—"Rowton Houses," by H. B. Measures. March 29.—"Small Suburban Houses." by H. D. Searles-Wood, F.R.I.B.A., and H. R. Appelbee. April 19.—Subject to be announced. May 10.—Subject to be announced.

The Théâtre Français. THE masons have finished their work in connection with the rebuilding of the Théâtre Français in Paris, which is now in the hands of the carpenters, joiners, painters and upholsterers, so that the reopening by the Comédie Française is not very far distant. As the outer walls of the building were little damaged by the fire, the exterior plan, designed by the architect Louis, about 1780, has practically undergone no modifications. The interior aspect and arrangement of the theatre have also been as far as possible preserved. Thus the oval-shaped vestibule on the ground floor remains unchanged. Considerable difficulties have been overcome in preserving the general design of the room and of the low roof supported on columns, as the latter had been seriously weakened by the ceiling yielding under the weight of the streams of water thrown on to extinguish the fire in the foyer. The grand staircase, likewise, will be restored exactly as it was. The stage has been entirely rebuilt, in exactly the same size as that of the old theatre, but it affords much greater depth below the boards, and far more extensive accommodation for the storage and shifting of scenery. Of course, full arrangements have been made for the efficient working of the fireproof curtain. A wide passage runs from the middle of the stalls and through the ground-floor tier of boxes, a very satisfactory improvement for the convenience and safety of the public. The change, however, has not met with universal approval.



HUNGARIAN AND ENGLISH PAVILIONS.



PAVILION OF ALGERIA.

PAVILIONS AT THE PARIS EXHIBITION, 1900.

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DESIGN FOR CHALICE, ST. BARTHOLOMEW'S CHURCH, BRIGHTON. H. WILSON, Architect.



DETAILS OF ELECTRIC LIGHT LAMP STANDARD, CITY SQUARE, LEEDS. A. DRURY, Sculptor.

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PAVILION OF GERMANY.

Drawn by F. HAMILTON JACKSON, R.B.A.

New Patents.

These patents are open to opposition until October 15th.

1899.—Window Sashes Without Weights.—13,764. R. L. WILLIAMS and T. PAYNE, Smithfield Engineering Works, George Street, Chester. At each side a screwed rod (which can be revolved by means of a cord) is fixed inside the window frame and on these rods work nuts attached to the sashes.

Spring Roller Blinds.—16,607. S. SMITH, 16 Higher Chatham Street, Chorlton-on-Medlock. Instead of being attached to the centre of the blind, the cord is fixed at the side to a pulley on the end of the roller. It is so fastened that when it is unwound the blind is lowered, the spring drawing it up when required. The advantages claimed are that only one hand is needed to operate the blind, that there is no liability to upset or disturb centre ornaments, and that the blind is more adapted for use in show windows.

Paving Materials.—19,353. C. J. R. LE MESURIER, Blewbury, Didcot. The material consists essentially of moss litter compounded under pressure with bituminous, resinous, elastic or other cementing substance, with or without the addition of brick dust, sand, &c. Moss litter is the material that usually covers the deposits of peat.

Earthenware Sinks.—20,271. B. ROBINSON, Church Gresley, Derbyshire. This invention enables earthenware sinks to be made by a continuous process, like bricks. It consists of a continuously or intermittently feeding clay-machine having a distributing centre with a device for forming the sink. This device comprises a die with a movable centre, a moving sliding-face plate (which forms the sides in turn), balance weights, &c.

The following specifications were published on Saturday last, and are open to opposition until October 22nd. A summary of the more important of them will be given next week. The names in italics within parentheses are those of communicators of inventions.

1899.—16,304, LANDMANN AND REIF, apparatus for drying, impregnating, and moulding plastic materials 16 921, FITCHEW, keyhole saw. 16,981, HENDERSON AND BROWN, preservative composition for coating wood, metal, &c. 17,083, WILKIE AND BEAMAN AND DEAS, LIMITED, destructor furnaces. 17 205, WESSBECHER, joints or connections for uniting parts of furniture. 17,764, THOMPSON (*Hutchinson and Wright*), combined separable squares, try-square and bevel. 17,866, DAUBACH, roofing. 19,402, TAYLOR, domestic fireplaces and hearths. 19,665, BAYLIFF, BAYLIFF AND DRAPER, couplings or joints for rods, shafting, &c. 20,470, MARTIN, water-waste preventers. 20,478, ROWLEY, manufacture of earthenware flushing cisterns. 20,544, BOWMAN, electric bell. 20,557, WHITHAM, machines for grinding or reducing lime, ashes, sandstone, &c. 20,604, RICHMOND, gas-heated water heaters. 20,723, DOYLE, bolts or fastenings for doors, windows, &c. 20,809, MACDONALD, filter presses and moulding presses. 21 196, MITCHELL, means for fixing brush heads to their handles.

1900.—90, HUPERTZ AND BREIDENBACH, roofing tiles and their manufacture. 3,783, CONDULA, grinding, crushing, mixing and kneading rollers. 4,166, ENGELS, process for the production of fire- and acid-proof materials and coatings. 5,755, JUNG, BRECHER AND KITTEL, manufacture of electrical insulating material. 7,106, MURPHY, electric railways on a surface-contact system. 9,897, GAVITT AND TUCKER, hooks. 11,026, LUNDBERG AND LUNDBERG, cord grips for electric-light fittings. 11,432, TREIBERT, attachment to kitchen ranges. 12,034, LEIGH (*McCartney*), water-heating, distilling and sterilising apparatus. 12 314, MOTLEY, combination shovel and sieve. 12,605, RUSSELL, apparatus for heating buildings by the circulation of steam or vapour. 12,688, O'BRIEN (*Soc. Anon. Française des Becs Juhle*), tap or valve. 12,859, LAKE (*Jewell Export Filter Co.*), purification of water.

Masters and Men.

The Strike of Labourers at the Bridge Engineering and Shipbuilding Works, Chepstow, which had lasted nine weeks, collapsed last week, owing to the men failing to receive continued support from the National Amalgamated Labourers' Union. New hands have displaced most of the strikers.

The Blackpool Painters' Strike, which commenced in April, still continues. At present, the masters are able to get through the very small amount of work now requiring attention by the employment of imported labour. The workers say they have now between thirty and forty men on their books.

Withholding Trade Union Funds.—William Lynch, treasurer of the Leeds branch of the Amalgamated Bricklayers' Labourers' Union, was charged last week with withholding £117 belonging to the union. The moneys were received by Lynch chiefly as members' subscriptions. The defendant admitted that about £25 was due to the union, and Mr. Willey, for the defence, said the defendant was a bricklayer's labourer with a little over a pound a week, and what he did in connection with the union he did in his spare time. The stipendiary magistrate fined the defendant £5, and made an order for the payment of £50.

The Peterhead Master Builders' Association, at its annual meeting, appointed the following office-bearers for the ensuing year:—President, Mr. Alex. Webster, builder; vice-president, Mr. Alex. Milne, engineer; committee—Messrs. West, builder; Simpson, slater; Ferguson, painter; Sutherland, blacksmith; and Scott, builder. Mr. A. Clark Martin, solicitor, was reappointed secretary and treasurer. The following were appointed delegates to the annual meeting of the Scottish Building Trades Federation, to be held in Edinburgh in October:—Messrs. William Stuart (member of the executive of the Federation); Dickie, joiner; and Hadden, builder.

The Strike of Edinburgh and District Masons still continues. The masters gave the men notice on April 5th of a reduction of wages from 9½d. to 8½d. per hour, to come into force in two months, and intimated that the agreement in the future would be one of three months instead of twelve months, as formerly. The joint committees of the men's three lodges met, and decided to hold a conference with the masters; but (as the operatives' officials say) these committees had no authority from a general meeting of the men to take any step. A conference was held, with the result that the employers offered 9d. per hour and a twelve months' agreement. The men rejected the proposals of the masters. The representatives of the Associated Masters say that, with the exception of Messrs. William Turner and Sons, Torphichen Street, who yielded to the men at the very beginning of the strike, really none of the seventy members of the Masters' Association of any importance have given in. The operatives' secretary reports "no change." There are at present, he states, about 600 men who came out on strike in Edinburgh and district who are working with employers who have conceded the men's terms. Altogether 2,200 men came out, and there remain a little over 900 still on the roll. The representative of the operatives states that of the associated masters four or five have yielded to the men, and between them have taken back 163 men.

A new Church at Bryn, Port Talbot, is being erected. The building, which is designed by Mr. Frank B. Smith, architect, of Aberavon, will accommodate 350 persons. The church is of the Lancet period, and will be built of stone, lined with red bricks inside, with white stone mouldings and joints. The roof will be covered with J. C. Edwards's Ruabon red tiles, and all woodwork will be pitch pine. The total cost of the building, including furnishing, will be £3,000. The contractors are Messrs. Lattey and Company, of Allen's Bank Works, Cardiff.

Surveying and Sanitary Notes.

A new Park at Leeds, called Burley Park, was opened on Saturday.

Town Hall Square Scheme at Newcastle.—Discussion over the site for new town-hall and municipal buildings at Newcastle is, it appears, again to be revived. Mr. Guy Wilfrid Hayler suggests that the present Town Hall should be pulled down, and that the area which it occupies should be used with the Cloth and Groat Markets to form a great municipal square. This scheme is attracting considerable attention.

Peterborough House and Grounds, Fulham.—There seems no possibility of the estate of Peterborough House and grounds, Fulham, being procured as an open space except by Act of Parliament, as the late freeholder directed in his will that the land was to be let to secure freehold ground rents.

A St. Luke's Improvement.—The St. Luke's Vestry have decided to give a contribution of £265 towards an improvement suggested by the London County Council at the junction of City Road and Old Street, fronting the new Electric Railway station. The total cost of the setting back will be £1,050, and the Shoreditch Vestry and the London County Council will share the balance.

The Strand Improvement Scheme.—The new roadway which takes the place of the old houses that stood on the north side of the Strand between St. Clement Danes' Church and St. Mary's Church has been opened for traffic, with a new wide pavement for pedestrians on the north side. This part of the Strand will now be over 60ft. wide, or exactly double the old width. In the centre of the roadway not yet finished will be two refuges for crossing purposes. For the present the houses on the south side of Holywell Street will be allowed to stand, but they will be demolished shortly when the leases expire.

Examinations in Sanitary Knowledge will be held next year by the Sanitary Institute at the places stated on the following dates:—*In Practical Sanitary Science and for Inspectors of Nuisances* (under the Public Health Act, 1875): Bristol, January 25th and 26th; Edinburgh, March 8th and 9th; Birmingham, March 22nd and 23rd; London, April 26th and 27th; Dublin, June 7th and 8th; Bradford, June 28th and 29th; Liverpool, July 12th and 13th; Cardiff, July 26th and 27th; Norwich, November 1st and 2nd; Newcastle, November 15th and 16th; London, November 29th and 30th; Manchester, December 20th and 21st. *For Inspectors of Meat and Other Foods*: Birmingham, March 29th and 30th; London, May 3rd and 4th; Liverpool, July 19th and 20th; London, December 6th and 7th. *In Practical Hygiene for School Teachers*: London, February 8th and 9th; Bradford, June 28th and 29th. *For Sanitary Inspectors* (under the Public Health, London, Act, 1891): London, January 15th to 19th. Further particulars of these examinations can be obtained on application at the Offices of the Institute, 72 Margaret Street, London, W.

Manchester Sewage Disposal.—At a meeting of the Manchester City Council last week Alderman Sir B. Leech moved the adoption of the proceedings of the Rivers Committee, which included the plans and estimates of two schemes for the better treatment of the sewage of the city, one based on the recommendations of experts engaged by the Corporation and the other framed to meet the requirements of the Local Government Board. Both schemes were based upon bacterial treatment, but the Government scheme involved much the larger acreage for filter beds. He said the committee asked the members of the Council to forget past differences and adopt a course that would best serve the interests of the city. The Council ought to take prompt steps, or they must expect further action by the Mersey and Irwell Joint Committee and largely-increased penalties. The pecuniary loss might be serious, but still more serious was the

stigma attached to the city as being more backward than almost any other in the kingdom in dealing with its sewage. Manchester has spent £223,000 already in works of sewage purification; that amounted to two-thirds of a penny in the pound on the rates. The Local Government Board asked the Corporation to spend £487,000, which would mean an annual addition to the rates of 1½d. in the pound. That would bring up the outlay to slightly over 2d. in the pound. The Rivers Committee did not recommend either of the schemes before the Council. The difference between the two schemes was, therefore, not likely to exceed ½d. in the pound in the rates, and it became a question for the Council to decide if they would go to that extra cost and so provide for the future expansion of the city and secure the goodwill and approval of the Local Government Board.—The Government scheme was adopted, and a resolution was passed to apply for the sanction of the Local Government Board to the borrowing of the £487,000 necessary.

Correspondence.

Building at Cape Town: A Warning.

To the Editor of THE BUILDERS' JOURNAL.

CAPE TOWN.

SIR,—On my recent visit to your country I noticed that enquiries were constantly being made concerning the building business here. As one who has experience of South Africa, and Cape Town in particular, as a public official in the building trades, a few remarks of mine may prove useful.

Cape Town is crowded with a lot of idle persons, many of whom (I had this from the Mayor) are at their wits' end to know what to do for food; some were even said to be living on one meal a day. There is about as much building now going on as before the war, but nothing like enough for the crowds here to do it. Amongst architects draughtsmen are in excess of the demand and numbers of them who came from Johannesburg ten months ago are still here. A few architects seem to be doing something, but many are complaining of the want of remunerative business. Shop-owners have done well during the war, but naturally they form only a moderate percentage of the people. Sir Alfred Milner recently informed a deputation that they (refugees) might have to wait two months before they could be allowed to return to Johannesburg. Several of these people have informed me that they regard this answer as simply diplomatic and that it may be twice that time before they are allowed to return to their homes. I have met several well-established builders who have informed me that they are doing practically nothing. Though rents are high, there is not very much new house building, as owners expect a large exodus on the proclamation of peace, which, however, will throw back on the labour market large numbers of colonial troops, many of whom have previously been engaged in the building trade. Lodgings are very difficult to get owing to the glut, and billets still harder: the civic authorities appear to have great anxiety on this latter account because of the number of the unemployed. The Public Works Department informed me that they had got rid of every possible man, and stopped practically all new building work for at least twelve months to come, as the estimates just now passing Parliament provide for none. A small amount of railway and irrigation work is projected for the next twelve months, but this class of work is mostly done by natives, very little skilled labour being needed, excepting for supervision.

So that, on account of these things, it is to be hoped that intending emigrants in any line will be wise enough to postpone their departure till a considerable time after the proclamation of peace—at any rate till it is clearly seen what move in a prosperous direction South Africa will be likely to take. It is most unwise of newcomers, unused to the country, to come at all at present unless furnished with about twelvemonth's supply of funds.—Yours truly,

EDWARD H. WAUGH.

Architects' Assistants' Salaries.

To the Editor of THE BUILDERS' JOURNAL.

BOURNEMOUTH.

SIR,—The only thing to be commended in the letter of your correspondent "Untrammelled" (published on page 67 of your issue for August 29th) is the choice of his *nom-de-plume*, for remarks more "untrammelled" by logical reasoning it would be difficult to imagine. I fail to understand how helping "in draughtsmanship" is not helping "in building" in proportion to one's position, whether as a despised "assistant" or equally so "architect." Though naturally a good deal of an assistant's work is mere reproduction, yet how often are buildings now erected which are the outcome of the head assistant's brain as much as the principal's. But, granting that assistants are mechanical machines for the preparation of drawings, how would matters be improved from an artistic standpoint if we turned masons, &c., as suggested by "Untrammelled?" For, as all could not immediately become master builders, any more than they can become practising architects at present, we should be dressing stones or working timber in individual sections, instead of drawing, and to a great extent working out, the details of an entire building.

Yours truly,

LINEAR.

To the Editor of THE BUILDERS' JOURNAL.

LONDON, E.C.

SIR,—I have followed with great interest the correspondence in your columns relating to the question of assistants' salaries, and I most cordially agree with the very candid and outspoken views of "Untrammelled." During my long experience in the profession, I have found few architects that have really been artists in the true sense of the word. The fact of the matter is, as I have before urged, that youths are placed in the profession who are totally unfitted for it—young men who have neither artistic nor constructional talent, whose parents are frequently rich tradesmen or poor gentlemen who apparently think that an architect can be "made," that is, turned out in the same commercial manner as a drapery warehouseman or a "dry goods merchant." It is the prevailing idea of many parents that by articling them to architects their sons will belong to a genteel profession without the great expense that would be entailed by placing them in any of the regularly-acknowledged professions; for, thanks to the exertions of the Royal Institute, the "profession of architecture" has no legal status, and is not half so much respected by the public as that of, say, the chartered accountants. Hence it is that there are so many priggish young assistants who look down upon respectable craftsmen and artisans with the greatest contempt—workmen are "quite too horrid, you know." It is because the architectural labour market is flooded with inefficient assistants that salaries are so poor, and inasmuch as each assistant can only be worth what his individual talent may be valued at, it would be impossible to have (as some of your correspondents have suggested) grades or classes with fixed payments for each.

Again, there is now not much hope for unknown men in the profession, however clever they may be, in the matter of important competitions. The Institute arrogates to itself the nomination of competitors for public works—*vide* the cases of the new street from Holborn to the Strand and the City Sessions House competition; so that unless an architect is one of the elect, or is a friend of one of the elect, his chance is *nil*.

Let parents ponder, then, before they place their charges (both male and female now) in such a very heart-breaking profession.

Yours truly,

H. T. B.

To the Editor of THE BUILDERS' JOURNAL.

BIRMINGHAM.

SIR,—Having read the letter of "Untrammelled" in your issue for August 29th, I notice that several of his remarks are not consistent with facts. He starts by stating that architects are badly paid, and consequently their assistants. This he attributes to the lack of interest shown by the educated public in architecture, as being due to the fact that the works of the Italian Renaissance and all that followed were insincere or copied, and therefore lacking in architectural interest. Does "Untrammelled," then, in this assertion include such buildings as St. Paul's Cathedral and a great many others over the country which never fail to arouse admiration and interest in the most refined and artistic minds?

Further on he says: "The producer of architecture in the past was always the builder, always the master-workman, an artist-tradesman. And the architects' assistants are part of the pernicious system now in vogue." I believe the first of these statements is to some extent correct, but the condition of modern requirements now calls for a different state of things. For instance, in the past time was often a matter of secondary importance as far as building was concerned, and the architect could easily combine the duties of architect and builder; but any practical person knows that, right or wrong, such a system is now impossible. With regard to what he terms "the pernicious system now in vogue" it is hard to find on what grounds he calls it such. It appears to me to be the natural development of architectural practice necessary to meet the requirements of the age.

Then he says: "Again, compare the large payments received by our painters and sculptors, men whose works are of interest, with the miserable payments made to those attempting to produce architecture." I may point out that there are many who not only attempt to produce, but actually produce, architecture which is both useful and artistic, and who, judging from their success in life, have no reason to complain of being ill-paid or unappreciated; and I may say, as a rule, that architects are paid quite fairly for the amount of work which it is their fortune to undertake. Besides, all painters and sculptors are not in the happy position of "receiving large payments"; on the contrary, many clever men and good artists are doomed to disappointment and obscurity.

With regard to the condition of architects' assistants, it is apparent that there are many men who from inadaptability or other causes are not worthy of good salaries, and it would certainly be no great evil if such would, as "Untrammelled" suggests, "be driven to take up some craft and work at it" more in accordance with their natural abilities; but as to their becoming "actual builders," as he thinks they might, such a course is completely out of the question.

Yours truly,

W. E. C.

To the Editor of THE BUILDERS' JOURNAL.

EXETER.

SIR,—After fourteen years' pupilage and thirty years' practice I venture to give an opinion on this subject. The value of an architect's assistant depends, like other labour, on supply and demand, and as an architect's assistant means draughtsmanship only in most cases the supply is now kept up from our Board Schools beyond the demand; hence the slump in the market. The cause of the whole of the trouble in the architectural profession arises from the want of business tact in the Royal Institute. The members of this institution have been improperly trained for the profession and they continue on the same lines which have failed for the past three hundred years at least.

We hear a great deal of talk about ancient architects, but we never hear of the Royal Institute acting up to our ancient architects' principles of training. Would it not be better if Freemasonry were swept away and real masonry substituted: and who is more capable of effecting this change than the Royal Institute? The present examination of the Institute, I am quite satisfied, is only a coached-up affair, like the examination for the Army, which fact the nation is now learning to its cost. There is more architectural ability in many an old country carpenter than is to be found in half the members of the Royal Institute of British Architects. Every member of the S.A

ought to be killed on sight. We must look to the joiner's "Bench" and the mason's "Banker" for our future architects.—Yours truly, PEN.

LONDON, W.

SIR,—As a student I naturally feel interested in your discussion. Surely the real cause of the trouble is that as a class we do not know our own business.

The budding architect must first beat the office boy off his own bat; then the tracer; pick up the element of surveying; attend classes in building construction by an eminently unpractical expert; and become a ready sketcher without tuition or encouragement. What wonder that we fall into the hands of the Wholesale Purveyor of Architecture, bound to do his bidding or to supply the occasional want of the surveyor and engineer. Incapability will cease when the responsibility of the pupils (mostly shirked by the master) is taken out of their palm, and a college established on practical foundations, controlled by an institute not too Royal, with a not too impossible charter. —Yours truly, S.R.I.B.A.

ILE L'OUESSANT, FINISTÈRE.

SIR,—"Reform," in your issue for August 8th, takes exception to "An Art Worker's" "effrontery" in speaking of architects' assistants in one breath with "ordinary clerks in business establishments." This may be right, but, if so, "Reform" has got hold of quite the wrong end of the stick. The fact is that, as young fellows, architects' assistants have such a wretched training that they are as a rule simply a drug in the market, either in an architect's office or in an office of any other kind. —Yours truly, AN ART WORKER.

Bricklaying.

To the Editor of THE BUILDERS' JOURNAL.

LONDON, N.W.

SIR,—The trade is much interested in the vexed question of how many bricks can—or rather should—a bricklayer honestly lay on ordinary work per day of nine working hours. Ordinary work may be taken as that done on workhouses, infirmaries or warehouses where all is specified to be built in stock bricks, picked facings outside, and (for the two first-named classes of buildings) plastering inside—struck joints on the inside for the last-mentioned class; usual window and door openings, walls 2½ bricks thick at the top of footings to 1½ bricks at the roof; a few courses of red bricks at different levels. But it is of course taken for granted that when dealing with the matter good solid work only—not jerry-building or field ranging—is referred to. Your correspondent "An Honest Bricklayer" says that it is impossible to lay more than 500 or 600 bricks a day on an 18in. wall which has no plumbing places and can be worked entirely with a line. If this is correct he surely cannot honestly lay claim to his *nom-de-plume*. A rod of brickwork costs for labour only, bricklayer and labourer, £4 19s. p.c., to which must be added the cost of scaffolding Taking the mean of 550, this is nominally a brick per minute of the working time. Therefore, what must be the cost of a wall with openings like those in the buildings mentioned above? A clerk of works stated to me that 40,000 bricks were laid by four bricklayers in four days in the base of a chimney shaft 12ft. square; this took place during the past spring in London, and means 2,250 per man per day. What of this? It is at the rate of 4⅙ bricks per minute for the four days. Were these four bricklayers "honest," or what?

Yours truly,
SYLAS SYNTAX

Courts and Courtyards.

To the Editor of THE BUILDERS' JOURNAL.

NEWCASTLE-ON-TYNE.

SIR,—The editorial notes on the above subject in your issue for August 29th are both welcome and opportune. It seems to me that unless some interest can be revived we shall soon have courtyards as extinct in this country as the proverbial dodo. Large mansions, large hotels and large colleges—in many of which a courtyard might be appropriately introduced—are all being built without this beautiful and serviceable architectural feature. To wander in the "quads" at Oxford is to realise what a courtyard is. You come in from the thoroughfare to a kind of calm seclusion, appreciably accentuated by the wide open space and the boundaries of weather-beaten stone walls on which mediæval art has left her indelible charm. You seem in a few steps to have left the restless world quite behind. The monk of old must have thoroughly understood the value of an open space, otherwise he would never have designed the cloisters. And what a delightful legacy to leave to posterity—why, in the whole of London I know of no place which seems so much a haven of rest as the cloisters at the Abbey; the Little Cloister, with its tiny fountain, is very impressive.

Very often I have stayed at a quaint old-fashioned inn in an out-of-the-way "town" in Berkshire (we English are in need of a word for a place which is not quite a town, yet is more than a village), and the little courtyard was one of its chief features. It had strange stairs outside leading up to the bedrooms, so that one's retirement at night was an event, especially if it was windy.

To surround his house and grounds with a very high and a very thick stone wall is said to be a trait of the Englishman, yet it seems to me that if he desires seclusion he could get it in a much better way by arranging his buildings so as to form a courtyard. He would then have a place which would be pleasant at all seasons, whilst in summer the shade of the buildings would afford a cool retreat. Let us hope he will seriously think it over.—Yours truly,

GUY WILFRID HAYLER.

THE BRITISH ASSOCIATION.

THE second Bradford meeting of the British Association was begun last Wednesday, being opened with an address by the president, Sir William Turner. On Thursday meetings were begun of the various sections of the Association. In the Mechanical Science section Mr. James Watson, M.I.C.E., read a paper on "Water Supply, with a description of

The Bradford Waterworks

Old and New." He said:—Three consecutive dry years give about 80 per cent. of the mean annual fall, and this is generally adopted as the basis of calculation in questions of water supply. Percolation is the source of all springs and of all well-water supplies, so that temperature, prevailing winds, physical features and geological formation all demand investigation. In gravitation works having large impounding reservoirs set among the hills, or in upland districts, rapid altitudes, absence of plant and vegetable life, and impermeable geological formation, are ruling desiderata, while in pumping schemes the converse holds good; porous or permeable formations become both filtering beds and reservoirs. Gravitation works in first cost are more expensive than pumping works, but the working expenses of the latter are much larger. Gravitation works, such as those of Bradford, entail the consideration of and provision for rights and interests generally unknown in pumping works, one important item being known as the "riparian owners' water rights," usually called "compensation water." Parliamentary Committees, dealing with private Bill legislation, invariably adhere to the unwritten law that of the total available rainfall yield, two-thirds to the Waterworks Undertakers for the use of the town, and one-third to the stream for the riparian owners' supply. The available yield of the appropriated gathering ground, or drainage area, is arrived at by taking the annual mean rainfall of three consecutive dry years, deducting therefrom one-fifth, plus the loss due to evaporation and percolation. The county landowner by this arrangement has his interests not only protected, but made more valuable. The proper distribution of a water supply under constant service to a large and increasing population for domestic and manufacturing purposes demands many considerations, such as the proper proportioning of each main and service main (both as to material, thickness and diameter), forming what is really a great complex network of pipes spread over an area or areas many square miles in extent, working under conditions constantly changing. The early tentative and private experiments in the supply of water to Bradford were next described by the author. The population of the city of Bradford is now 300,000, and, in addition to supplying Bradford, the Corporation supply twenty-four towns and places outside the city boundary, but within the Parliamentary area of supply. The out-towns have a population of 150,000, so that the aggregate population now supplied is 450,000. The average daily consumption is 12,000,000 gallons, or about 26½gals. per head per day for all purposes—domestic, public health and trade. The consumption within the city, calculated on the population previous to the city extension of last year, was 41gals. per head per day for all purposes, but of this quantity no less than 21¾gals. per head per day was sold through meter for trade purposes. The consumption under constant service has for years exceeded the supply, and recourse to short or intermittent service during the summer months has been frequent.

The Physical Configuration

of Bradford and its out-towns and the extreme range in height (supply being given by gravitation in three zones, viz, the low, middle and high levels) within the area of supply, which runs from 200ft. above the sea at Appeley Bridge to 1,240ft. above sea level at Queensbury, or a difference of 1,040ft, makes supply and proper distribution matters of considerable difficulty. The low-level supply comes from the Barden Moors in the valleys of the rivers Aire and Wharfe; the middle level from Manywells Springs, near Wilsden; and the high level from the high moors above Denholme, in the valleys of the Denholme Beck and River Worth, both tributaries of the River Aire. The storage capacity of the impounding and service reservoirs, thirteen in number, is 1,784 million gallons. The drainage area to the compensation reservoirs is 12,020 acres, and the storage capacity of six compensation reservoirs is 1,292 million gallons

Mr. John McTaggart, A.M.Inst.M.E., Superintendent of the Cleansing Department of the Bradford Corporation, read a paper on

"The Disposal of House Refuse

in Bradford." He said:—The disposal of house refuse is a problem which has occupied the attention of many cities and towns, and to none has the solution been more difficult than to the city of Bradford. Early in 1880 the first destructor of six cells was erected at Hammerton Street by Messrs. Manlove, Alliot and Co. Subsequently the number of cells was doubled at this place, and these were followed by the erection of a destructor at Southfield Lane in 1883, the Sunbridge Road destructor, and the Cliffe Road destructor, 1891, the total number of cells then being thirty-five, capable of destroying at that time 250 tons of house refuse per day, or nearly the whole of the refuse collected at that time. The whole of these destructors have been kept at work ever since. In 1897 the twelve cells at Hammerton Street were rebuilt under the "Horsfall" Patents, and early in the present year the contract for the rebuilding of the Southfield Lane destructor was placed in the hands of the same company. The total quantity of refuse collected amounts to 125,000 loads per annum, from 32,164 ashpits, to which 180,000 visits are paid during that time, giving an average of 3·87 loads per ashpit, and 5·6 visits per year. At the present time about 90,000 loads are destroyed annually at our destructors, the remainder being either tipped in the out districts or sold to farmers. The latter method of disposal is becoming extremely difficult in Bradford owing to our being somewhat removed from the agricultural districts. Tenders have been invited for the erection of five additional refuse destructors in various parts of the city, capable of destroying altogether 180 tons per day, and it is the intention of the cleansing committee to push on this work as rapidly as possible, so that we may be able to destroy the whole of the refuse collected in the city during the next year. In the specification for these new destructors

the Cleansing Committee have aimed at a well-considered scheme which embraces the following objects :—

1. The least possible handling of the refuse after being tipped at the destructor, the total abolition of the customary "pit" and of the employment of chargers being aimed at.

2. The design of furnace which is calculated to give the highest destroying efficiency, taking into consideration the cost of working and repairs.

3. The scheme which is calculated to give the highest evaporative efficiency, bearing in mind the fact that the destruction of refuse without nuisance is the first consideration.

4. The scheme which has for its object the lessening of the labour and preventing nuisance, consequent upon frequent "clinkering," and for the automatic removal or conveying of clinker, and the cooling of the same will receive the most favourable consideration of the committee.

At the present time the total number of cells in Bradford is as follows:—Working, 29; rebuilding, 5; to be erected, 18; total, 53. These, when complete, will have a total destroying capacity of 145,000 loads per annum.

Disposal of Clinker.

Until 1894 it cost the Corporation of Bradford over £1,000 per annum to cart the clinker to tips. Since that time, however, we have been very successful in our efforts to utilise in various ways the large amount of clinker we produce. Additional mortar mills have been erected; clinker crushing and screening machinery has also been introduced, with the result that at two of our destructors, Hammerton Street and Cliffe Road, we sell the whole of the clinker produced. At Sunbridge Road we dispose of one-half at the present time, and at Southfield Lane machinery is being installed to utilise the whole production. At the present time we have eight mortar mills at work, and we are turning out mortar at the rate of 12,000 tons per annum. We produce the screened clinker in four sizes, and the uses to which it is put are many and varied. It has been extensively used for

Concrete Work

in connection with the recent tramways extensions in Bradford; at the electric power station extensions in foundations and engine beds; and in the sewage and street cleansing departments; while the finest, or No. 4 size, is eagerly purchased by plasterers, and takes the place of river sand. Another method of profitably utilising this residuum is in the manufacture of artificial stone. We have lately installed at our Hammerton Street Works a complete hydraulic plant for this work, comprising a powerful hydraulic press, working at a pressure of two tons per square inch. In conjunction with this press are two sets of moulds, which enable us to keep the press working continuously, one mould being under pressure while the other is being filled. The machine is capable of producing 200 slabs per day of 9½ hours. The slabs are made in a variety of ways—some with a facing of granite chippings and Portland cement, ¾in. thick, in the proportion of 3 to 1, the remainder of the slab, which is 2½in. thick altogether, being composed of clinker and cement in the same proportion. The slabs are also made from clinker and cement alone; these slabs can be produced much cheaper, and are very suitable for side streets, backyards, and cellaring. Some of the neatest and best slabs we have yet manufactured are composed of bluestone chippings and cement in the proportion of 3 to 1. As these can be sold at the same price as granite-faced slabs, they are likely to become very popular. The price fixed for these slabs is 3s. 2d. per square yard, but I am anticipating being able to recommend to my committee to still further reduce this price at an early date. Still another, and perhaps the most profitable, way of utilising clinker, especially when large quantities have to be dealt with, is in the manufacture of

Concrete Bricks.

The results have been so satisfactory that it is intended to lay down one or more plants at some of our new destructors. These bricks are eminently suitable for any class of inside walling. These bricks, when made from a 10 per cent. mixture of hydraulic lime and clinker, and properly seasoned, are nearly 50 per cent. stronger than the ordinary building brick used in Bradford, and they can be manufactured at a cost of 14s. per 1,000. For utilising large quantities of clinker in districts where its sale in other forms is limited there can be no better method, the product always being in demand, and a small machine turning out 8,000 bricks per day will require over 20 tons of clinker for that purpose. Samples of these bricks were tested by our Technical College staff, and the results show that they should be kept at least three months before using, if they are naturally dried, the increase of strength during the last four weeks being remarkable. Clinker can also be used for manufacturing ornamental tiles. Special and inexpensive machinery has been designed for this work, by the use of which one man is capable of producing 750 encaustic tiles, or from 3,000 to 4,000 plain tiles, per day, each tile being subjected to a pressure of sixty tons. There is always a good demand for ornamental tiles, and these can be manufactured at a very handsome profit.

The Silchester Excavations.

In the Anthropological Section a report was read of the committee, consisting of Mr. A. J. Evans (chairman), Mr. J. L. Myres (secretary), and Mr. E. W. Brabrooke, appointed to co-operate with the Silchester Excavation Fund Committee. The excavations, which had been completed in the south-west quarter of the town in 1898, were continued in the northern half of the site in 1899 from May to November. As usual, a number of wells were met with in the course of the work, lined with wooden framing towards the bottom. No architectural remains of any importance were met with, save a piece of coping, part of a fluted Purbeck marble pilaster, and a fragment of a white marble slab. The finds in bronze, iron, glass and bone were as numerous as usual, but do not call for notice. From the pits examined an exceptionally large number of entire vessels of pottery were recovered, the total being about eighty. They include several pseudo-Samian vases of unusual quality, an inscribed drinking cup of Castor ware, some large vessels of the coarse ware which is so seldom found entire, &c. The coins found were not very numerous.

The Timber Supply of Great Britain.

In the Botany section Mr. Samuel Margerison read a paper on "British Sylviculture," of which the following is a summary :—

The old insular idea that there is no timber on earth equal to British oak has had to be considerably modified since the introduction of foreign timbers in large quantities. Among the hundreds of imported varieties it only needs to mention teak, greenheart, pitch pine and fir to show that our own supplies would long ago have proved inadequate to the demand, both in quantity and quality, had we been solely dependent on home production. Yet we cannot afford to ignore the fact that we still need large quantities of native wood. Notwithstanding the substitution to a large extent of iron for wood in construction more timber is used than ever, and in the opinion of experts the available supply of the latter is so much reduced that we are "within measurable distance" of a timber famine. Doubtless, the world has immense areas of almost untouched forests, but the present cost of transport is prohibitive of their use here, and, besides, the requirements of other countries are increasing, and much of this supply will be wanted at home. In view of these vital facts it is shortsighted and improvident of us to neglect our own sources of supply.

Of course something is being done by a few persons to provide for future requirements, but it is a trifle in comparison with what ought to be done. Not hundreds of acres, but hundreds of thousands ought to be planted. We have much land, both in hilly and lowland districts, which is at present wholly or partially unproductive, a great part of which could be profitably utilised for sylviculture, and it behoves us to use some of it in this way. There is enough of it to make us nearly independent of foreign supplies of the most generally used timbers, which we import to the value of nearly £20,000,000 per annum.

It seems to many that, as this question of the supply of timber is even more a national than a personal one, it might be taken up by

A Government Department

in such a manner that private owners would be secured against loss, whilst the nation would ultimately benefit largely. It may also be incidentally mentioned that the cultivation of a large area of forest would be another means of keeping the labourers from crowding into the large towns as they are doing.

When we compare the results obtained from the forests of the Continent (especially the forests of Germany) with those of our own country we cannot fail to see that some change is necessary. We find in Germany, for instance, beech forests with 9,000 cubic feet and fir with 12,000 to 15,000 cubic feet to the acre. Contrast these with our crops of 2,000 to 3,000 cubic feet. The German forester plants thickly to induce lengthy, straight, and clean growth; he preserves a good overhead canopy to modify direct evaporation from the soil; and, later, thins gradually to encourage thickness of stem. He has systematic "rotations" of a certain number of years for cutting, according to the nature of the crop, its environment and rate of growth. Sport is secondary to sylviculture, although sport is abundant. And, where advisable, he has the advantage of secured Government loans at reasonable interest, together with what is perhaps the most important thing of all, Government supervision. There are also large areas of forest belonging to the State and to other Corporations. Schools of Forestry, with equipments worthy of the importance of their object, are also provided in order to give scientific and practical training to those who have charge of the forests, and the result of this care is that crops of three or four times the bulk of ours are gained from the timbered areas.

In the

Sylviculture Proper,

the greatest gain would come from the systematic methods of growing timber, the crops not being subject, as they are at present, to being wasted in consequence of the caprice or necessity of individuals. The great principles would be thoroughly worked on of making sport secondary to timber growing (most especially by keeping down rabbits, and by not allowing the convenience of King Pheasant to interfere with the proper working of the woods); thick planting; preservation of overhead canopy; judicious thinning, and the suppression of the host of forest enemies, insect, vegetable and other. In a few years current expenses would be met by the sale of the early thinnings and sporting rents, and the later crops would be utilised by the repayment of the loans, meeting death duties, &c.

Having produced a stock of timber, it is necessary to place it where it is useful, and so the

Questions of Handling, Transport and Conversion

come in. The question of handling and transport is a vital one. It is no less so in relation to native timber. In fact, under present circumstances (circumstances which might be modified) it has almost more important influence, proportionately, on home productions than it has on foreign. The cost of conversion is also greater. The continental forester and timber merchant have larger quantities of stock in one district to work on, so that there are less frequent removals of the appliances for conversion. He has less costly labour. He can do much of the work of conversion on the ground where the trees are grown. Often he has the advantage of water carriage, and his railway carriage is much more economically done. When his produce arrives in this country also it is conveyed from the port to the consumer for very much less than our native timber is carried. Preferential railway rates here are equal to an annual tax on our woodlands of some four shillings per acre. But much of this could be remedied.

These, then, seem to be the essential objects to be striven for if our home forestry is to be

made equal to the future requirements of the country:—First, the largest possible crops to be grown from a given area by improved sylviculture, and large areas of cheap land devoted to a considerable extent to the production of timber so as to centralise effort. Secondly, conversion or partial conversion of the timber on the spot by means of machinery, assisted by light railways, timber slides, wire railways, water shoots, timber waggons (which, after all, will almost 'go anywhere and do anything") for local transport. Thirdly, the cheapening of transport to the more distant markets by railway rates more on an equality with those for imported timber. Fourthly, Government assistance and supervision in order to secure continuity of policy.

In the discussion which followed, Professor Bayley Balfour, of Edinburgh, said the maintenance of the supply of timber, especially of the softer kinds, was becoming a serious problem, but that the development of sylviculture in Great Britain was a complex question. Something had, however, been done to introduce improved methods, both by the Government in the Forest of Dean and by the large private landlords. The most important thing to be aimed at was the education of foresters, and in this the Government might do a great deal. There was no reason why we should not grow our own soft timber.

Professor Marshall Ward, of Cambridge, and Mr. T. H. Healey, architect, of Bradford, also spoke.

Sectional meetings were held on Friday. In the Mechanical Science Section Professor Hele Shaw read a paper on

"The Resistance of Road Vehicles to Traction."

He said: During the last few years it has been realised that there was a great field for the development of traction, and particularly by mechanical means upon the common roads, and the improvement which has been quietly taking place in the construction and maintenance of roads is a feature of national importance. Not only is the condition of the pavements in the cities and towns much improved, but in out-of-the-way districts, such as in the hilly parts of Cumberland and Westmoreland, the use of steam rollers by the county councils has effected vast improvement in the state of the roads. Experiments were made over roads of asphalt, wood, setts and macadam in the neighbourhood of Liverpool, both level and up the steepest gradients which could be found, to ascertain the resistance to vehicles. The apparatus consists of two parts—(1) a dynamometer and (2) a speed indicator. The net result of the experiments showed that, even on apparently the smoothest road, the variation in the pull was so considerable that nothing but appliances which would record autographically both the pull and the velocity at the same instant and indicate also the distance travelled, so as to indicate the exact piece of road corresponding to the record, would be of any value. Moreover, it was evident that some autographic record of the nature of the road as well as some instrument for recording the vibration of the vehicle which was being towed were necessary in order to form some estimate of the effect of vibration upon the resistance.

Mr. J. Brown gave a brief description of the viagraph, an instrument which takes a record of the profile of a road-surface on a paper strip to an appropriate scale. The instrument also indicates the total added depths of all ruts or depressions over which it passes, thus giving a coefficient of evenness for each road.

Mr. Arthur T. Walmisley, M.Inst.C.E., read a paper on

"The Use of Metal in Concrete."

The author referred to the paper read at the Liverpool meeting of the British Association descriptive of the manufacture of expanded metal by Mr. J. F. Golding, the inventor of the machinery for its production, and then dealt with its development, with special application to its introduction into concrete for supplying that tensile element which concrete without metal lacks. The present machinery is limited to sheets eight feet in length, but larger machines are in contemplation for the Expanded Metal Company's works at West Hartlepool, to enable sheets of metal long and strong enough for spans of 16ft. slabs to be supplied. Mr. Walmisley assumed that the safe-working unit stress for concrete in compression is ten times the safe-working unit stress for concrete in tension, and pointed out that, under these circumstances, with a homogeneous section of pure concrete having parallel sides the neutral axis must be above the level of the centre of gravity of a slab laid horizontally or vertically; and that, assuming—as in the case of a slab supported at the edges—that is laid flat, the neutral axis of a section divided the depth into the proportions of 0·24 and 0·76 respectively in order to create a result equal to a couple in which the compressive and tensile elements unaided by metal would be in equilibrium. Mr. Walmisley then gave calculations showing the effect of introducing metal into the tensile portion of the section, whereby the neutral axis under the above conditions of equilibrium is lowered, the compressive portion is increased, and the neutral axis made to approach nearer the centre of gravity of the section. Examples were given of a section containing wires or rods, plates, and inverted tee sections, together with a comparison of a section containing expanded metal; and the author pointed out that the latter provides a uniform distribution of tensile strength in all directions, ample in amount without extravagance, and easily laid without the responsibility of supervision in placing the material transversely at the specified distances apart, as would be necessary in the case of separate pieces.

The Insertion of Wires

or individual sections gives strength in the direction of their length, leaving the intermediate concrete comparatively weak. Expanded metal contributes strength laterally both in the direction of width and length, as well as giving an effective keyage in its depth. The coefficients of expansion of the two constituents, iron or steel and concrete, are considered for all practical purposes to be identical. Results of experiments made on various size slabs were next given, the longest span without intermediate joists being on a slab 12ft. 6in. by 11ft. clear span, which was loaded to 5½cwt. to the foot super, and bore this load for 1½ hour before it collapsed, the fractures occurring at each of the four corners. The gradual increase of the load and progress of deflection of the slab were related in detail. The adhesion of iron and concrete was found by Professor Baushinger, of Munich, to be about 569 to 668 pounds per square inch, but a case was quoted, experimenting upon 2in. diameter anchor bolts set 11½in. in a masonry block, with lead, sulphur and cement, from which it was inferred that in suitable setting the cement joint on a smooth rod might be made to fracture the rod before the adhesion of the connection failed. The author described the introduction of

The Aid of Channel Arches

by the Expanded Metal Company. The spans were enabled to be increased thereby, the only objection being, in his opinion, the exposure of the under surface of the channel metal rib; but the surface so exposed is comparatively small compared with the various systems of trough flooring that have been patented. The result of experiments was stated in the paper, the channel metal flat arches being firmly held between longitudinal joists spaced at specified intervals. The author considered that, in order to keep the portion of a slab containing metal in tension below the neutral axis, the slab should not be fixed at its bearings; but he pointed out that probably there is a tendency to form a flat arch within a concrete beam, which converts a large part of the vertical pressure into lateral thrust, which in the case of an expanded metal section becomes a tied arch, and that, in his opinion, a concrete beam should be viewed as a bar with a hollow curved soffit.

Mr. C. France remarked on the singular coincidence that, without knowing what had been done by others in this direction, he had experimented in the use of iron in this way. In a case lately, where in order to overcome the soft and spongy nature of the subsoil he had been faced with the alternative of piling or of going down 85ft. to the rock, he had of course chosen piling. When it came to the question of bridging the piles he specified concrete of this type, and as the weight carried was something like 6,000 tons, and the piles 3ft. to 4ft. apart, it would be seen that the concrete had to carry a fair load. The use of the metal had so increased the strength of the concrete that it had shown no signs of giving way.

Mr. G. F. Deacon thought that the question of time in relation to the possible

Oxidation of the Iron

was one which needed serious consideration and should induce caution in the use of metal in concrete work under water at least. He also alluded to the comparative values of Portland cement and hydraulic lime, and stated that whereas Portland cement mortar, composed in the proportion of 2½ of sand to 1 of cement, might in common practice be expected to stand from 300lbs. to 400lbs. per square inch, there was plenty of hydraulic lime in this country which, used in the same proportions, would stand from 400lbs. to 500lbs. He had brought some from Italy which would stand over 600 lbs., and he had recently been testing a sample from Russia which stood 1,260 lbs. per square inch.

Mr. John B. C. Kershaw, F.I.C., submitted a paper on

"Power Generation:

Comparative Cost by Steam-engine, Water Turbine and Gas-engine." The author said: The supremacy which the steam-engine has so long enjoyed is now assailed from two sides. The water turbine and the gas-engine have become dangerous rivals. Gas-engines up to 650 horse-power have been built, and have worked smoothly and economically; while at Seraing, in Belgium, and at other places the blast-furnace gases have been utilised for driving the engines which supply the blast. Taking the best figures for each of the three sources of power, and bringing them all to a common basis of comparison, namely, the cost of the estimated horse-power year of 8,760 hours, the author obtained the following figures:—

Comparative Costs of Electrical Power.

	Lowest cost per E.H.P. year of 8,760 hours.							
	Estimated.			Locality.	Actual.			Locality.
	£	s.	d.		£	s.	d.	
Water ..	1	5	5	Canada	1	19	0	Switzerland
Steam ..	4	18	8	N. England	4	9	7	United States
Gas (producer)	5	0	0	England	—			—
Gas (blast-furnace) ..	4	1	7	Germany	—			—

The figures in the table support the opinion, now generally held, that water when developed without excessive capital expenditure is the cheapest source of mechanical or electrical energy. The question of the practicability of large engines may be taken as settled. If they do not cost excessive sums for maintenance and repairs large gas engines, in conjunction with coke ovens and blast-furnaces, may entirely alter the present position of affairs; and the new industries which at present are being established in the neighbourhood of water-power stations may find themselves in severe competition with similar manufactures carried on in the coal and iron districts of the older manufacturing countries. It has been calculated that 2,000,000 h.-p. is annually wasted in the gases issuing from the blast-furnaces of the United Kingdom. If these waste gases could be industrially utilised in the manner suggested we should to a large extent be compensated for our lack of natural water power.

Mr. A. Siemens, who presided in the absence of Sir A. Binnie, said that Mr. Kershaw's paper had clearly demonstrated the common fallacy that there was such a vast quantity of water power in England running to waste which could be profitably employed. This was absolutely not the case. In England water supply was irregular, and any attempt to store the excess in wet weather involved excessive capital expenditure, which made it very diffi-

cult to use water power on a large scale with economy.

In the Anthropological Section Mr. A. C. Haddon, Sc.D., F.R.S., dealt with "The Textile Patterns of the Sea Dyaks," and on "Houses and Family Life in Sarawak." Mr. Haddon's explanations of the symbolism of the patterns in the wonderful embroideries of the Dyaks were extremely curious and interesting and suggested the addition to our artistic stock of an entirely new style of Eastern art, as remarkable in its way as the Chinese and Japanese styles with which we have become successively familiar.

Professor Rucker, Secretary of the Royal Society, was elected to be president of next year's meeting, which is fixed to be held at Glasgow on September 11th. A deputation from Belfast attended the meeting of the general committee, and invited the Association to hold its congress for 1902 in that city. This invitation was unanimously accepted.

On Saturday visits were paid to Bolton Abbey, Farnley Hall, Ilkley, Haworth, Knaresborough, Kirkstall Abbey and Adel. A hundred and fifty members of the engineering section visited the Nidd Valley Waterworks, which were described on Thursday in a paper by Mr. James Watson.

Enquiries Answered.

The services of a large staff of experts, including all those engaged on "Specification," are at the disposal of readers who require information on architectural, constructional, or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Lead Flat over Porch.

BECKENHAM.—ENQUIRER writes: "Please state the number and the thickness of wooden pillars (resting on York stone) required to carry a lead flat over a porch 10ft. high; also the dimensions of the bearers to carry the joists. How should the other ends of the joists be supported? Is it necessary to have hip rafters where the small span roof cuts into the main roof? If so, how should they be supported? If the common rafters of main roof rest on wall plate continued across bay, how should wall plate be strengthened?"

The solution of the question as to the thickness of wooden pillars to carry the lead flat rather depends on the number of pillars suitable to the design and the kind of timber used. It will probably be found that the minimum thickness would be hardly satisfactory in appearance, and, in fact, that the weight is a somewhat insignificant factor. If querist is anxious to determine this he can do so by the use of the following formula for square struts:—

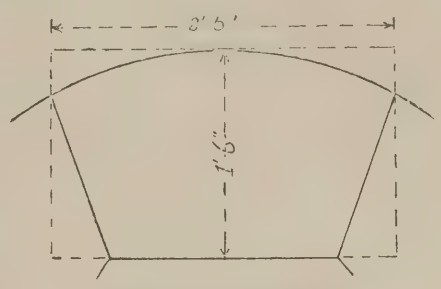
$$S = \frac{a \times d^4}{L^2},$$

where S = safe weight, a = constant (15½ cwts. for fir), d = the side of a square strut in inches. The working load should not be taken as more than one-tenth the ultimate resistance; one-twentieth would be better. The dimensions of the bearers (from pillar to pillar) will, of course, depend on the span and may be obtained from the formula $W = \frac{cbd^2}{L}$, where W = weight to be borne in cwts., c = constant 2 for fir timbers (safe distributed load in cwts.), b = breadth in inches (may be assumed as about two-thirds of d), d = depth in inches, L = length of clear span in feet. If, however, the work is all new the floor joists might well be continued out through the wall over the porch, in which case the flat would be practically self-supporting, the joists acting as cantilevers. A small bressummer (say, three 7ins. by 2ins. bolted together) should be placed across the opening for bay over the porch to carry the feet of the rafters, unless they are stopped on valley-pieces, which seems the better method. Over the porch or bay hip rafters would be necessary to carry the short or "jack" rafters. Probably about 7in. by 1½in. would do in this case for both hips and valleys: they would be fixed to the ridge and the angles of the wall plates. A. G. B.

Taking-out Quantities.

TEWKESBURY. — ARCHITECT writes:—"(1) How should the quantities be taken out for brick machicolations? (2) Also how would the quantity of stone in large circular piers, such as those in Gloucester Cathedral, be taken out?"

(1) There are various methods of dealing with an item of this description, but on the whole the best one is to number each complete, giving width on face, height and projection, including labour and materials and the cutting in facing at sides. (2) If each course is in one stone the following would be the items required, taking as an example a stone 3ft. diameter and 1ft. high:—



TAKING-OUT QUANTITIES.

```
3  0
3  0
1  0
———      9  0   stone (no labour).
3  0
3  0
———      9  0
2 / 3  0          }
  1  0            } bed and joint.
———      6  0   }
(Circumference).
9  6
1  0
———      9  6   circular plain face.
```

If each course is made up of more than one stone the following example will explain the method to be adopted:—

```
   2  6
   1  6
   1  0
   ———      3  9   stone (no labour).
   2  6
   1  6
   ———      3  9
   2  6             } bed and joint.
   1  0
   ———      2  6   }
2 / 1  5
  1  0
  ———      2 10   sunk joint.
  2  8
  1  0
  ———      2  8   circular plain face.
```

As the question of measuring stonework is a somewhat complex one "Architect" would do well to refer to a work confined to quantity surveying, as "Quantities and Quantity Taking," by W. E. Davis, "Builder" Students' Series (price 3s. 6d.), as an elementary work, or "Quantity Surveying" by John Leaning (Spon, 15s.) as a more advanced one. W. E. D.

Constructing Lean-to Roof.

BECKENHAM. — ENQUIRER writes: "In a lean-to roof, how should the rafters be fixed against the main wall so as to avoid the flues? Is it necessary to corbel out, and, if so, how far apart and of what dimensions should the corbellings be? How should the bearer be fixed to the main wall?"

We presume that the roof in question (tracing not reproduced) runs along the whole of the wall containing the two flues, and that the glass covering and the slate covering lie all in one plane, starting from the eaves, which are 10ft. high. Apparently there would be sufficient support at the feet of the rafters where a wall plate would rest on the 9in. wall. At the upper end we should recommend—(*a*) If the main wall is already constructed, that small iron corbels be inserted in the brickwork at convenient intervals of not more than about 3ft. span; to these the wall plate, which should be at least 4in. by 3in., could be screwed from the underside, and a rendering of cement might with advantage be added between the plate and the flues. (*b*) If the whole of the work is new, two or three oversailing courses might be built in the brickwork; the upper one projecting 4½in., running the whole length of the wall, would answer the purpose sufficiently. A. G. B.

R.I.B.A. Examinations.

BIRMINGHAM. — BRUM writes: "I have passed first-class Advanced Building Construction and intend to sit for the A.R.I.B.A. Would you advise passing in Honours Construction before commencing to study for the A.R.I.B.A., or leave Honours Construction and commence forthwith? What arithmetic is necessary in order to work out the different formulæ given in some works, and what are the books on arithmetic I should obtain? I have no knowledge of algebra or Euclid."

With regard to the first question, "Brum" does not state whether he intends to enter for the progressive examinations of the R.I.B.A. or for the Special Final (open to architects in practice who are more than twenty-five years of age and chief assistants who are more than thirty years of age), by which he would obtain exemption from the Preliminary and Intermediate Examinations. Presumably, the former is his intention, and, if so, he would probably do well to go in at once for the Preliminary and Intermediate Examinations and get them over; the Final could then be read for side by side with the Honours Building Construction. As to the second question, we should strongly advise querist to take up at least the elementary parts of Euclid and algebra—say the first four books of Euclid and algebra up to quadratic equations (according to any of the usual text-books). Among the many good text-books on these subjects may be mentioned Todhunter's (for beginners) and Hall and Knight's.

A. G. B.

NEATH.—PROBATIONER writes: "Please say whether the following books will be sufficient for me to study (and to prepare the 'Testimonies of Study' from) for the Intermediate R.I.B.A. Examinations:—1. Fletcher's 'History of Architecture'; 2. Parker's 'Introduction to Gothic Architecture'; 3. Spiers' 'Orders of Architecture.' Please also give a few examples of what is required for the following:—Details of Classic ornament from the round in outline. Mediæval ornament, freehand drawing from the round in outline. Is Gwilt's Encyclopædia modern enough to be worth obtaining for general subjects, such as descriptive geometry, perspective, &c.?"

We can hardly say that "Probationer's" list is sufficient. In history alone the books mentioned would cover a good deal of the ground, but the following might be added:—Smith and Slater's "Classic and Early Christian Architecture"; Roger Smith's "Gothic and Renaissance Architecture"; Parker's "Glossary"; Colling's "Gothic Details" (for reference). A complete list of books recommended is to be found in the Kalendar of the R.I.B.A. Gwilt's Encyclopædia is brought up to date from time to time, and is a very useful work of reference, but for the special subjects mentioned by querist we should recommend the elementary text-books; for instance, Gill's Imperial Geometry, or, for more advanced study, Angel's Geometry. Fergusson's "Architectural Perspective" is also a useful book.

A. G. B.

Obstruction of Ancient Lights.

BANGOR.—BANGOR writes: "I intend carrying out alterations and additions to certain business premises, and should be glad to know, before letting the contract, whether or not the additional storey would interfere with my neighbour's ancient lights. I enclose sketch plan and section (not reproduced)."

It is quite impossible to tell from a drawing of the existing and proposed buildings, and of the position and dimensions of the ancient

window, whether the works when completed will or will not cause an actionable diminution of the light which at present reaches that window. A variety of circumstances affect the question, such as the direction from which the main supply of light to the window comes, the quantity of light which it receives from the direction in which the obstruction caused by the new building will stand, and so on. There are no hard and fast rules as to the obstruction of ancient lights. We have pointed out more than once to our correspondents that the question is one of fact in each case. The supposed rule of law that a building will not obstruct the light if it permits it to fall on the window at an angle of not less than 45 deg. from the vertical has no existence, though it may be useful as a rough guide. We regret, therefore, that we can give our correspondent no assistance in a matter which can only be decided by a person on the spot; and even he may be unable to forecast with accuracy the effect which will be produced on the light by buildings which are still in embryo. H. P. B.

Stress on Steel Bar.

KING'S NORTON.—F. E. T. writes: "What is the safe stress to put on a bar of steel 2in. by $\frac{3}{8}$in. in tension and compression?"

It depends upon the ultimate strength of the steel in question, but assuming that to be ordinary basic steel having an ultimate strength of 26 tons per square inch, and taking a factor of safety of 4, a 2in. by $\frac{3}{8}$in. bar in tension would carry $4\frac{3}{4}$ tons. If there be any holes in bar, say for $\frac{3}{4}$in. rivets, the safe stress would be reduced to 3 tons. It is not possible to say anything with regard to the safe stress under compression without knowing the length of the bar, and whether any bending moments be produced in it by the manner in which the load is applied. BREES VAN HOMAN.

Contract Work.

MANCHESTER.—S. D. J. writes: "(1) Is it the general custom for an architect to supply a contrac or with a specification of work between them? (2) Is there any substitute which would be deemed equivalent to a specification? (3) Are there any recognised charges between architect and proprietor?"

(1) Yes. (2) A bill of quantities might be substituted, in which the particulars and methods of work would have to be described. This is not a satisfactory method, however; the bill of quantities, if provided, should be in addition to the specification. (3) No. The rate of payment should be fixed between the architect and the building owner before the former does any work for the latter. The best plan is get the building owner to agree, in writing, to the R I B.A. scale of charges. There is no legal scale of fees binding a client.

Model Bricks.

COLWYN BAY.—W. J. writes: "I should be glad to know the address of a maker of model clay bricks. The bricks I mean are made to scale, and are about an inch long and about a quarter of an inch wide. They are exact representations of red pressed bricks, and are used for teaching how to make bonds of walls, &c, in detail."

The model bricks required by our correspondent can be obtained from Messrs W. Payne and Son, 16 and 17 High Holborn, W.C., who are the agents for the makers, Messrs. F. Ad. Richter and Co., of Rudolstadt, Germany. The different shapes have been determined by Mr. Richter's art department, consisting of a number of experienced architects. A booklet is obtainable giving figured illustrations of the bricks, or stones as they are called.

More "Builders' Journals" Wanted.—The publisher will be pleased to send a copy of the current number of the "Architectural Review" to any reader in exchange for "Builders' Journals" of the following dates:—February 8th and 15th and April 19th, 1899. We are obliged to those readers who have already sent copies.

Trade and Craft.

Electric Arc Lamps.

The enclosed long-burning "Ark" lamp recently introduced by Messrs. Johnson and Phillips, of Victoria Works, Old Charlton, Kent, has met with great success, and to enable the increasing demand for it to be supplied (and also to meet foreign competition) the firm has erected new shops and machinery for its manufacture. We have received a copy of the catalogue dealing with this new "Ark" lamp, which embodies all the best points in design that Messrs. Johnson and Phillips have determined during twenty years' experience as arc lamp manufacturers. The following claims are made for it: It provides the cheapest known illuminant; it burns in deoxygenated air, prolonging its life fifteen or twenty times and effecting an economy in carbons and trimming which more than saves the cost of the lamp in one year; its candle power is about 2,000 per 500-watt lamp; it gives a soft and diffused light; it is perfectly automatic; and it has only one working part (the armature). Sample lamps are sent out to responsible persons for trial on condition that, if not approved, they are returned within three weeks, carriage paid. Their price varies between £4 15s. and £6. A copy of the catalogue under notice (which is excellently produced and includes some good specimens of colour printing) will be supplied to the trade on application.

Driving Belts and Leathers.

It is a pleasing feature in the price lists of Messrs. Fleming, Birkby and Goodall, Limited, manufacturers of belting, hydraulic leathers, &c., of West Grove Mill, Halifax, that they contain a number of useful hints and data about the particular articles dealt with. For instance, they issue a very handy little pamphlet entitled "Hints on Hydraulic Leathers," which describes and illustrates the various methods of packing (both past and present) and comments on their respective merits. As is stated, the chief reason why perfect leather packings have been so difficult to obtain is that they have been made either by the tanner and currier or by the mechanical engineer, singly. It is the combination of these two which produces the best result; and this is what Messrs. Fleming, Birkby and Goodall have done by placing at the head of their hydraulic leather department an expert who has had the training of a mechanical engineer and the experience of a tanner. In the matter of belts a similar discretion has been observed. Fleming's "Standard" oak-tanned belting is made from the prime parts of the hide, well stretched, and is curried expressly to secure strength, uniform toughness, and durability. The "Teon" belting is a substitute for indiarubber, balata and similar beltings; and the manufacturers claim that it possesses all the good qualities of these belts and none of their disadvantages. As regards pulleys, the firm has a speciality in the "Gilbert," which is made of thoroughly seasoned maple, runs true, gives a good grip, and wears well. Messrs. Fleming, Birkby and Goodall, Limited, should be applied to when belts, leathers and similar articles are required; their London office is at 39 Lime Street, E.C.

The Acquisition of the Alexandra Palace and Park may now be taken to have been accomplished. The amount originally asked for was £120,000, but it was deemed desirable to enfranchise the leasehold portion of the land and to purchase the "Grove." Therefore the amount was increased to £150,000. Of this sum £144,500 has been promised, and the Parks and Open Spaces Committee of the London County Council now recommend a grant of £7,000. This sum, which is necessary to enable the Council to have a representative on the Board of Trustees, will give a surplus of £1,500. The scheme upon which the trustees will work is to maintain the grounds as they are, to lease the theatre and concert-hall for performances, and to continue to let the racecourse. The banqueting hall is to be devoted entirely to Volunteer purposes, and a polytechnic is to be established.

THE GRANITE BUILDERS OF EGYPT.

THE ancient Egyptians watched the effect of atmospheric and other influences on stones, and wisely profited by the lessons taught them by experience. They learned that earth, abounding with nitre, from its attracting moisture, had the effect of decomposing granite but that in the dry climate of upper Egypt the stone remained for ages uninjured when raised above all contact with the ground. When, therefore, there was a possibility of its being exposed to damp they based an obelisk or other granite monument on limestone substructions, and these last are found at the present day perfectly preserved, while the granite above them gives signs of decay in proportion to its contact with the earth subsequently accumulated around it. This refers to Upper Egypt, visited only four or five times in a year by a shower of rain, for in the Delta granite remains have been affected in a far greater degree than in the Thebaid: nitre abounds there, and it is remarkable that the obelisks at Alexandria have suffered the least on the sides next the sea. The Egyptians seldom used granite as a building stone, except for a small sanctuary in some sandstone temple; and in the later times of the Ptolemies one or two temples were built entirely of granite. But in the true Egyptian period the use of that stone was chiefly confined to the external and internal casings of walls, to obelisks, doorways, monolithic shrines, sarcophagi, statues, small columns and monuments of limited size, and was sometimes employed for roofing a chamber in a tomb.

The durability of granite varies according to its quality. The felspar is the first of its competent parts which decomposes, and its greater or less aptitude for decay depends on the nature of the base of which the felspar consists. Egypt produces a great variety of granite, and the primitive ranges in the desert to the east of the Nile, about thirty-five miles from the Red Sea, supplied the Romans with numerous unknown kinds, as well as with porphyry, which they quarried extensively in that district; but the granite of the ancient Egyptians came from the quarries of Syene, in the valley of the Nile, and from these they obtained what was used for their monuments. It is from this locality that the name "Syenite" has been applied to a certain kind of granite; it is, however, far from being all of the same nature, and a small portion only of the stone found there is really what we now call "Syenite."

At the early period of the third and fourth dynasties, between twelve and thirteen centuries before the Christian era, the Egyptians extensively employed granite for various purposes. They had learned to cut it with such skill that the joints of the blocks were fitted with the utmost precision; deep grooves were formed in the hard stone with evident facility, and it must have been known to them for a long period before the erection of the oldest monuments that remain, the Pyramids of Memphis, where granite was introduced in a manner which could only result from long experience. In the time of the first Osirtasen, about 2050 years before the Christian era, granite obelisks were erected at Heliopolis and in the Fyoom, and other granite monuments were raised in the same reign at Thebes, from which we find that even then the Egyptians had learned how the damp earth acted on granite when buried beneath it; and this interesting question suggests itself—How long before that time must the stone have been used to enable them to obtain from experience that important hint which led them to place granite on limestone foundations?

Desecration of the Tower.—The Society for the Preservation of Ancient Buildings held a meeting last week, when attention was called to the new guard-house at the Tower. A good deal of feeling was expressed on the subject by some of the members, and the action of the War Office in placing a modern brick building between the two oldest towers was generally condemned; but it was felt it would be outside the scope of the society to take any action in respect to new premises so long as they did not structurally injure any old building.

Keystones.

New Co-operative Premises at Paisley have been opened by the Paisley Provident Co-operative Society. The new branch is situated in Bank Street, and consists of dwelling-houses and two shops—a grocery and a fishmonger's.

A new Stained-Glass Window in Ely Cathedral has been placed in Bishop Alcock's chapel. It is the work of Messrs. Clayton and Bell, and has four large figures in it, of Hugh de Northwold (1249-54), Hugh de Balsham (1257-86), Bishop John Hotham (1316-37), Bishop John Alcock (1466-1500).

A new Window at St. Paul's Church, Penzance, has just been erected. The window contains figures of Thomas Cranmer, Archbishop of Canterbury, and of Nicholas Ridley, Bishop of London, two of the martyrs of the Reformation period. The window was designed by Mr. Reginald T. Dick, of Newlyn.

A Boys' Club at Salford is to be built and endowed by Messrs. W. and J. Groves, of Salford, at a cost of £10,000, the site costing another £1,000. The trustees of the Harling estate have also promised to build a club for girls, at a cost of £5,000. The site of both institutions is on land formerly occupied by the barracks.

St. Bartholomew's Church, Bristol, has been fitted with a tower clock. There are two dials, one on the south and one on the west wall of the tower. These dials are 5ft. in diameter, and are made of iron with carved centres, the figures and hands being gilded, and the centre decorated blue. It is of horizontal construction, with an iron bed, upon which the trains of wheels are built on plummer blocks, the wheels being made of gun metal and brass with steel arbors and lantern pinions. The diameter of the great wheel is 12in. A special cupola has been built on the roof of the tower for the bell. The clock has been made by Messrs. Kemp Brothers, of Bristol.

The Guildhall is undergoing considerable alterations. The Art Gallery is being enlarged by the acquisition of a part of the Mayor's Court offices. For some years past, since art loan exhibitions have been held in the Corporation Gallery, the want of space in the present structure has been very apparent, hence the determination of the Court of Common Council to enlarge it. A ladies' gallery is being erected opposite the canopy under which the most distinguished guests at Mayoral banquets always sit. Hitherto the special accommodation for ladies has been confined to a temporary structure put up every Lord Mayor's day. The left wall of the porch—the most ancient part of the Guildhall—is undergoing some alteration in order to improve the means of communication to the suite of offices occupied by the City Comptroller.

The new Public Baths at Stockbridge which have been erected by Edinburgh Town Council have just been opened. They are situated at the west end of Saxe-Coburg Place, having an access therefrom, and also from the low level of Glenogle Road. The main pond is 75ft. long and 35ft. wide, with a depth from 3ft. to 7ft. 6in. Below the pond hall floor there is a basement. The pond itself is built entirely of concrete, the exposed surface being lined with white enamel brick. Round the pond there are arranged the dressing boxes for the use of the bathers. On the floor above there is a gallery round the pond, access to which is obtained from the entrance hall. On this level there are twenty-one ordinary slipper baths. A new departure has been adopted by the Corporation in providing a Russian bath, with six retiring lounges. At the north-west corner of the building there is an exit communicating with the gallery level and pond hall, to be used on the occasion of swimming galas. At the east end of the pond hall and practically on the gallery level there are nine first-class bath rooms. On the gallery level there is a club room. At the west end of the pond hall there is a gymnasium room. There are rooms for the staff. The estimated cost of the undertaking is slightly over £15,000.

The Royal Institute of British Architects intend to hold their annual meeting in Glasgow in October, 1901.

A Stained-Glass Window to the author of the "Pilgrim's Progress" is to be placed in St. Saviour's, Southwark.

The Isolation Hospital at Cuddington is undergoing alterations and new wards are being erected. Mr. H. D. Searles Wood, of 157 Wool Exchange, Coleman Street, is the architect.

Messrs. A. J. Arrowsmith and Co., of 80 New Bond Street, have been awarded a silver medal for their excellent oak work, panelling, &c., in the English Royal Pavilion at the Paris Exhibition.

Macclesfield Church is being restored. An anonymous donor has offered £1,000 towards the £5,000 still needed, on condition that the whole amount is raised before the reopening early next year. The restoration has already cost £20,000.

Homes for Consumptive Patients.—The second of a series of six homes for sufferers from consumption to be erected in Scotland has been opened at Bridge of Weir, Renfrewshire. It is the gift of Mr. James Carnegie, of Lochearnhead, has cost £12,000, and provides accommodation for forty-four patients.

Prizes for Drawings.—The London County Council Technical Education Board announce that they are prepared to award four prizes—two of the value of £15, and two of the value of £10—for careful drawing studies in museums and old churches, especially the South Kensington and British Museums.

An American Hotel, said to be the first in England, is proposed to be erected near Waterloo Railway Station. A New York architect came to England over a year ago at the request of the directors of the syndicate responsible for the new enterprise. The structure will be entirely of steel, and the steel beams are already being cast at Sheffield.

The King's College Course in Architecture, Building Construction, &c., is under Professor R. Elsey Smith, Messrs. C. H. Reilly and James Bartlett. The syllabus for the session 1900-1 has just been issued, giving particulars of all the day and evening classes, and of prizes offered to students by the Carpenters' Company. There are also classes in wood-carving, conducted by Messrs. W. H. Howard and G. J. Bull.

A "Home of Rest" at Bare, Morecambe, for the Girls' Friendly Society has just been dedicated. The building is in the Elizabethan style. On the ground floor is a large dining room looking out on the Promenade, as well as a cloak room, with special entrance for the girls. The first floor is arranged so as to include sitting room, matron's sitting room, and dormitories, extending to the rear, while the third floor is almost exclusively occupied by dormitories. The architect is Mr. Maidman, of Edinburgh, whose plans were selected in a public competition.

The Peking Palaces.—Mr. C. J. Holmes, writing in the "Times," says:—"Our telegrams from the Far East continue to indicate that the Allies may punish the Chinese by the destruction of the Imperial Palaces at Peking. Before the palaces are razed to the ground, could not some well-known expert be asked to look through their contents and preserve for our museums all relics that there may be of the ancient art and literature of the Chinese? Photographic records might be taken of the things that could not readily be carried away. It is certainly better that such records should exist in our museums than that they should not exist at all. Care, at least, should be taken to avoid the irremediable damage done at the burning of the Summer Palace, when hundreds of the most ancient specimens of Chinese painting perished in the fire, with everything else that no soldier thought worth the looting. Such damage may not seem important to us at present, because our knowledge of the art of the Far East is so imperfect. For that very reason we should be careful not to destroy by an act of hasty anger archæological treasures which we can never replace."

The First Permanent Board School for Blackpool is being erected in Central Road, Revoe.

The Fylde District Pupil Teachers' Centre was opened last week at the Technical School, Blackpool.

A new Dining and Ceremonial Hall, to be called the Principal Rainy Hall, is being added to the Edinburgh New College.

A new Town Hall at Atherton was opened last week. The new building, which has been erected at a cost of nearly £4,000, occupies the site of the old Public Hall.

An Electric Lighting Station at Ilford is being erected by the Ilford Urban District Council. This is intended to supply the public lighting and the tramways in the district. The new building is situated in Ley Street, and will have a shaft 180ft. high. Mr. Herbert Shaw, A.M.I.C.E., surveyor to the Urban District Council, is the architect of the new building, and Mr. George Sharpe the builder.

Cottage Homes at Stockton have been erected by the Board of Guardians at a cost of between £10,000 and £11,000. Two pairs of the homes are situated in Windsor Road and two in Hartington Road. They are built of grey clamped bricks throughout, with stone corner facings; they have been made so that should the scheme not turn out a success the homes can be speedily adapted at slight cost for ordinary habitable purposes. Each home is built to accommodate fifteen children, under the charge of a foster-mother.

The Building Trades' Gift to the Nation.—The executive committee, representing the architects, master builders, operatives of all branches, and manufacturers and builders' merchants in Birmingham, appointed to collect subscriptions in that district in aid of the Gift, met last week. Mr. F. G. Whittall (President of the Birmingham Master Builders' Association) presided. Mr. William Sapcote (hon. treasurer) read a letter from Mr. T. F. Rider, F.R.G.S. (London), congratulating the Birmingham executive on the splendid effort they had made on behalf of the fund. Mr. Matthews, on behalf of the operative carpenters, handed in a contribution of £66, and Mr. H. Duckett one of £25 on behalf of the operative plasterers. Other representatives of the operatives handed in small donations, and Mr. Sapcote remarked that Birmingham would contribute something like £500 to the fund. As several promised contributions had not been received it was decided to adjourn the meeting till October 9th, on which date the local collection will be closed.

Law Cases.

Obtaining Injunctions against Trades Unions.—In the case of the *Taff Vale Railway Company* v. *The Amalgamated Society of Railway Servants*, heard last week in the Chancery Division of the High Court of Justice, judgment was given upon the question of whether the defendant society could be included in the injunction granted against Mr. Bell and Mr. Holmes restraining them from watching or besetting, or causing to be watched or beset, the Great Western Railway Company at Cardiff. Mr. Justice Farwell, in giving judgment, said the society had taken out a summons to strike out their name as a defendant, the ground being that they were neither a corporation nor a body that could be sued. It was true that a trades union was neither a corporate body, individual, nor partnership. The question, however, turned upon the true construction of the Trades Union Acts of 1871 and 1876. Having regard to those Acts, it could not be said that a trades union was not a legal combination. The association could own property and could act by agents. The fact that it could act by agents gave it the same duties and the same liabilities as the law imposed upon a private individual. He could not think that the Legislature would have legalised the existence of an irresponsible body. Upon that construction of the Act, he must dismiss the motion. An injunction was granted against the society in the same terms as against the other defendants.

Engineering Notes.

The Ruskin Union intends to hold its first congress at Sheffield on September 21st and 22nd. Lord Windsor will deliver the presidential address.

Proposed new Pavilion at Bournemouth.—A Local Government Board enquiry was held at Bournemouth on Friday into the application of the Corporation to borrow £37,000 to erect a pavilion on the shore end of the pier. Strong opposition was raised.

East Ham Electric Station.—The foundation-stone of the shaft for the new electricity station which is being erected by the East Ham Council in connection with the scheme for electric tramways and lighting was laid last week. A few hours before the ceremony the roof of part of the unfinished building collapsed and slightly injured two workmen.

Profitable Electricity.—At the St. Pancras Vestry's meeting last Wednesday, Dr. W. Smith, chairman of the Electricity Committee, presented a report showing that the nett profit on the local electrical undertaking since its beginning, in 1892, was £18,288. Dr. Smith explained that the Vestry would hand over to its successors, the new Borough Council, a property worth £300,000, which had not and would not cost the ratepayers a penny. Had their undertaking been a joint stock concern, it would have paid a dividend at the rate of 6 per cent.

The Houses Supplied by the London Water Companies.—Some indication, if not a conclusive one, of the number of houses in London may be gathered from the approximate number of houses served by the various metropolitan water companies. The New River Company heads the list with about 133,000 houses on its books. Southwark and Vauxhall Company follows with 114,000; East London, 104,000; Lambeth, 82,311; Kent, 62,426; West Middlesex, 62,044; Chelsea, 37,905; and Grand Junction, 33,469 houses.

The Northampton Institute, Clerkenwell, E.C.—We have received a copy of the announcements for the Session 1900-1. The chief new departure is the establishment of engineering day courses, which include mechanical, electrical, and horological engineering. In the electrical engineering department, in addition to ordinary work in lighting and power distribution, special attention will be given to electric traction and electro-chemistry. The winter term begins on Monday, October 1st, and ends on Friday, December 21st.

Development of Sunderland Docks.—The extension of the South Dock, which has been taken over by Sir John Jackson, who secured the contract, is going rapidly forward at Sunderland. The work now in hand includes the alteration of No. 1 gateway and the enlargement of Hudson Dock North. At present the gateway has an entrance of 45ft. only: it is being enlarged to 70ft. clear, widening out to 104ft. at the basin entrance. The contractors are now busy putting in coffer-dams of concrete preparatory to removing the old gateway. The use of concrete in the construction of dams is a new departure, but it has already been successfully carried out by the contractors at Devonport. The next work to be taken in hand is the enlargement of the Hudson Dock North.

City of London College.—The Michaelmas term of this college (which is situated in White Street, Moorfields, E.C.) begins on Monday, October 1, and ends on Saturday, December 22. In the engineering department, which is under Professor Henry Adams, the well-known specialist and instructor, classes will be held for technical drawing and construction, building construction honours, sanitary, civil and mechanical engineering and practical sanitary science, quantity surveying and levelling, valuation, theodolite work, engineering field work, town surveying and the laying-out of building estates. The College Calendar giving full particulars of all the examinations, classes, &c., can be obtained for 9d., post free.

New Companies.

Sheaf Pottery Company, Limited.

This company was registered on August 24th with a capital of £1,000 in £1 shares to acquire the business lately carried on by Frederick A. Spruce as the Sheaf Pottery Company at Commerce Street, Longton, Staffordshire, and to carry on the business of earthenware and china manufacturers, &c.

Southend-on-Sea Estates Company, Limited.

This company was registered on August 30th with a capital of £120,000 in £10 shares to acquire, sell, hold, let, improve, build upon, use, and develop any real or personal property in the neighbourhood of Southend-on-Sea or elsewhere; to lay out land for building purposes, as builders and contractors, brick, tile and terra-cotta manufacturers, &c. The first directors (of whom there shall be not less than four) are J. G. Sadd, A. G. Sadd, J. P. Sadd and H. A. Dowsett. Registered office: 3 Alexandra Street, Southend.

Foster Estates Company, Limited

This company was registered on August 30th with a capital of £100,000 in £10 shares to acquire certain land at Chislehurst, Kent the property of R. Foster; to lay out the same, or any other land, for building purposes; to construct and maintain any rail or tram roads, wharves, docks, piers, warehouses; as builders and contractors, dealers in every description of stone, sand, lime, bricks, tiles and terra-cotta; timber merchants, sawmillers and sawmill proprietors; as house agents, producers and suppliers of gas and electricity for the purpose of light, heat or power. The first directors (of whom there shall be not less than three nor more than five) are R. Foster, W. F. Foster, R. Foster, jun., J. Foster and M. Foster.

Westleigh Estates Company, Limited.

This company was registered on August 17th with a capital of £93,000 in £1 shares to acquire certain real estate and rent charges, subject to the leases and agreements, situate in or issuing out of land in Westleigh and Hindley, Lancashire, to develop and extend the same, and generally to carry on the businesses of colliery proprietors, mine owners, coal and iron masters, coke manufacturers, &c.; as builders and contractors, ironmasters, steel converters, builders of engines, machinery and all kinds of rolling stock; to develop the resources of land by planting, clearing, farming or building thereon, &c. The directors are H. Bubb, J. Pendlebury, W. H. Hampson, H. G. Gregory, J. Fletcher and H. Pendlebury, H. Bubb to retain office so long as Mrs. Bubb or her executors hold 48,000 shares.

Tasmanian Timber Corporation, Limited.

This company was registered on August 18th with a capital of £120,000 in £1 shares to carry out an agreement between J. C. Kemsley and this company for the acquisition of the business of timber merchants, &c., and, generally, to carry on the businesses of timber merchants, sawmill proprietors, timber growers, manipulators, importers, exporters and workers and dealers in timber and wood of all kinds, manufacturers of wooden articles, shipbuilders and owners, wharfingers, carriers, &c., and other rights, grants, leases, claims, concessions, &c., in any part of the world, and to develop, deal with, work and turn to account the same in such manner as the company shall see fit; as miners, smelters and metallurgists; to lay out land for building purposes; as shippers, shipowners, carriers by land and water; to develop the resources of land by planting, clearing, draining, farming, &c.; as engineers and metal founders, producers and suppliers of gas and electricity for the purposes of light, heat or power; as bankers, financiers, and concessionnaires; stock and share dealers, &c. The first directors (of whom there shall be not less than three nor more than seven) are to be elected by the signatories to the memorandum of association—G. A. Murray, J. C. Kemsley, J. A. Waterhouse, F. W. Eccardt, G. L. Le Sueur, W. B. Pipkin and E. Richardson.

Sheffield Building Trades Exchange Co., Lim.

This company was registered on September 1st with a capital of £6,000 in £1 shares to acquire a plot of freehold land containing 263 square yards or thereabouts, extending from Upper Charles Street to Cross Burgess Street, Sheffield, and having frontages to those streets of 31ft. and 41ft. respectively, to erect a building or buildings for use as an exchange and club house, and to establish and carry on a builders' exchange. The number of directors is not to be less than six nor more than eight. The subscribers — James Longden, John Biggin, Alfred J. Forsdike, Arthur Mastin, John D. Cook, Arthur Bradbury and Martin Grantham, all builders of Sheffield—are to appoint the first.

CURRENT PRICES.

		£ s. d.	£ s. d.
FORAGE.			
Hay, best	per load	4 0 0	4 7 6
Sainfoin mixture	do.	3 10 0	4 10 0
Clover, best	do.	4 5 0	5 0 0
Beans	per qr.	1 7 6	—
Straw	per load	1 8 0	1 18 0
OILS AND PAINTS.			
Castor Oil, French	per cwt.	1 11 6	1 12 8
Colza Oil, English	do.	1 10 3	—
Copperas	per ton	2 0 0	—
Lard Oil	per cwt.	1 17 0	—
Lead, white, ground, carbonate	do.	1 3 10	—
Do. red	do.	1 0 4½	—
Linseed Oil	do.	1 14 0	—
Petroleum, American	per gal.	0 0 6¾	0 0 6½
Do. Russian	do.	0 0 6½	0 0 6½
Pitch	per barrel	0 8 6	—
Shellac, orange	per cwt.	2 18 0	2 19 0
Soda crystals	per ton	3 0 0	3 2 6
Tallow, Town	per cwt.	1 3 6	1 7 6
Tar, Stockholm	per barrel	1 6 0	—
Turpentine	per cwt.	1 8 1½	—
METALS.			
Copper, sheet, strong	per ton	85 0 0	—
Iron, Staffs., bar	do.	9 15 0	11 10 0
Do Galvanised Corrugated sheet	do.	13 0 0	—
Lead, pig, Spanish	do.	17 13 9	17 15 0
Do. do. English common brands	do.	18 0 0	—
Do. sheet, English, 3lb. per sq. ft. and upwards	do.	21 0 0	22 0 0
Do. pipe	do.	23 0 0	—
Nails, cut clasp, 3in. to 6in.	do.	12 0 0	13 0 0
Do. floor brads	do.	11 15 0	12 15 0
Steel, Staffs., Girders and Angles	do.	8 10 0	9 0 0
Do. Mild Bars	do.	9 7 6	9 15 0
Tin, Foreign	do.	135 10 0	135 0 0
Do. English ingots	do.	140 0 0	140 10 0
Zinc, sheets, Silesian	do.	23 10 0	—
Do. do. Vieille Montaigne	do.	24 5 0	—
Do. Spelter	do.	18 15 0	18 17 6
TIMBER.			
SOFT WOODS.		£ s. £.	£ s. d.
Fir, Dantzic and Memel	per load	3 0 0	4 0 0
Pine, Quebec Yellow	do.	4 7 6	6 0 0
Do. Pitch	do.	3 8 0	—
Laths, log, Dantzic	per fath.	4 10 0	5 10 0
Do. Petersburg	per bundle	0 1 1½	—
Deals, Archangel 2nd & 1st	per P. Std.	12 15 0	18 0 0
Do. do. 4th & 3rd	do.	13 5 0	—
Do. do. unsorted	do.	11 0 0	12 10 0
Do. Riga	do.	6 15 0	8 10 0
Do. Petersburg 1st Yellow	do.	18 0 0	—
Do. do. 2nd „	do.	10 15 0	13 15 0
Do. do. Unsorted „	do.	8 15 0	13 0 0
Do. do. White	do.	11 5 0	11 15 0
Do. Swedish	do.	10 15 0	22 10 0
Do. White Sea	do.	13 5 0	17 15 0
Do. Quebec Pine, 1st	do.	13 15 0	23 15 0
Do. do. 2nd	do.	18 15 0	—
Do. do. 3rd &c.	do.	9 0 0	9 15 0
Do. Canadian Spruce, 1st	do.	10 10 0	11 15 0
Do. do. 3rd & 2nd	do.	8 0 0	10 0 0
Do. New Brunswick	do.	7 5 0	8 0 0
Battens, all kinds	do.	8 15 0	10 0 0
Flooring Boards, 1in. prepared, 1st	per square	0 12 0	0 13 3
Do. 2nd	do.	0 8 0	0 9 3
Do. 3rd &c.	do.	0 9 6	—
HARD WOODS			
Ash, Quebec	per load	3 17 6	4 10 0
Birch, Quebec	do.	3 12 6	3 17 6
Box, Turkey	per ton	7 0 0	15 0 0
Cedar, 1in., Cuba	per ft. sup.	0 0 3	0 0 3½
Do. Honduras	do.	0 0 3⅜	—
Do. Tobasco	do.	0 0 3½	—
Elm, Quebec	per load	0 12 6	5 10 0
Mahogany, Average Price for Cargo, Honduras	per ft. sup.	0 0 4⅞	—
Do. African	do.	0 0 4⅞	—
Do. St. Domingo	do.	0 0 6⅜	—
Do. Tobasco	do.	0 0 4⅜	—
Do. Cuba	do.	0 0 4⅞	—
Oak, Dantzic and Memel	per load	3 15 0	5 7 6
Do. Quebec	do.	4 12 6	5 0 0
Teak, Rangoon, planks	do.	9 0 0	21 0 0
Wainscot, Riga (Baulk)	do.	3 15 0	5 15 0
Do. Odessa Crown	do.	3 15 0	5 15 0
Walnut, American	per cub. ft.	0 1 9	0 3 4

COMPLETE LIST OF CONTRACTS OPEN.

DATE OF DELIVERY.		WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
		BUILDING.		
Sept.	14	London, N.W.—School	Managers of Aske's Haberdashers' School	Widnell and Trollope, 20 Tothill Street, Westminster, S.W.
"	14	Talwrn, near Coedpoeth, Wales—Chapel	Wesleyan Methodists	Bryn Tabor, Coedpoeth.
"	15	Wigton—Rebuilding	Maryport Brewery Company	G. Armstrong, 24 Bank Street, Carlisle.
"	15	Bristol—Passenger Station	Docks Committee	Engineer, Cumberland Basin, Bristol.
"	15	Devonport—Wall		J. F. Burns, Municipal Offices, Ker Street, Devonport.
"	15	Folkestone—Repairs	Joint Committee of the Burial Board	F. Newman, 4 Bouverie Square, Folkestone.
"	17	Cardiff—Law Courts	Corporation	Town Clerk, Town Hall, Cardiff.
"	17	Richmond, Surrey—Infirmary and Nurses' Home	Guardians	A. J. Wood, 17 The Green, Richmond, Surrey.
"	17	London, S.E.—Stables	Vestry of St. Mary Magdalen, Bermondsey	F. Ryall, Town Hall, Spa Road, Bermondsey.
"	17	Pembroke Dock, Wales—School	School Board	G. Morgan and Son, 24 King Street, Carmarthen.
"	17	Walsall—School	School Board	Batley and McConnal, Bridge Street, Walsall.
"	17	Glasgow—Hotel	Caledonian Railway Co.	J. Miller, 223 West George Street, Glasgow.
"	17	Leeds—Alterations	School Board	W. S. Braithwaite, Architect, Leeds.
"	17	Llanelly—School	School Board	J. W. Watkins, School Board Offices, Llanelly.
"	18	London, E.C.—Enlarging Telegraph Factory	Commissioners of H.M. Works	Secretary, H.M. Office of Works, &c., Storey's Gate, S.W.
"	18	Warrington—Sanatorium	Corporation	Borough Surveyor, Town Hall, Warrington.
"	18	Hertford—Fire Station	Corporation	J. H. Jevons, Borough Engineer and Surveyor, Hertford.
"	18	South Kirby, Yorks—Extension	Committee of the Working Men's Club	Garside and Pennington, Architects and Surveyors, Pontefract.
"	18	Bilston—Roof Works	Urban District Council	J. D. Wassell, Town Hall, Bilston.
"	19	Chapel-Allerton, Leeds—Home	Guardians of Leeds Union	P. Robinson, 72 Albion Street, Leeds.
"	21	Merthyr Tydfil—School	School Board	J. L. Smith, Architect, Aberdare.
"	21	Limerick—Residence		W. H. Byrne, 20 Suffolk Street, Dublin.
"	22	Lichfield—School	Governors of Grammar School	H. H. Brown, Clerk to the Governors, Lichfield.
"	22	Halifax—Stabling		Horsfall and Son, Lord Street Chambers, Halifax.
"	24	Barnes—Shops		F. and W. Stocker, 90 Queen Street, E.C.
"	24	Hatfield—Police Cottages	Herts County Council	County Surveyor, 41 Parliament Street, S.W.
"	25	Sheffield—Bridge	Health Committee	C. F. Wike, Town Hall, Sheffield.
"	25	Sheffield—Baths, &c.	Health Committee	C. F. Wike, Town Hall, Sheffield.
"	25	London, E.—Quarter Sessions Court	West Ham County Council	Borough Engineer, Town Hall, West Ham, E.
"	25	London, S.W.—Post Office	H.M. Office of Works	Mr. Wager, Office of Works, Storey's Gate, S.W.
		ENGINEERING.		
Sept.	15	Minehead, Somerset—Improving Sea Front	Urban District Council	F. W. Roberts, Engineer, Taunton.
"	15	Mexborough—Electric Lighting	Urban District Council	H. Waring, 18 Berkeley Road, Crouch End, London, N.
"	15	Perth—Electric Lighting	Commissioners	J. Begg, City Chambers, Perth.
"	15	Edinburgh—Crane	Gas Commissioners	W. R. Herring, New Street Works, Edinburgh.
"	15	Neyland, Pembrokeshire—Heating Apparatus		H. Powell, Congregational Minister, Neyland.
"	15	Middleton and Castleton, Lancs.—Light Railways	British Electric Traction Company, Ltd.	Engineer, The Company, Donington House, Norfolk St., Strand, W.C.
"	17	Jassy, Roumania—Waterworks		Technical Department, Communal Council Office, Jassy.
"	18	Ewesley, Northumberland—Reservoir	Tynemouth Corporation	Borough Surveyor, Tynemouth.
"	18	Dursley, Glos.—Reservoir	Rural District Council	Taylor, Sons and Crimp, 27 Gt. George Street, London, S.W.
"	19	Plumstead—Electric Plant	Vestry	J. B. Mitchell, Vestry Hall, Maxey Road, Plumstead.
"	19	Belper—Reservoirs	Rural District Council	J. Erith, Engineer, Baslow.
"	20	Tunbridge Wells—Cables	Corporation	H. Boot, Borough Electrical Engineer, Tunbridge Wells.
"	21	Sunderland—Dynamos	Corporation	J. F. C. Snell, Dunning Street, Sunderland.
"	22	Horton, Surrey—Dynamos	London County Council	R. W. Partridge, 6 Waterloo Place, S.W.
"	22	Horton, Surrey—Pumping Machinery	London County Council	R. W. Partridge, 6 Waterloo Place, S.W.
"	24	London, S.W.—Mains	London County Council	Engineer, County Hall, Spring Gardens, S.W.
"	24	Burnham, Somerset—Valves	Urban District Council	W. J. Press, Town Hall, Burnham.
"	24	Burnham, Somerset—Pipelaying	Urban District Council	W. J. Press, Town Hall, Burnham.
"	25	Walthamstow—Electric Lighting Plant	Urban District Council	J. Enright, 47 Victoria Street, S.W.
"	25	Exmouth—Pumping Machinery	Urban District Council	J. Mansergh, 5 Victoria Street, Westminster, S.W.
"	26	Uganda—Steel Trestle Viaducts and Traveller	Railway Committee	Crown Agents for the Colonies, Downing Street, S.W.
"	26	Ulverston—Water Mains	Rural District Council	W. F. Y. Molineux, 3 Benson Street, Ulverston.
"	27	Glasgow—Graving Dock	J. Shearer and Son	J. Deas, 53 Bothwell Street, Glasgow.
"	27	Hull—Pipework	Electric Lighting Committee	City Treasurer, Town Hall, Hull.
"	28	Glasgow—Piping	Corporation	J. Young, 83 Renfield Street, Glasgow.
"	29	Aberdeen—Generating Plant	Electric Lighting Committee	J. A. Bell, Cotton Street, Aberdeen.
"	30	Wellington, New Zealand—Engines	Corporation	J. Duthie and Co., Limited, 23 Lime Street, London, E.C.
Oct.	1	Llandebie, Wales—Widening Bridge	Carmarthenshire County Council	T. Jones, Council Offices, Llandovery.
"	2	Barcelona, Spain—Elevators	Harbour Commissioners	Commercial Department, Foreign Office, S.W.
		IRON AND STEEL.		
Sept.	15	Bonnyrigg, Scotland—Urinal		B. M'Bey, Clerk, Bonnyrigg.
"	22	Leigh, Lancs.—Pipes	Gas Committee	J. Foster, Gas Works, Leigh.
"	24	Burnham, Somerset—Pipes	Urban District Council	W. J. Press, Town Hall, Burnham.
"	26	The Hague, Holland—Socket Pipes		M. Nydoff, Noblestreet 18, The Hague, Holland.
"	27	Ulverston—Pipes	Rural District Council	W. F. Y. Molineux, 3 Benson Street, Ulverston.
		PAINTING AND PLUMBING.		
Sept.	14	Batley—Painting	Co-operative Society, Limited	H. B. Buckley, 85 Commercial Street, Batley.
"	17	Leeds—Painting	Corporation	City Engineer, Municipal Buildings, Leeds.
"	18	Wakefield—Painting	Guardians	Master, Workhouse, Wakefield.
		ROADS.		
Sept.	14	Preston, Lancs.—Paving	Corporation	Borough Surveyor, Town Hall, Preston.
"	15	Mansfield—Street Works	Corporation	R. F. Vallance, White Hart Chambers, Mansfield.
"	17	Colchester—Roadmaking	Roads and Drainage Committee	H. Goodyear, Borough Surveyor, Colchester.
"	17	Shildon—Paving	Urban District Council	C. Heslop, Council Chambers, Shildon R. S. O.
"	18	St. Alban's—Granite	Corporation	City Surveyor, Victoria Street, St. Alban's.
"	18	Tottenham—Kerbing, &c.	Urban District Council	P. E. Murphy, 72 High Road, Tottenham.
"	19	Kingsbury, Middlesex—Granite	Urban District Council	Surveyor, Council Offices, Kingsbury, Middlesex.
"	19	Hoddesdon, Herts—Works	Urban District Council	T. Salkield, Lord Street, Hoddesdon.
"	19	London, S.W.—Making-up	Fulham Vestry	Surveyor, Town Hall, Walham Green, S.W.
"	22	Tredegar, Mon.—Limestone	Bedwellty Urban District Council	J. A. Shepard, Town Hall, Tredegar.
"	25	London, E.—Making-up	West Ham County Council	Borough Engineer, Town Hall, West Ham.
"	27	Heswall, Cheshire—Road	Wirrall Rural District Council	W. H. Churton, Eastgate Buildings, Cheshire.
		SANITARY.		
Sept.	17	Londonderry—Sewer	County Borough Council	City Surveyor, Guildhall, Londonderry.
"	17	Blackburn—Privies and Cesspools	Health Committee	W. Stubbs, Municipal Offices, Blackburn.
"	17	Northallerton—Sewer	Rural District Council	W. Fowle, Clerk, Northallerton.
"	18	Eastleigh, Hants—Sewerage Works	Urban District Council	Lennon & Blizard, Lansdowne House, Southampton.
"	18	London, W.—Sewer Works	Kensington Vestry	Surveyor, Town Hall, High Street, Kensington.
"	22	Durham—Sewers	Urban District Council	H. W. Taylor, St. Nicholas's Chambers, Newcastle-on-Tyne.
Oct.	1	Normanton-by-Derby—Sewers	Shardlow Rural District Council	T. A. Fuller, The College, All Saints, Derby.
		TIMBER.		
Sept.	21	Hull—Timber	Corporation	A. E. White, Town Hall, Hull.
"	22	Horton, near Epsom—Fencing	London County Council	R. W. Partridge, 6 Waterloo Place, S.W.
"	25	London, E.—Fencing	West Ham County Council	Borough Engineer, Town Hall, West Ham, E.

COMPETITIONS OPEN.

DATE OF DELIVERY.		DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	BY WHOM ADVERTISED.
Sept.	15	Cardiff—Asylum	£105	Borough Engineer, Town Hall, Cardiff.
"	27	Willington Quay—Store	£10	Secretary, Industrial Society, Limited, Willington Quay.
"	27	Ashford, Middlesex—Schools		E. Brooker, Ashford, Middlesex.
"	30	Devizes—Hospital	£20, £10	O. Sheppard, Clerk to Joint Committee, Devizes.
"	30	Musselburgh—Town Hall	£26 5s. and £15 15s.	Town Clerk, Council Offices, Musselburgh.
Oct.	30	South Shields—Municipal Buildings	£200, £100, £50	J. M. Hayton, Town Clerk, Court Buildings, South Shields.
Nov.	30	Swansea—Harbour Offices	£100, £50	T. Strick, Harbour Offices, Swansea.

COMING EVENTS.

Wednesday, September 12.

BRITISH ASSOCIATION.—Meeting at Bradford (seventh day). Concluding general meeting at 2.30 p.m.

INSTITUTE OF SANITARY ENGINEERS.—Meetings of Examination and Literary Committee at 2.30 p.m., General Purposes and Finance Committee at 3.30 p.m., Election Committee at 5 p.m., and members' sessional meeting at 7 p.m.

Thursday, September 13.

BRITISH ASSOCIATION.—Meeting at Bradford (eighth and last day). Excursions to places of interest in the neighbourhood.

Monday, September 17.

SANITARY INSTITUTE—Lectures and Demonstrations for Sanitary Officers: Part I. Mr. John Castell-Evans on "Mechanical Physics, Laws of Motion, Hydraulics, &c.," at 8 p.m.

IRON AND STEEL INSTITUTE—Meeting of Council at 10 Rue Lafitte, Paris, at 6 p.m.

Tuesday, September 18.

INSTITUTION OF MINING AND MECHANICAL ENGINEERS (Annual Meeting in the Crown Court, Bristol, first day).—Reception by the Lord Mayor of Bristol. Sir Herbert Ashman, the Secretary, will read the Annual Report of the Council. Mr. James McMurtrie, F.G.S., on "The Geological Features of the Somerset and Bristol Coal-field, with special reference to the Physical Geology of the Somersetshire Basin;" Mr. George E. J. McMurtrie, Assoc. M. Inst. C.E., on "Methods of working the Thin Coal Seams of the Bristol and Somerset Coal-field;" Mr. W. A. E. Ussher on "The Culm-measure Types of Great Britain;" Mr. Edward Gledhill on "The Analogy between the Gold 'Cintas' of Columbia and the Auriferous Gravels of California;" Mr. J. J. Sandeman on "Gold-mining in the Rossland District, British Columbia;" Mr. H. W. Halbaum on "The Theory of the Equivalent Orifice Treated Graphically;" Mr. J. A. Jones on "Development and Working of Minerals in the Leon District, Spain;" Mr. James Stirling on "The Geological Age of the Gold Deposits of Victoria, Australia;" Mr. W. K. Lawrence on "Saltford Slip," at 10.30 a.m. Excursion to Avonmouth Dock, Granary and Cold Storage Warehouses at 2.20 p.m.

IRON AND STEEL INSTITUTE—Autumn meeting at 44 Rue de Rennes, Paris. Address by the President, Sir William Roberts-Austen, K.C.B., D.C.L., F.R.S.; Mons. H. Pingent, Secretary of the Comité des Forges de France on "The Development of the Iron and Steel Industries in France since 1889;" Professor H. Bauermann (Ordnance College, Woolwich) on "Iron and Steel at the Paris Exhibition;" Mr. Albert Ladd Colby (South Bethlehem, Pennsylvania) on "American Methods of Testing Iron and Steel;" Mr. Alfonso Dory (Bilbao) on "The Washing of Iron Ore," at 9.30 a.m. Visit to the Exhibition at 2 p.m. Soirée Musicale et Littéraire held by the Comité des Forges de France, at 9 p.m.

CUMBERLAND AND WESTMORELAND ANTIQUARIAN AND ARCHÆOLOGICAL SOCIETY.—Meeting at Bowness, Windermere (first day). Excursion to Kentmere and Garburn. Mr. H. Swainson Cowper, F.S.A., on "The Recently discovered Roman Road at Ambleside" and "A Contrast in Architecture: Part I., Primitive Quadrilateral Structures: Part II., An Archaic Survival." Mr. J. A. Martindale on "The British Camp at Mill Riggs, Kentmere."

Wednesday, September 19.

INSTITUTION OF MINING AND MECHANICAL ENGINEERS (Annual Meeting in the Crown Court, Bristol, second day).—Visit to the Bristol Tramways Company's Electric-power Station, Counterslip, at 9 a.m.; Excursion to Bath, Roman Baths, &c., and Bath Stone Quarries at 11 a.m.

IRON AND STEEL INSTITUTE.—Mr. Louis Katona (Resicza, Hungary) on "Rolling Mills;" Baron H. von Jüptner (Donawitz, Austria), on "The Constitution of Slags;" Mr. E. F. S. Lange (Manchester) on "A New Method of Producing High Temperatures;" Messrs. Godfrey Melland, B.Sc., Assoc.R.S.M., and Mr. H. W. Waldron, Mason University College, Birmingham, on "The Action of Aluminium on the Carbon of Cast Iron;" Mr. J. E. Stead, Member of Council, on "A Micro-chemical Research on Iron and Phosphorus." Visit to Exhibition at 2 p.m. Banquet at the Hôtel Continental, Rue Castiglione.

SANITARY INSTITUTE.—Lectures and Demonstrations for Sanitary Officers: Part I. Mr. John Castell-Evans on "Natural Forces; Light, Heat, Electricity; Chemistry," at 8 p.m.

CUMBERLAND AND WESTMORELAND ANTIQUARIAN AND ARCHÆOLOGICAL SOCIETY.—Meeting at Bowness, Windermere (second and last day). Excursion through the Winster Valley to Grange-over-Sands. Mr. H. Swainson Cowper, F.S.A., on "Cawmire (Comer) Hall." The Rev. Canon Rawnsley on "William Pearson of Borderside, Winster."

Thursday, September 20.

INSTITUTION OF MINING AND MECHANICAL ENGINEERS (Annual Meeting in the Crown Court, Bristol, third and last day).—Excursion to Cheddar and Wells at 9.30 a.m.

IRON AND STEEL INSTITUTE.—Autumn Meeting at 44 Rue de Rennes, Paris. Visit to Exhibition at Vincennes (Locomotives, Railway Plant and Machine Tools), at 10 a.m.

Friday, September 21.

INSTITUTE OF SANITARY ENGINEERS.—Examination in Practical Sanitary Science.

IRON AND STEEL INSTITUTE.—Autumn Meeting at 44 Rue de Rennes, Paris. Visits to St. Chamond Works at 7.48 a.m. and to Hayange Works at 8 a.m.

SANITARY INSTITUTE.—Lectures and Demonstrations for Sanitary Officers: Part I. Mr. John Castell-Evans on "The Atmosphere: Pressure and Composition; Air; Combustion and Respiration," at 8 p.m.

Saturday, September 22.

INSTITUTE OF SANITARY ENGINEERS.—Examination in Practical Sanitary Science.

Monday, September 24.

SANITARY INSTITUTE.—Lectures and Demonstrations for Sanitary Officers: Part I. Mr. John Castell-Evans on "Ventilation, Warming and Lighting," at 8 p.m.

Tuesday, September 25.

CHURCH CONGRESS.—Meeting at Newcastle (first day).

Wednesday, September 26.

CHURCH CONGRESS.—Meeting at Newcastle (second day). Mr. G. F. Watts, R.A., the Bishop of Chichester, Mr. W. Hole, Mr. Stirling Lee, Mr. E. S. Prior and Mr. Selwyn Image on "The Relation of Art to Religion."

SANITARY INSTITUTE.—Lectures and Demonstrations for Sanitary Officers: Part I. Mr. John Castell-Evans on "Meteorology," at 8 p.m. Inspection and Demonstration in the Parish of St. George's, Hanover Square, at 2 p.m., conducted by Mr. Albert Taylor.

Thursday, September 27.

CHURCH CONGRESS.—Meeting at Newcastle (third day).

Friday, September 28.

CHURCH CONGRESS.—Meeting at Newcastle (fourth and last day). The Rev. J. W. Horsley, Dr. Bowmaker, Professor Steggall, Sir T. Wrightson, M.P., and Councillor Thompson on "The Housing of the People."

SANITARY INSTITUTE.—Lectures and Demonstrations for Sanitary Officers: Part I. Mr. John Castell-Evans on "Sanitary Law," at 8 p.m.

Saturday, September 29.

SANITARY INSTITUTE.—Lectures and Demonstrations for Sanitary Officers: Part I. Inspection and Demonstration at Wimbledon Sewage Works, at 3 p.m., conducted by Mr. C. H. Cooper, M.I.C.E.

TENDERS.

Information from accredited sources should be sent to "The Editor." Results of tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the Work.

BIRMINGHAM.—For the erection of a building (for nurses, &c.) at the Workhouse, Gravelly Hill, Aston, for the Guardians of Aston Union. Mr. Cooper Whitwell, architect, 23 Temple Row, Birmingham. Quantities by the architect:—

Harley & Son	£10,962	Whitehouse & Sons	£10,121
J. & W. Webb	10,900	A. Colin Hughes	9,971
Barnsley & Sons	10,700	T. Johnson, Birmingham*	9,900
Lee & Son	10,250		
W. Harvey Gibbs	10,250		

* Accepted.

BROMLEY.—For alterations, redrainage, and repairs, &c., to Springhill, Bromley, Kent, for a school of domestic economy for the county, for the Kent County Council Technical Education Committee. Messrs. Wadmore, Wadmore & Mallett, architects, 8 Bream's Buildings, Chancery Lane, E.C.:—

F. W. Green	£1,373	Syme & Duncan	£1,110
Crossley & Son	1,339	D. Payne	1,110
Podger & Son	1,276	Arnaud & Son	1,020
R. A. Lowe	1,271	F. P. Duthoit, Bromley*	977
T. D. Graty	1,145		

* Accepted.

BURY (Lancs.).—For the erection of shops, Crompton Street, for Mr. J. Whittam. Messrs. Openshaw & Gill, architects, 6 Fleet Street, Bury. Quantities by Mr. Wm. E. Gill:—

C. Brierley	£1,510	J. Hall	£1,276
Thompson & Brierley	1,406	S. Clough	1,260
Newhouse & Son	1,400	J. Tinline, Parker Street, Bury*	1,190
J. Comfort	1,383		
Jas. Byron	1,331		

* Accepted.

CARDIFF.—For the erection of a chapel, Keppoch Street, Roath. Messrs. W. Beddoe Rees and J. H. James, architects, 37 St. Mary Street, Cardiff:—

G. Hallet	£4,750 0 0	Symonds & Co.	£4,306 7 0
Powell & Mansfield	4,559 0 0	Turner & Sons	4,245 0 0
Knox & Wells	4,500 0 0	D. Davies	4,190 0 0
J. Allen	4,467 0 0	Price Bros.	4,168 0 0
Lathy & Co.	4,387 0 0	W. T. Morgan	4,150 0 0
Evans Bros.	4,917 8 5	J. E. Evans	4,050 0 0
		Chubb & Co.*	3,750 0 0

* Accepted. [All of Cardiff.]

DEVONPORT.—For erecting the Royal Sailors' Home, Devonport, for the Committee. Mr. H. J. Snell, architect, Plymouth:—

Tozer & Son	£9,640	W. Littleton	£8,695
W. H. Lethbridge	9,460	Wakeham Bros.	8,642
Pearn Bros.	9,450	T. May	8,487
J. P. Berry	8,989	J. Partridge, Plymouth*	8,470
A. Andrews	8,888		

* Accepted.

FENNY STRATFORD.—For the erection of school buildings (new girls' school) for the School Board. Mr. John Chadwick, architect, Fenny Stratford. Quantities by architect:—

W. Wade	£4,788	Walter & Austen	£4,418
T. Yirrell	4,597	A. Taylor, Fenny Stratford*	4,360
T. T. Coleman	4,585		
A. Adkins	4,497		

* Accepted subject to approval of Education Department.

HANLEY.—For the erection of Grove Schools for the Hanley School Board. Messrs. R. Scrivener & Sons, architects, Hanley:—

Ellis	£10,799	Grant	£9,900
Longden	10,355	Bagnall	9,793
Godwin	10,085	Tompkinson & Bettelley, Longton*	9,577
Bennett	10,050		

* Accepted.

ST. GILES (Devon).—For the erection of school buildings, residence, &c., for the School Board. Messrs. Wise & Wise architects, Launceston:—

J. & H. Rich	£1,236	J. Northcott, Ashwater*	£1,200
Broad & Werren	1,225		

* Accepted.

SHIPSTON-ON-STOUR.—For the construction of a reservoir, and laying five miles C.I. mains, &c., for the Rural District Council. Mr. J. E. Willcox, C.E., 63 Temple Row, Birmingham:—

Herbert Holloway	£4,260	J. W. Lord	£3,200
H. Law	3,800	J. Jameson	2,934
Rowell & Sons	3,216	Thomas Vale	2,878

SKERRIES (Co. Dublin).—For the erection of seawater baths, concert hall, &c., for the Skerries Baths Company, Limited. Mr. Frederick Shaw, architect, 20 Laurence Street, Drogheda:—

S. Henty	£1,799	Wm. Flanagan, Skerries*	£1,447
T. Creaser	1,750	F. Gogarty	1,350
B. McDonnell	1,600		

* Accepted. † For the building only. Baths, boiler, &c., will form a separate contract.

TUNBRIDGE WELLS.—For rebuilding No. 37 and alterations to No. 35, The Pantiles, Tunbridge Wells, for the executors of the late Mr. John Charlton. Mr. C. H. Strange, architect, 16 Grosvenor Road, Tunbridge Wells:—

J. Jarvis	£1,615	Mansfield & Son, Tunbridge Wells*	£1,495
Strange & Sons	1,584		

* Accepted.

WOKING.—For alterations to No. 1 The Pavement, to convert same into Banking Premises, for the London and South-Western Bank, Lim. Mr. William G. Jones, architect, Woking. Quantities by Mr. John Scott, surveyor, 23 Bedford Row, London, W.C.:—

Oldridge & Sons, Norbiton	£2,980 0 0
A. A. Gale, Woking	2,928 0 0
Whitburn, J., Woking	2,828 0 0
Greenfield, Weybridge	2,770 0 0
Potterton, Molesey	2,750 0 0
Gaze & Son, Kingston	2,739 0 0
Wheatley, Molesey	2,690 0 0
Drowley & Co., Woking	2,657 18 0
Harris, J., & Son, Woking*	2,595 0 0

* Accepted.

WOLVERHAMPTON.—For rebuilding the Red Cow Inn, Wolverhampton. Mr. R. J. Rowe, architect. Quantities by Mr. W. Webb:—

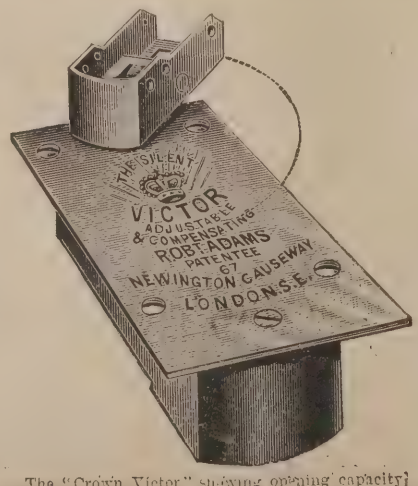
Tildesley	£1,187	Skett	£1,150
Herbert	1,185	Gough	1,120
Morrell	1,170	Cave*	1,098

* Accepted.

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THE BUILDERS' JOURNAL & ARCHITECTURAL RECORD

SEPTEMBER 19, 1900. No. CCXCIII.

EFFINGHAM HOUSE, ARUNDEL STREET, STRAND, W.C.

An Architectural Causerie.

Ravenna: its Connection with Early Christian Art.

Of all the great cities of the Roman Republic and of the Holy Roman Empire few have dropped back into an oblivion so absolute as the ancient city of Ravenna. It is true that Ravenna occupied only for a short period her proud position as the centre of government, yet that short period of active participation in the administrative affairs of the Empire invested her with a permanent interest. Ravenna's part in the affairs of the world—for the Empire practically comprised the world then—was not a very dignified one. It was a place of refuge for Consuls fleeing from Alaric and the Goths, and at the time of the fall of Rome in A.D. 410 Innocent himself, Christian Bishop of Rome, found refuge there. The Court was held sometimes at Milan, sometimes at Ravenna, but the interest of Ravenna for us lies in the fact, that it entered into the political and religious arena when Christianity—at war with Paganism—finally broke down Pagan beliefs; establishing itself as first spiritual and temporal power over Eastern and Western Empires. World-wide events such as these cannot but affect a city in its entirety, and I wish to trace here the effect upon the art of Ravenna nearly fifteen centuries ago.

That we are able to do this is extraordinary enough, but the explanation is that the tide of Roman government swept onward and eastward to Constantium—Constantinople—leaving Ravenna in the backwater of political and religious dissension, where it has lain fallow all these centuries. When once the power temporal and the sway spiritual left Ravenna, it no more partook prominently in the affairs of history, but lay wrapt in the mist of its rice swamps, secure from molestation, and secure also from those grosser acts of vandalism which have left such sorry marks upon other and more prominent cities. Augustine's work after the fall of Rome finally rang the death knell of Paganism as a religion; as a spirit, with disciples among the mixed population of all the various races in Italy, it still existed—so much so that officials of the Christian Church held Paganistic ideas, and even practised to a limited extent Paganistic propaganda, and it may be said that in the fourth century Paganism ran like a strong undercurrent beneath the wide-spreading flood of Christianity. This can be plainly seen in the few examples of fifth-century art still left to us in Ravenna. Art at this time, it must be realised, was Christian, and decidedly Anti-Pagan. In fact, the art of the time became often mere vandalism, for it occupied itself with altering shamelessly the noble temples and edifices, centres of Pagan worship, into places for the practice of Christianity. Not in the whole world-history of art can there be found a more paradoxical position than this. The Christian community was producing and carrying forward all the artistic life and movement of the time, yet entirely and strongly in opposition to the Pagan section of the community, whose inheritance this art was by right of descent. Christianity had no artistic history, no art ideals or precedents to build upon for itself; it was too young a growth for this. Therefore, to make any progress in art at all, it had to do so through the hated channels of Paganistic culture; yet the intellectual and educated Christian could not but endorse the Pagan standard of beauty and artistic excellence handed down from those Pagans of Pagans the ancient Greeks.

The fifth century was a time of intellectual anarchy. Most of the old Roman families were split up in some way by the entrance of this new religion. People were concerned more about the safety of their souls than the beauty of their buildings, and logically the art of that time suffered accordingly. Christian artists wrought by Pagan standards with not so much faith in their efficacy as did the artist aforetime, and with some doubt as to their morality. Thus the early Christian Art is undoubtedly degenerate and somewhat debased because of its want of faith, yet it could not fall far, inasmuch as the vigour and spirit of the new religion animated it and made it live. It has never been claimed, I think, that the Renaissance ever approaches the glory and spiritual beauty of pure Classic Art. The Renaissance seems rather the outcome of the despair of a people who realised that never could they gain such a secret of form and excellence as the Greeks possessed, and so made what progress they could with their stock of ideas. The great movement of the Renaissance *was* great because of its resumption of pure standards and high ideals of beauty for the debased ideas of the Middle Ages; yet the Renaissance is inferior to the Classic, and immeasurably so. This is stated in order to draw a parallel between the late Italian Renaissance of the seventeenth century and the Christian Art of the fifth. In Ravenna examples of this early Christian Art are to be seen existing to-day in mosaic, in marble fretwork of exquisite finish, and marble bas-reliefs. Some are in a perfect state of preservation, and—here lies the interest—it would demand the discernment of a specialist in the Italian Renaissance to tell which was the fifth century work and which was the seventeenth. This is partly due to the wonderful state of preservation that the Ravenna examples are in, but it is a most nteresting parallel that the Christian Art of the fifth century, which we accepted before as a form of debased Pagan Art, a sort of debased Classic Art, should so strikingly resemble the work of the Italian Renaissance at the zenith of its power. This proves what we already know, that the Renaissance was a harking backward to Classic ideas which it could not completely realise.

I know of no other place where such a comparison can be made. Little fifth century art of any kind is handed down to us to examine, but Ravenna, like the ghost of its former glory lurking among its wet rice swamps, supplies a link in the history of art which cannot be overestimated. The comparison fails only in the composition of figure, where the fifth century mosaic falls short of the noble conceptions of form brought forth by the Italian Renaissance. Explanation of this is to be found in the attitude adopted by the early Church towards art. It regarded that absorbed sensualism of the Greeks in beauty as something immoral and to be suppressed. This temper can be traced to the Church even of the thirteenth and fourteenth centuries, when Fra Lippo Lippi was told by the worthy bishop that he was not to seduce the minds of the worshippers by painting beautiful saints dangerously like the cardinal's niece, but by picturing a ghastly suffering and contorted form to lead their minds to martyrdom.



KINGSTON RUSSELL. DRAWN BY C. G. HARPER.

The Baptistery of Ravenna is a building of absorbing interest. It contains art work of undoubted fifth century origin, and a mosaic almost unique in historical, religious and artistic interest. The mosaic referred to is within the dome of the Baptistery, its colours but little faded, although fifteen centuries old. The subject is the Baptism of Christ by John the Baptist, a brilliant and striking conception of figures. That of Christ is rising half out of the water, and to the right is the figure of the Pagan river god riding on the waves and seemingly presiding over the ceremony. Here you have proof of the undercurrent of Paganism coming to the surface indeed. The artist must have been Christian, the worker Christian, and the building Christian, yet unconsciously a poetic idea of Paganism springs right up amidst such alien surroundings. Ravenna, shrouded with its damp malarial mists, silent and solitary in the middle of its swamps, with its quaint prison and begging inmates, its ancient history and its intense age, is literally a ghost of the past. It represents and reproduces the thoughts, the ideas of an age almost unimaginable, of an art almost forgotten; but it is also the sign of what once ruled the whole known world, though long since sunk in the sea of ages—the Holy Roman Empire.

F. B.

The Home of the Russells

THE old home of the Russells, Dukes of Bedford, has lately been put in order, and thus bids fair to last another few hundred years to mark the spot whence that family took its rise. The old Manor House of Kingston Russell is not indeed the original residence, having been rebuilt in its present style about two hundred years ago, after the fortunes of the house were assured. Kingston Russell is in the West Country. As the traveller down the old highway to Exeter passes Dorchester and makes for Bridport he enters upon a wild district of bleak and windy downs. In sharp contrast with these inhospitable heights are the deep coombes where the primrose blooms early and frosts come seldom. In one of these gardens in the wilderness is this successor of the original farmhouse, which still belongs to the Dukes of Bedford, whose ancestors were seated here shortly after the Conquest. Deep down in this retired spot, away from all rumours of the outer world, this lonely mansion stands with no neighbours save farmsteads. On this spot the Russells were anchored for very many entirely undistinguished generations, until mere chance brought them into prominence, fame and fortune.

The Rozels, as they were originally, like many other Norman filibusters, came over with the Conqueror, and history passes them by from that date until 1506. For all those centuries the Russell genius for getting on lay fallow, and none of them did anything in particular. They just vegetated on their lands in Dorsetshire, at Kingston Russell, near Bridport, until that year, when a quite unexpected happening put the beginnings of promotion in their way. John Russell, the heir of the bucolic head of the house, had just returned from Continental travels, and had acquired both polish and the command of the French, Spanish, and German tongues, which accomplishments would probably have been of no sort of use to him had it not been for the singular happening already referred to. In the winter of that year the Archduke of Austria, voyaging from the Low Countries to Spain, was driven by the fury of the Channel gales into Weymouth. He was unromantically seasick, and landed, although England at that time was no safe place for one of his house. At any rate, he preferred the prospect of political imprisonment to the unkindly usage of the seas. Meanwhile, he was sheltered by Sir Thomas Trenchard, of Wolveton, until the King's pleasure became known, and because Sir Thomas knew naught but his own native robust English tongue he had his young kinsman, John Russell, over from Kingston Russell to explain and entertain. This he did with so much address and courtliness that when the Archduke visited Henry the Seventh on a friendly invitation to Windsor, where, instead of being clapped into a dungeon, he was royally entreated, he spoke in such high praise of this young Englishman that the King speedily found him a position in the royal household. Thus was a career opened to this most fortunate young man. He was with Henry the Eighth in France, and fought in several battles, losing an eye at the taking of Morlaix, and at the same time gaining a knighthood. Diplomacy, which rather than fighting is the Russell *métier*, soon claimed him. Diplomacy, it is well said, is the art of lying for the advantage of one's country. Perhaps he had not learned the art sufficiently well, for his great mission to the Continent failed, and he returned, not to disgrace, but, with the inevitable Russell address, to preferment. The times were fatal for honest men. That Russell survived them and died in his bed in the reign of Mary, at peace, ennobled with the title of Earl of Bedford, and enriched with the spoils of confiscated religious houses and the lands of attainted and executed friends, is therefore no recommendation of his character, which was that of a cautious time-server and cunning sycophant. He lies, the founder of his house, in the Ducal Chapel at Chenies, in Buckinghamshire, his recumbent effigy beside that of his Countess, who brought Chenies into the family. It is a magnificent monument, and the figures evidently careful likenesses, even down to the detail of the Earl's eye-lid, it being represented drooping over the lost eye. C. G. H.

On Reflection.

Yerkes.

Two leading London half-penny dailies are disputing over the report of a scheme for a new "tuppenny tube" in, or rather under, the metropolis. The "Daily Express" ushers in Mr. Yerkes, the American railway magnate, who, backed with American dollars to the tune of £4,000,000, is going to show the "darnation Britisher" how to run suburban traffic. The "Daily Mail," perturbed by this scoop in Transatlantic journalism, opines that this is Wall Street fiction of the penny plain and twopence coloured order, intended strictly for home consumption. Exactly why Mr. Yerkes should wish to engineer railway enterprises in England when the "virgin tracts" and the "bounding prairies" (we think these terms are correct) of his own, his native, land are open to the machinations of his fertile brain. But, presuming (only presuming) that Mr. Yerkes desires to show us the wonders and delights of American railway enterprise, why, oh why, does he select the one field which is already fully occupied? The Waterloo and Baker Street Railway, with its extension to Hampstead, seems to us to already cover pretty fully the ground which Mr. Yerkes proposes to traverse. If Mr. Yerkes had suggested a line from the Bank along Queen Victoria Street, Cannon Street, Ludgate Hill, Fleet Street, Strand, Haymarket, Piccadilly Circus, Piccadilly, Brompton Road and Fulham Road to Putney Bridge, he would have initiated an enterprise worthy of every Londoner's support. At present we will wait and see if the "Express" prognostications turn out to be correct. We have heard of Mr. Yerkes before, but his pose last time was tramways. Well, we do not want any more tramways, and especially overhead electric tramways. They are sometimes dangerous, always unsightly, and help to congest our already overcrowded streets. The new electric railways have shown us that we can dispense with them, and the mad municipal tramway schemes of the L.C.C. will, we hope, receive a salutary check. While private enterprise will take passengers such distances as from the City to Stockwell and the City to Shepherd's Bush for 2d., there is no need to load the overburdened ratepayers with the cost of out-of-date municipal monopolies. The advent, however, of Mr. Yerkes would bustle things, and London requires it. We guess the underground tube line has arrived, and we wouldn't do a thing to that scheme of Mr. Yerkes. We hear the derisive onlooker jeer at the passengers "jerked through the tuppenny tube"; but in future the passengers will be "yerked."

The Worth of Congresses.

CONGRESSES have been plentiful of late: we have had the Trades Union Congress at Huddersfield, that of the British Association at Bradford, and the Sanitary Congress at Stirling, to mention only three. The question is therefore opportune—Do these meetings effect any good, or are they mere gossipy gatherings promoted for the benefit of the few who can afford to attend them? Before attempting to give an answer it would be well to state what is the professed purpose of a congress. It is convened, firstly, to consider the progress being made by the particular section of human effort with which it is connected, to allow an exchange of views between leading men and a discussion to take place; and, secondly, there is its social side, by which its members are enabled to enjoy that personal knowledge which exerts so powerful an influence on all affairs. There are those who declare in connection with the British Medical Association that the newly-qualified are caught young with the prospect of sharing the advantages of the Association for a guinea a year, with the weekly journal thrown in: in a few years comes the awakening—there is the journal, but where are the advantages of the Association? A writer with the same feelings says that we read papers on the glorious art of architecture which is ours. "We go home flushed with applause, palpitating with delight, our heads brushing the stars, and, without one thought of the absurdity of it all, go on with our work as artistic middlemen, hurriedly imposing our half-baked ideals on workmen who would do better work if we left them alone." But for all that we do not think that meetings and congresses are so much waste of time. They do improve many who attend them, either by restating half-forgotten principles or by supplying new facts about practical current subjects; besides which, it should be remembered that nowadays the newspaper is all alive, and despite its many deficiencies it remains the text-book of the people. See, for instance, what space has been devoted to the papers read at the congresses mentioned above. Has this had no effect; does it not tend to create an interest in the general reader which prompts him to appreciate something he took no notice of before? And, extending this argument to the technical press, where fuller reports are to be found, is it not surely a benefit that those who were unable to be present at the delivery of a lecture are thus enabled to learn exactly what was said and done? It is not the fault of the system if individual members there think fit to give utterance to high-flown ideas or to sentiments which they do not embody in everyday practice. Then there is the social side, when we see the gods without their halo, when philosophers become gallant. A good example of the popularity of this feature was to be had at the last General Architectural Congress, for, while the professional meetings were very thinly attended, on the opening "ladies' night" the Institute's room was crowded. This was not right, because the first object of the Congress was a professional and not a social one, and it would be more satisfactory if this fact were observed more generally. But to make a wholesale sweep of congresses and meetings is certainly not justifiable, as, if properly conducted, they should be the outward and visible record of current thought and progress. Faults they have, to be sure; they can be remedied; but this is no reason for destroying the whole.

To-day's Street: to-morrow's Slum.

PARTICULARS will be found on the "Bricks and Mortar" page this week of the new town in course of erection outside Manchester, and these particulars are sufficient to throw a little light on what pure speculation and "commercial progress" can do and may be the cause of. The Trafford Park Company, from all accounts, is carrying out a scheme which cannot be too strongly condemned. Mr. E. T. Hooley bought the land in Trafford Park, and the company acquired it from him; now they are putting up a batch of factories and about fifteen hundred houses as fast and as cheaply as they can, and there seems every possibility that in a few years the district will have all the attributes of a slum. There will be no gardens, no trees, no grass; merely a mass of bricks and mortar, mud and crying children, drunkenness, cursing and the concomitant evils of lower city life. One does not want to paint too black a picture, but the facts are so ugly that the worst is feared. Humanity handed over to the merciful care of a rent-earning speculation and a manufacturing extension will have a hard time of it. The Dwellings Company have to make the scheme pay somehow. That is the sole object; but unless things are conducted in a little more humane way than they have been commenced Trafford Park will be another addition to the deplorable list of slum districts.

AIR-TIGHT CASE MAKING.*

By W. T. SWEETT.

FOR some years there has been forming quite a new branch of trade, that of air-tight case making.

In all the joints of doors and glass of show cases, window enclosures, &c., the interiors of which are to be air-tight and yet easily accessible, it is necessary to have perfect truth of surfaces and a minimum of friction. Air-tight cases may be divided into two classes, namely, exhibition cases (being cases which are very rarely opened after the exhibit has been enclosed) and shop show cases (those in which a shopman displays his wares).

It is very rarely that any system of tongues, or hooks, is used in the joints of the doors of exhibition cases. These doors are usually shot into a very close joint, so close in fact that the two surfaces touch one another, causing a considerable amount of friction when opened and closed. A velvet pad is placed in the rebate in order to make the joints perfectly air-tight.

In the second instance the cases required by the shopkeeper must necessarily be made air-tight by something more substantial than velvet; so that, almost without exception, these cases have an arrangement of tongues, &c., which will be described later.

In designing show cases the great aim should be lightness of material, causing the least obstruction to a full view of the interior.

The majority of cases made by men not adept at the work are displeasingly substantial in appearance, for it is astonishing what strong cases and doors can be made with frail framework carefully glazed. Exhibition and show cases generally are known by the following names:—

Wall Cases.—These have their backs, and sometimes their backs and ends, to the wall. When two cases of the same size are to be fixed back to back they should be of the wall-case type, the doors being in front.

Centre Cases.—These stand in the centre of shops, about exhibition floors, &c., so that the public can get all round them, the means of access being kept as nearly secret as possible (some of the devices employed will be dealt with later).

Table Cases.—These open at the top and are of the height of tables, and, as tables, stand upon legs. They are usually very shallow, the interiors being viewed from above. The table case is also made with the top leaning towards a ridge, sometimes very steep and sometimes very flat, but invariably placed so that the interiors are viewed through the tops and access obtained by raising the tops, which are hung to the ridge. The ends of these cases are sometimes hipped and sometimes of the gable or spandrel type. When table cases are made to fix against the wall they are known as wall table cases.

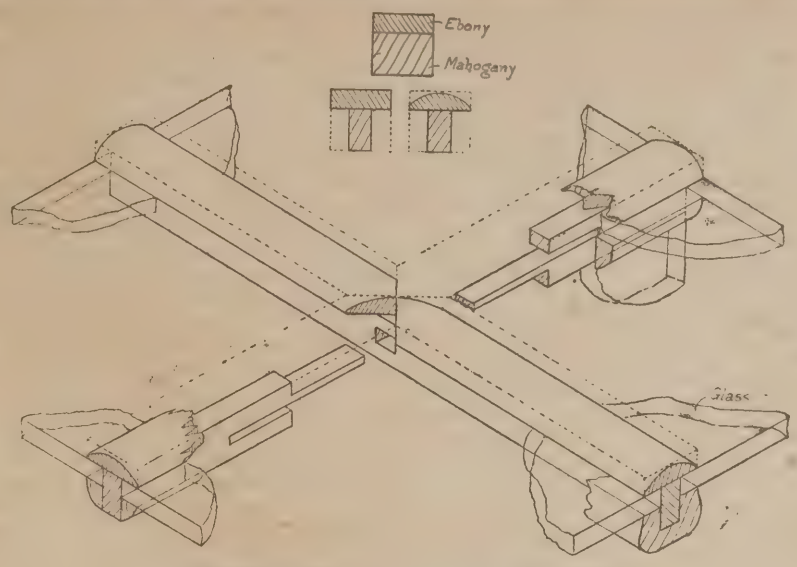
Counter Cases.—As their names imply, these act as counters when placed upon the under fittings and counter front. They have clear glass tops and risers, and are usually between 9in. and 12in. deep, with a width varying from 19in. to 27in. Access is obtained by the shopman from behind. The rim of wood is of the smallest dimension, never being more than $\frac{3}{4}$in., but usually $\frac{5}{8}$in., round, and generally polished black. When the cases are to be polished black, the top rim, even in the most common kinds, should be of ebony, as by the continual wear caused by serving a stained deception very soon reveals its secret. Counter cases are made with square and semi-circular ends, and are not usually more than 14ft. long. When a greater length is required, two or more cases are butted together, the joints being kept in position by dowels in the base. As the accompanying details show, the work required will try the patience rather severely.

Air-tight Drawers, sometimes air-tight in themselves and sometimes placed in nests in air-tight cupboards, also come within the scope of this paper.

Pedestal Cases.—These are usually of the centre or table-case type, and instead of being upon solid low bases or legs are placed upon pedestals, bringing the bottoms of the cases up to a height of about 3ft. or 3ft. 6in. The pedestals themselves are generally used as cupboards or for nests of drawers, &c.

Window Enclosures.—These are composed of doors and frames fixed to the back of the stall board, an air-shelf extending from the enclosure frame to the window, which is usually only in front, though it is sometimes at the front and one end, and occasionally at the front and both ends. The ends not bounded by the shop windows generally have splayed mirrors set at a good angle, to give the spectator the impression of a double stock. Now as to the

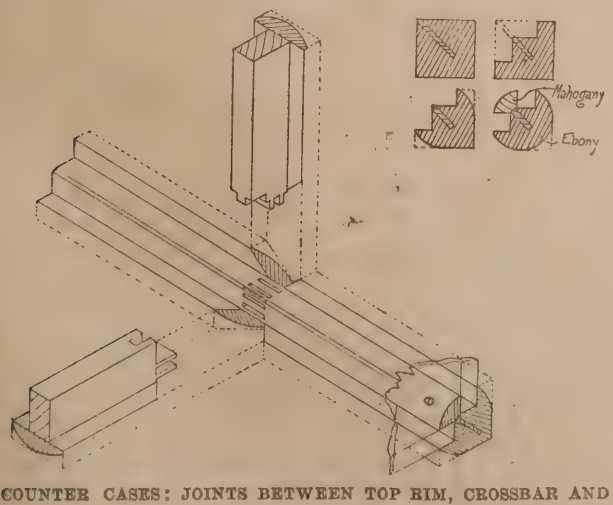
* A paper read before the meeting of the British Institute of Certified Carpenters held on August 4th, 1900.



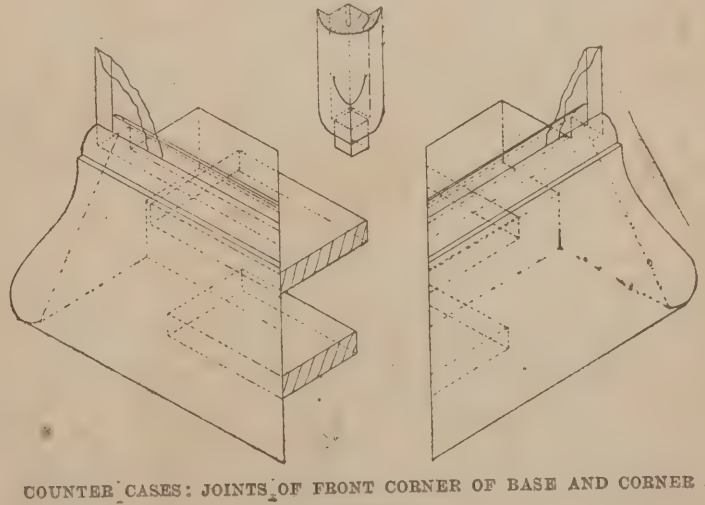
COUNTER CASES: JOINT OF TOP CROSS BARS.

Methods of Construction.

First take the wall case before described. There can be no limit to the size of this form of case. It is not usual to make doors (or sashes as they are sometimes incorrectly termed) more than 2ft. 9in. wide. Everything is planed up and set out in the usual way, but the first parts to be glued up must be the doors, all attention being given to the squaring, &c. The frame is then fitted up, all the tenons being made $1\frac{1}{2}$in. longer than the width of the stiles or rails, as the case may be (excepting when the case has a finished end). A hole is mortised through the tenons beyond the frame, in order that a wedge may be driven through to act as a key, or draw bore pin, to draw up the shoulders. The whole frame is put together in this manner, and is afterwards cleaned off flush on the back side, the sashes also being cleaned off on the back side and carefully shot to size. The frame is then taken to pieces and the single- or double-grooving plane (whichever is to be used) is stuck in the edge from the back side of the hanging stiles of the frame, and tongues are glued preparatory for the double hollow. Then the single square-grooving plane is, in every instance, stuck from the joint on the back side, preparing a groove for the air fillets on the top and bottom rails of the frame. These fillets are next glued in. The doors have a hollow worked in the back at the top and bottom with the single round plane, working from the joint, the hollow also crossing the stiles. The hanging stiles of the doors have the single or double hollow worked with the single or double round from the back of the stile. The closing joint should be that known as the hooked joint. To prepare this, first shoot the stiles to a bevel set at about 85 deg.; rebate with a side fillister to remove the bulk of waste wood, and then



COUNTER CASES: JOINTS BETWEEN TOP RIM, CROSSBAR AND UPRIGHT FRONT BAR.



COUNTER CASES: JOINTS OF FRONT CORNER OF BASE AND CORNER UPRIGHT.

with the hooked-joint plane finish working the joint. The plane should be previously set by trial on two spare pieces of stuff. The tongues on the hanging stiles of the frame require to be finished. This is done with the single or double hollow, working from the back side as before. From these remarks it will be understood that all planes for air-tight work, whether single or double, must be "matched."

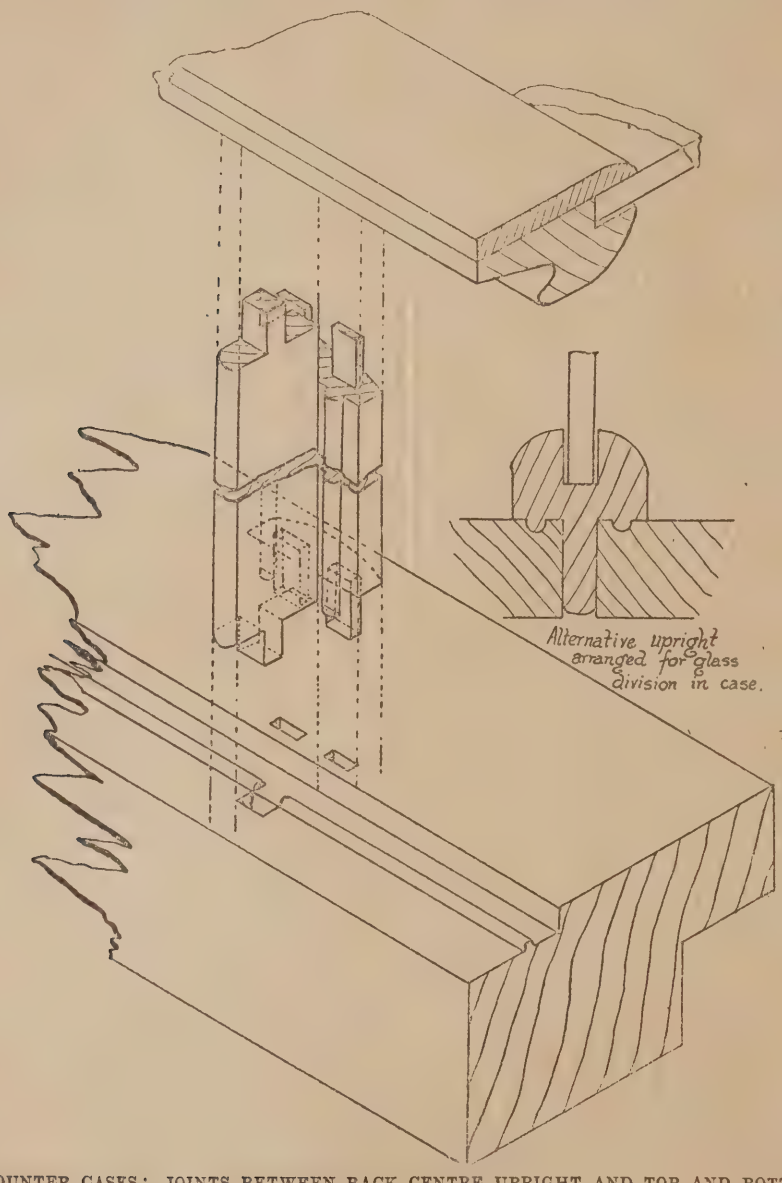
The butts are now let in and the doors hung to their respective frame stiles. The butts are let in to depth by a specially prepared template. A single-tooth gauge is employed from the back side of the doors and frame to mark for the edge of the butt flange.

Having hung the doors, note that all joints fit correctly, and then prepare to glue the frame. To do this, unscrew the butts and put the frame together as before and key up, put in the doors, the butts being placed in their places, though not screwed, slack the keys and glue up the frame, using the keys only to pull up the shoulders. Wedge the frame up very carefully, as much depends upon how the wedging is carried out. It is very easy to wedge too hard and bind the doors, or too lightly and make the carefully prepared joints ineffectual for excluding the air.

To control the wedging to a nicety, place the fingers under the rails of the doors, top or bottom, at the shutting joint, and the thumbs on the rail of the frame outside; by this means one can, by gently pulling the door, determine whether the wedges are binding the joints too hard or causing the frame to pinch the doors cornerwise.

The frame should be wedged to the doors until these are just too tight to work easily, the tightness being afterwards remedied by glass papering and rubbing the joints with French chalk. It will now be seen that the doors must be glued up first, all joints being stuck from the back side, which is the flush side, and being fitted up before the frame is glued. The front of the case may now be considered complete, as it only requires cleaning off.

Now to consider the carcase. The top, bottom, and sides of the case are housed together, the sides having tongues worked on them to be received by the front, and the top and bottom resting on fillets. Having glued and screwed the carcase to the front, attention is next given to the back, which must be made air-tight carefully. Canvas is stretched across the case, struts having been previously put inside to prevent the canvas bending inwards.



COUNTER CASES: JOINTS BETWEEN BACK CENTRE UPRIGHT AND TOP AND BOTTOM.

After thoroughly fixing the canvas, the match-lining is nailed on to form the back; then the whole of the inside of the case is lined with strong lining paper, turned at the angles to cover the joints. The bottom is usually covered with cloth, the backs and sides lined with mirrors, and the top papered.

With just a word about glazing I will leave wall cases. The plates glazing the doors are bedded on very thin putty, and the glass is packed on strips until the door is kept by the glass in the exact place where it was fitted. The glazing fillets are then fixed in and the minor details—such as cleaning off, fixing fastenings, cornice, plinth, &c.—having been attended to, the case is complete.

The other cases—table cases, centre cases, &c.—are constructed in a very similar manner so far as making the frame to fit the sashes or doors is concerned. The doors of centre cases, which have to be as nearly secret as possible, have no butts, but lift out as shutters, the form of joint usually being on the velvet-pad system. They are sometimes fastened in by four locks, two on each side, and sometimes by two dowels in the bottom and two locks at the top.

I will now pass on to counter cases, which may be considered to be the most intricate to make.

The first part to be made is the top rim, which is glued up. The next to be fitted and glued up are the base rim and bottom panelling. The uprights are then fitted into the top rim and base and the case is ready to glue up. It is now to be glazed. To do so turn the case upside down, the top rim being on the bench and held by straight-edges. The putty is made very thin, and the top plates are the first to be firmly bedded; next the riser plates, then the glazing fillets are screwed in place, and finally the case bottom is screwed up. After this the case is turned upon its base, when the flaps are fitted and hung and the case cleaned off for polishing. The interiors of the cases are usually fitted with trays, their rims being fixed to their bottoms by pegs, which can be cleaned off and ebonised with the rims, which are usually of American walnut. This produces a fairly cheap and satisfactory tray. The bottoms are usually finished by covering them with cloth.

When the case has circular ends the top rim for the end is built up laminated by means of three strips of black walnut and one strip of ebony, bent round a shaped block; after being cleaned off, a cover-piece of ebony is glued on the top. The rim end is then ready for fitting and working.

All the fitting to the counter case is done with the ebony left flat, the rounding, or lipping as it is called, being done after fitting and before glueing up. The bottoms of these cases are usually of 1½in. white pine and have 1in. flush panels. After cleaning off they are very carefully covered on the top or flush side with calico, being afterwards lined with paper and blacked.

DECORATION AND FURNISHING.

II.

By FRANK MURRAY.

(*Continued from page* 97, No. CCXCI.)

IN undertaking to give any useful practical hints on decoration and furniture it would be advisable to attempt some sort of definition, in order to limit each area. At the outset such a definition is beset with difficulties; the two are so intimately associated that to draw a precise line of demarcation or to specify very exactly the frontiers, is not easy.

Let us take up decoration first, and define it as follows:—Decoration shall mean the application of colour, material, or relief ornament, and shall be limited to the treatment of pre-existing architectural features.

The work of the decorator commonly covers a much wider field—the remodelling of all the apartments in a house, the introduction of new constructive features, &c.; but for the purpose of this paper it must be supposed that all constructional work is complete, and that the services of the "building" artisan will not be required.

It remains, therefore, to deal with the application of colour and ornament, and the selection of material for wall or ceiling covering if painted decoration be not used; also the consideration of how far the style of the general scheme should be influenced by the existing architectural features.

It is at this point that we discover the intimate union between decoration and furniture, and how the region of the one overlaps that of the other. Into which division of our subject, for example, should the floor-covering of a room come? It is the counterpart of the ceiling, and very often of far greater importance in a colour scheme. An authority of no mean standing used to begin his decorative scheme invariably by selecting his carpet.

In a paper of this nature, however, it does not do to be too nice over distinctions, therefore, putting on one side doubtful points, let us split the subject up into two principal subdivisions, which may be considered in order

thus:—(1) Considerations of style to be adopted in relation to the architecture of the building treated. (2) Colour schemes and materials to be used in the decoration of surfaces and the treatment of light apertures, such as windows, skylights, lantern lights.

Style.

Subject to two general rules, the greatest possible latitude should be allowed in style. There is one which I think of universal application—the style used in the decoration of a building, if it be a defined one, *should not be of an earlier date than the building itself.*

Given the main constructional features of style in a building, a legitimate effect can never be produced where the decorative detail is not in accord with the architecture of the building. One cannot insist too strongly upon this point of cardinal value; the main architectural lines of a building invariably dictate the style. The most beautifully-drawn and harmoniously-coloured detail has no value in comparison with the lines of architectural construction.

It is quite useless to cover a ceiling of Renaissance contour with Oriental detail and colour; the architectural lines will always dominate, and the ceiling will remain Renaissance to the end of time. With those styles that have architectural features in common the greatest possible latitude may and ought to be allowed, always within the limits of natural development in point of time. It is not, for instance, worth while to insist that the ornament of a fourteenth-century building should be of that period; indeed, an additional interest grows out of diversity, and we may well apply to the mouldings and wall surfaces of a very late Gothic the character and colouring of the Transition Renaissance.

The selection or choice of any one of the numerous styles is, obviously, a matter for individual preference, yet it may perhaps be as well to set down a few hints which might not occur to anyone dealing for the first time with the subject of decoration.

Firstly, then, I would say that all the styles have some typical character or expression which renders them most satisfying in certain situations.

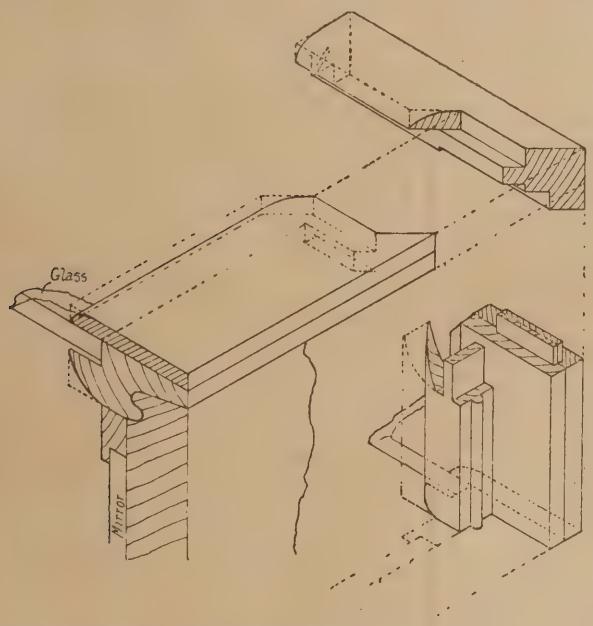
There is an obvious inappropriateness in using the characteristic details of an Egyptian temple in a modern room. The sixteenth and seventeenth century Renaissance styles seem particularly suited for domestic interiors, and those from the tenth to the fourteenth centuries find a more fitting place in large public buildings of either secular or ecclesiastical character. The eighteenth century is rich with styles developed from the Roman, which can be applied to either public or private buildings. The weight and boldness of Georgian, for instance, find a fitting home in some municipal building, whilst the exquisite detail and Italian delicacy of the Adams style can be appreciated fully in domestic interiors.

Let us here say a word or two on the vexed question of style. There is at the present time a confusion of ideas as to what "style" really means. Definitions are always difficult and proverbially dangerous; it is, therefore, with some temerity that one attempts to define "style," yet until one has formed some distinct idea on this subject, to write about it only makes confusion chaotic. Style in decorative art would seem to be the developed expression of the ruling ideas of the time through the medium of pre-existing decorative types.

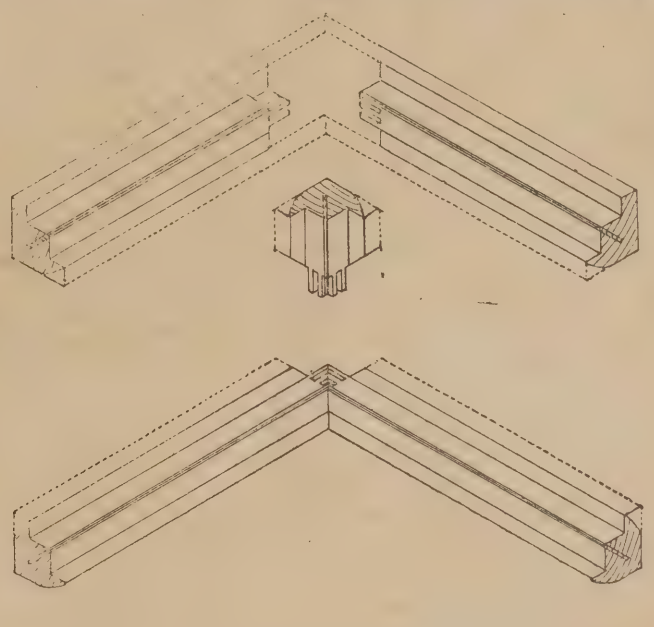
The constructive materials accessible—the habits of the people—sense of colour and form—mental appreciation of Nature and its beauty—sense of harmony in proportion, and a thousand other things, expressed through the medium of certain general laws, give a character and quality to work typical of the race and its attributes at the time of the production of the style.

The physical character of the country, the incidents of war or peace, even the personal qualities of the rulers, find an expression in style. The Empire Style, borrowed from the Imperial days of Rome, is obviously the artistic response to the Imperial idea of the later Republic in France. The decorations of the epoch of Louis XIV. are the true complement of the social conditions of the time, and recall a grandiose rather than grand phase in art; the style of Louis XV., in the unchecked license of its line, aptly expresses the period which gave it birth. It is needless to multiply instances; everyone will recognise the truth of the proposition.

Many are asking for a new style—there never was and never will be a *new* style, any more than there will be a new cloud, mountain or tree. The slowly changing conditions and ideals of life among the diverse races of mankind will differentiate styles from the old types, governed always by the force of the everlasting laws of construction and harmonic proportion in form and colour.



COUNTER CASES: JOINTS BETWEEN BACK AND END OF TOP AND BACK CORNER UPRIGHT, WITH SECTION OF FLAP.



COUNTER CASES: JOINTS BETWEEN TOP FRONT CORNER OF RIM AND CORNER POST.

Applied Materials.

Perhaps the last decade has seen a greater development in materials and designs for wall coverings than in almost any other branch of decorative art, and one might be led at first to believe that we have discovered many new applications of industrial art hitherto undreamt of. A little examination will soon dispel these ideas.

"The invention of velvet-paper," John Beckmann tells us in his "History of Invention," is by several French writers ascribed to the English; and if they are not mistaken, it was first made known in the reign of Charles I. On May 1st, 1634, an artist named Jerome Lanyer received a patent for this art, in which it is said that he had found out a method of affixing wool, silk, and other materials of various colours upon linen, cloth, silk, cotton, leather, and different substances, with oil, size, and cements, so that they could be employed for hangings as well as for other purposes."

The earliest wall coverings that we find records of include arras, painted leather, and painted cloths, stencilled materials, modelled low-relief plaster.

Leather paper is used very largely at the present time, and there is no reason why it should not be ranked as a just decorative material if a rich and harmonious colour effect can be produced on a paper background. The fact that leather was originally used as a ground or foundation in the preparation of a decorative material by the addition of low-relief ornament, colour, and gilding, constitutes no æsthetic argument against the use of paper on other material as a ground for the production of the same effect.

Beautiful textures of every dye are now economically produced, and can be used plain or with coloured decorations painted or stencilled on them. The dyed linen and jute canvases from Scotland are an instance.

Woven fabrics, printed chintzes, arras cloths, are largely and properly used, and some of the most exquisite effects attained thereby. Brocade patterns, in mixtures of silk, cotton, and linen—even the much unjustly maligned jute—give some very good results used as wall coverings, either closely applied with adhesive material or strained on frames in panels. Wallpapers demand almost an article devoted solely to this one subject, so extensively are they used, so wide the range they cover.

The invention of the paper machine has effected a great change in paper-hangings; any lengths of paper can now be obtained, whereas formerly they could only be printed upon separate sheets, which naturally rendered them extremely inconvenient to print as well as to apply to walls. Any remarks upon the countless designs for wallpapers now in the market must be reserved for another opportunity, as the subject is far too large to dismiss hurriedly.

Painted Decoration.

Tempera was the earliest method of applying colour, and is still largely used, and the result is very satisfactory. As regards price, it is quite an inexpensive method to employ, and, in good atmospheres, more artistically satisfactory than oil paint.

By using tempera one can obtain that subtle softness and velvety surface which is the lasting delight of the artist.

Oil paint is more costly, but undoubtedly more lasting. Where the surface is exposed to any wear, or where great depth and richness of colour are needed, it is distinctly best to employ oil paint. There is no reason why both tempera and oil cannot be used in the same scheme of decoration; should it be sufficiently large in scale, there will be found an appropriate place for each.

One need not more than allude to such forms of decoration as fresco, water glass, or encaustic painting; both the cost and difficulty of working put them out of the scope of ordinary decorative material. Possibly at a later date these methods may be more fully dealt with; for the present, one is compelled to merely mention them. Sgraffito is an effective means of wall decoration, relatively costly, but always worth keeping in mind. The main difficulty is to get capable handicraftsmen for these special developments when wanted.

Avoid cheap ornament; the cheaper the ornament the more sparingly should it be used. At the present time we are suffering from a plethora of cheap ornament.

Restraint in both colour, form, and ornament should be the keynote in any scheme of decoration; already we notice with gratitude the marked tendency in that direction in the present revival of the arts.

Wood panelling can hardly be said to come inside the scope of decoration, but a word or two, perhaps, may be given to it. There is a great deal to be said on the subject of painting pine panelling, and *appliqué* mouldings on a flat surface. These treated in the subdued tertiary tones of wood give a great range of decorative effect; it is even admissible, and often produces a beautiful effect, to paint such work in full rich tones. One has seen with the greatest pleasure a deep, rich, bright green, orange, and even bright red. That these latter colours should be applied with great circumspection and care goes without saying, but when thought and judgment have been exercised it is equally certain that the happiest effects can be obtained by their use.

Very little use is made of glazes—thin semi-transparent colours lightly brushed over opaque grounds below. These should be much more widely applied in decorative work; their effect is very rich, and gives a high artistic finish and completeness; many of the finest effects in colour are attainable in no other way.

Much may be done with transparent stains applied to the natural wood. America is in advance of us in this respect, and one ventures to think that we shall see a greater improvement in the use of stained woods in proportion as Englishmen become more accustomed to the possibilities of which Americans have already taken full advantage.

By transition we come to graining. A great deal can be written for and against graining. One cannot pretend to enter into the discussion here; that to which Ruskin has devoted a page of earnest reprobation may not be dismissed in a sentence. One may remind those who object to graining that the same argument applies to the use of scagliola. One thing is certain, which is, that there is no æsthetic canon that ought to deny one the right to use colour in such a way as to obtain the quality of rich and varied tone possessed by woods and marbles.

There is no requirement that the imitation should be exact to a particular marble, so as to deceive the eye—only that the qualities before mentioned should be reproduced. No one supposes a gold frame is solid gold.

We arrive at "Furniture," only to find the subject so large as to require a separate article—not for the purpose of dividing the indivisible, but from force of circumstances, owing to the space at our disposal being absorbed by remarks on "Decoration."

(*To be concluded.*)

A Chimney Shaft 410ft. High has just been erected by the Belgian Silver Works Company. The interior diameter at the base is about 25ft., and at the top 11ft., and the chimney is surmounted by a lightning-conductor nearly 50ft. high.

BRICKMAKING IN RUSSIA.

Enormous Developments.

In a recent book of statistics published at St. Petersburg it is stated that during last year no fewer than twenty German manufacturers of clay-working machinery carried on a regular trade with Russia, a fact which speaks well for the energy and business methods of machinery makers in Germany, and testifies to the enormous and growing market existing in the Czar's domains for modern and up-to-date manufactured goods. Indeed, in view of the colossal impetus given to the building and the manufacturing industries of the empire by the opening of Siberia, it is safe to assume that the sums of money taken out of the country last year by the twenty manufacturers referred to aggregated several million roubles.

Of all European countries, Russia is, practically speaking, the youngest in the manufacture of building materials. While statistics show that the making of pottery and firebrick extends back to time out of memory, and while pottery in particular constitutes one of the most widespread branches of industry of the empire, the manufacture of brick on a large scale is actually a development of the past ten years.

It may be mentioned in passing that long before the establishment of the present large plants the working of fireclays was carried on extensively as a so-called household industry, i.e. in certain districts every family had a small crudely-equipped plant of its own, with which they produced bricks for sale to the large dealers in building materials. These primitive methods obtained for many decades in the Government of Novgorod and other districts abounding in fireclays, and formed the sole means of production until twenty years ago, when the first large plant was erected in the district of Borovichi.

Previous to this period (namely, 1880) the Russian market for high-grade firebrick was supplied almost exclusively by Great Britain, the English brick sold in Russia being not only of a quality superior to the Russian, but considerably cheaper in price. The lower cost was due to the badly developed transportation facilities between the Russian capital and the clay-producing districts. For example, the freight on a ton of brick from Borovichi to St. Petersburg amounted as a rule to 8s. 6d., whereas the rates from Newcastle to the same point never exceeded an average of 6s. 3d. per ton.

The general excellence of English brick and its lower cost were sufficient to seriously handicap the Russian industry, and not until the year 1891, when the Government was induced to impose a large import duty, did the local production gain a foothold of real strength, that made the present progress of development possible.

The Vachter Plant.

The large plant in the Borovichi district already mentioned is owned and operated by the firm of K. Z. Vachter. Previously to the imposition of the import duty on firebrick, this plant had attained an annual production of 2,500,000 bricks; these figures increased shortly after 1891 to 5,000,000, until at present the output is not less than 8,000,000. Of course, an output of this size is small in comparison with that of such European concerns as Hoganas, in Sweden; the Glenboigs, in Scotland; or the Baumaterialien Gesellschaft, in Austria; yet, considering that it is practically a mere beginning made by private enterprise under uncertain conditions, it may be regarded as an evidence of the future progress that is destined to be made by the industry in Russia.

The Vachter plant at Zhdani is also a pioneer in the manufacture of drain pipes and stoneware. An important annexe was built to the plant a few years ago, and equipped with three rolling and three cylinder presses for working the clay mass. For fuel, wood dried thoroughly in special kilns is used. There are four such furnaces at the factory. This equipment enables the works to produce daily between 400 and 500 pipes between 6in. and 9in. in diameter: thus the average production amounts to 120,000 pipes per year. Pipes of small diameter, beginning at 2in., are also made, but for these hand presses are used; large pipes are also made of 12in. and 18in. diameter, and, when specially ordered, of 24in.

This brief description of the Vachter plant will serve as an illustration of the general state of the brick industry in the Russian Empire. According to the

Official Statistics

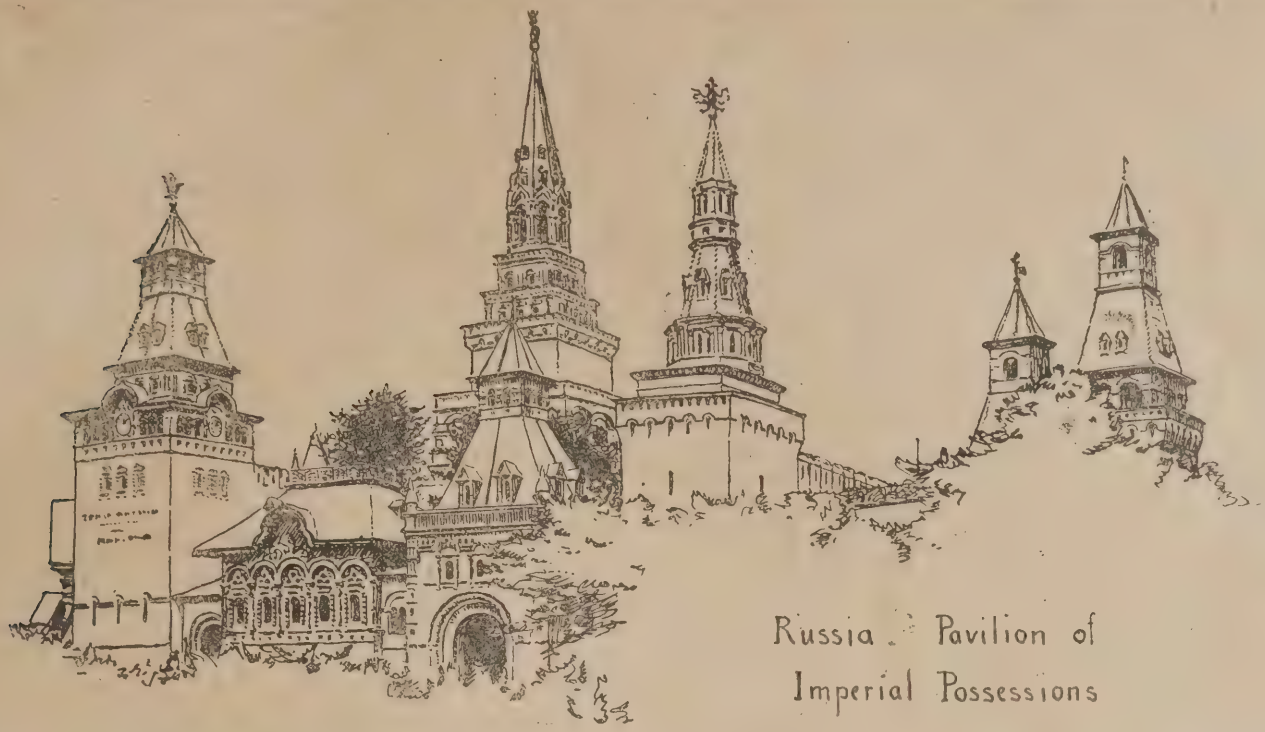
of the St. Petersburg Government the total output of bricks in Russia amounts annually to something over 1,000,000,000: 200,000,000 of the total are produced in the district of Moscow; 100,000,000 in the St. Petersburg district; 80,000,000 in the Government of Kharkov; 70,000,000 in the Governments of Kiev and Ekaterinoslav each; and 50,000,000 in each of the Provinces of Tauride and the Don. In these rough figures the local production of brick by the metallurgical works for their own use is not included; nor are the figures for many of the smaller establishments throughout the empire. Siberia's output of 10,000,000 bricks is also not included.

As fully evidenced by the foregoing figures, the brick industry in Russia and Siberia is fast travelling the way to success, for keeping pace with the growth of the industry is the enormous demand for building materials both in European Russia and Siberia. All cities that are so fortunate as to be in the immediate vicinity of the Trans-Siberian Railway are making great strides in industrial and commercial development. Manufacturing plants of every variety are rapidly springing up along the railway, demanding large quantities of brick and machinery. Indeed, conditions on every hand point to one conclusion—progress.

Masters and Men.

Bricklayers' and Stonemasons' Dispute at Barrow.—In consequence of the men's inability to come to terms as to whose duty it is to lay terra-cotta work at the New Science and Art Schools, the Master Builders' Association have locked out all the men in their employ in these trades, leaving the work open for them when they have settled their difficulty. Replies from 30 large towns show this work is done by bricklayers. The men have agreed to submit the dispute to arbitration.

The Midland Centre of the National Building Trades Employers' Federation held a meeting at Leicester last week under the presidency of Mr. James Wright, Nottingham. The quarterly report presented by the secretary (Mr. A. E. Tallis) referred to the work of organisation going on amongst master builders in the Midland counties towards obtaining a complete federation of employers for the protection of their common interests. The executive called the attention of master builders to the Federation of Trades Unions, and rejoiced that the promoters of this movement declared one of its main objects to be the prevention of strikes. At the same time, the executive warned the members of the Builders' Federation against accepting such a declaration without some reservation. The master builders of the country, probably more than the employers in any other trade, had been the victims of the aggression of trades unionism. They, however, hoped the trades unionist federation would achieve its object in preventing strikes in the future. On the motion of the President, seconded by Mr. F. G. Whittall (Birmingham), it was resolved to request local associations to approach candidates for Parliamentary honours, and also municipal candidates, and ascertain their opinions upon matters affecting the interests of master builders. A discussion took place on the question of builders insisting upon strike, lock-out, weather, and arbitration clauses forming part of any contract, and also that quantities should form part of any contract. Mr. Whittall said that if this matter were looked at properly it would not fail to recommend itself to every fair-minded architect. This view was endorsed by Mr. Chambers (Leicester), Mr. H. Smith (West Bromwich), Mr. Albert S. Smith (Birmingham), Mr. Fox (Leicester), Mr. Weston (Derby) and others.



Russia — Pavilion of Imperial Possessions

THE PARIS EXHIBITION.

BY F. HAMILTON JACKSON.

(*Concluded from p.* 104, No. CCXCII.)

THE other great group is below the Trocadéro, though the pavilions of Morocco, Siam, the Tyrolese house and a few others are scattered round the Eiffel Tower. Crossing the Pont d'Jéna the two pavilions of Algeria flank the ascent towards the cascades. On the right is a pavilion approached by a great flight of steps, the right of which is formed by a minaret which reproduces that of the mosque of Sultan Bacha at Oran. It is white, ornamented with panels of coloured tiles, as is the greater part of the pavilion. The great central cupola reproduces that of the Algerian Fish Market mosque, and the illuminations are the same as those which are seen there in Ramadan. The ground floor has a pretty courtyard which reproduces a portion of the Museum at Algiers, surrounded with slender Mooresque columns supporting a gallery, which one may also enter by the great flight of steps and the elegant portico to which it conducts. Beyond, on this higher level, is another delightful courtyard, with a fountain and plants beneath the great dome. This is a reproduction of part of the mosque of Abd-el-Kadir at Mascara, and one leaves it through a picturesque pointed arched doorway about which lounge men in Arab costume, if not genuine Arabs. On the other side of the avenue are other buildings enclosing dioramas and other curiosities, built in the manner of the houses one sees in Algiers, with projecting windows supported on brackets and colonnades, all glaring white in the brilliant sun, the woodwork painted red or green and equally ornamented with the panels. There is a reproduction of the Kasbah, the narrow street of Algiers, flanked by shops and overhung by musharabiyehs, which appears to be reduced in scale, so easily filled with people is it, but a more successful reproduction is to be found in the Tunisian pavilion close by, where one would almost imagine oneself in the "Souks," the real Tunisian bazaars—rows of little shops of fantastic architecture, half hidden by the goods hung up for sale, and tenanted by real Arabs in brilliant dresses; narrow streets and little squares, some of them vaulted over, the vaults supported by highly-coloured columns and capitals, red and blue or green and blue painted in spiral lines, the caps sometimes Gothic, sometimes Byzantine and sometimes antique. The gateways beneath which one passes are of black and white or red voussoirs; doors are painted red sometimes, with cheap Moorish knockers and patterns in nails of different sizes, or dark wood carved; and among all this the artificers ply their crafts and little Arab children run about or sit in corners. The buildings reproduced are the mosque of Sidi Mahrez at Tunis, that of the Barber of the Prophet at Kairouan, a picturesque house near Bizerta, the pavilion of Manouba near the Bardo at Tunis, an ancient gateway from Monastri, and the lofty minaret of Sfax. The pavilion of Indo-China is nearly as interesting. Here are reproduced the Pagoda of Cho-Lon, the Tonquinese palace of Co-Loa, an Annamite house brought piece by piece from Thudaumot on the Saigon river and re-erected here, and the celebrated Royal Pagoda of Pnom Penh, which is one of the sights of the capital of Cambodia. One enters a subterranean hall, which looks like a rock temple, with strange pillars and capitals of bizarre ornamentation, where are shown views of various parts of Indo-China: from this hall an ingenious double spiral stair leads to the summit of the rock upon which the Royal Pagoda is set on a terrace surrounded by queer dragon-like monsters with erect tails. The stairs on the side of the hill are very steep, and guarded here and there by more monsters, and the pagoda is occupied by a special exhibition of Buddhist religious art. In a corresponding situation on the other side of the cascade is the pavilion of the Russian Imperial Possessions, a building covering a large space and which is one of the most important and solid-looking. It has six or seven large towers with pyramidal roofs covered with coloured tiles and enlivened with gilding, and the whitish walls relieve them with great effect. The architecture is intended to reproduce a princely dwelling of the ancient Muscovites, and is supposed to be based upon that of the antique Byzantine school. Several portions of the interior are very effective—in particular a court with a fountain in the centre and paintings of ruins with landscape and figures with architecture, painted sketchily but with breadth of effect, and surrrounded by a painted framing in imitation of Persian tiles, so well done as to be almost deceptive. This court has stairs leading from it to a higher level at the angles and is itself approached from a lower level by a few steps. Here it is that the costumes of the Asiatic peoples are seen, adding picturesqueness to the scene, and ready to sell the carpets, skins, rugs, and other objects which are exposed. Behind the pavilion is a Russian village, massive wooden loghouses with rustic furniture and other objects manufactured in country places—not the least interesting part of the exhibit; and on the first floor is a panorama of the Trans-Siberian Railway. Close to the Russian pavilion, as is fitting, is the Chinese Garden, with its pavilions, one of which (used as a restaurant) is a reproduction of one of the gates of Pekin, while another is a copy of one of the six pavilions which together make up the Imperial Palace of Pekin. There is also a reproduction of a celebrated gate of marble and yellow and green pottery from the Temple of Confucius, of which there are two copies in China, and in the shops Chinese artificers may be seen at work. The ground occupied by Japan lies a little distance away, and, like the Chinese buildings, its pavilions are dotted about a delightful garden, which, when I saw it, was rich with lilies and Japanese iris. The principal building is a reproduction of the Temple of Hondo, the golden temple, built at Nara, the Japanese capital in the seventh century. It is painted gold colour relieved with red, and the doors are of gilded bronze, of which material the roof also appears to be, though it is really constructed of glazed tiles. It contains a magnificent collection of antiques, most of which come from the collection of the Mikado and the great Japanese lords, and have never before been seen in Europe. There are lacquered boxes dating from the ninth and eleventh centuries, other boxes inlaid with mother-of-pearl on gold lac from twelfth to seventeenth centuries, wooden dancing masks of the eighth and twelfth centuries painted with vivid colours, and other wood sculptures of the ninth and thirteenth. Metal vases from the twelfth century onwards, a metal pagoda of the eighth and a bronze statue of "Kaimon" of the same date, a seventh century coffer inlaid with mother-of-pearl peacocks in circles, pictures from temples from the ninth century to the fifteenth, fine in colour and very decorative, and a long roll of eleventh century drawings of animal stories, better than European MS. of the same period, showing the tricks played by the frog on the other animals in a sort of "Brer Rabbit" fashion—to enumerate only a few of the treasures. There is also a curious standard of plates of gilded bronze dating from the seventh century. Other pavilions shelter a tea-house (where "The Washington Post" was being played by a band!), a pavilion of Sake (where stronger liquors might be had), and a row of shops. Above it is the Egyptian temple, partly a reproduction of the Temple of Daudourt in Nubia, partly of Philæ, Abydos and Karnak. It has an internal court beneath which is a crypt reproducing some of the tombs, and there is also an Arab bazaar and a theatre. To the west are the pavilions of the Dutch East Indies, in the centre of which is a temple made up of casts from the friezes of the celebrated Buddhist temple of Boeroe-boedoer, a cast from the great portico of which is within, together with other examples of Hindoo sculpture. Panels with fantastic framings and crestings contain attitudinising figures of gods and god-

desses, while round the wall of the terrace runs a series of bas-reliefs of the legends of the Hindoo pantheon, and strange monsters rise here and there as terminals. The pavilions on each side represent the houses of Sumatran natives, carved all over with ornament, painted in brilliant colours and crowned with thatched roofs rising to acute peaks over the gables in strange but not unpleasing curves. Lower down, by the side of Japan, are the pavilions of the English Indies and other colonies—Ceylon, Canada and Australia. The first is the more remarkable, with a great gateway approached by steps between two circular towers, with open loggias and roofs of the kind with which Earl's Court has made us familiar. The staircase within is decorated with carvings by Burmese artificers, and the external surface of the white walls is relieved by an ornamented parapet and by rows of windows grouped beneath projecting roofs.

The pavilions are most of them interesting on account of the reproductions of ancient work which form so great a part of their structure. In Vieux Paris numerous buildings of different ages and of historic interest have been reproduced from old authorities and grouped together on different levels in a most picturesque and convincing manner. The woodwork has been painted and then weathered, the plaster imitates the effect of age and weather upon stone in the most marvellous way, and it is difficult to imagine how this portion of the Exhibition can be improved upon, as far as its somewhat theatrical construction goes, though the management may leave much to be desired. Here are several of the gates, the towers of the Louvre and the Archbishop's Palace, the great hall of the Royal Palace, the Chatelet, the Pont au Change and many historic houses, either entire or in part, while along the Seine runs a varied façade with projecting bays and windows of innumerable shapes; on the other side, under the trees of the Quai Debilly, is a row of attractive and picturesque shops. The architects and painters who have carried this out are much to be congratulated, and in my opinion this is the real "clou" (to use the French slang) of the Exhibition.

Views and Reviews.

THE WHOLE HISTORY OF ACETYLENE.

It would be idle to attempt any detailed criticism of this great work of more than 900 pages. Acetylene as a commercial possibility is so young that many persons will be surprised that so large a volume could be filled with the story of its birth and youth. Much space has been occupied by the illustrated description of the various forms of apparatus upon the market for use in connection with the gas; but this is a feature that could not well have been sacrificed. The book, if somewhat bulky, is exceptionally well produced; the clear type and sideheads in red make the work of reference or verification simple and pleasurable. A summary of the legal enactments regarding acetylene, also a précis and catalogue of the patents granted, will be of much value, and the book closes with an excellent index. The work of collecting, tabulating, and verifying the facts contained in the volume must have been enormous, and suggests that the author has made the subject his life study. At the published price the work is marvellously cheap, and it is *the* text-book on the subject written by an authority.

"Acetylene: A Handbook for the Student and Manufacturer," by Vivian B. Lewes, F.I.C. Archibald Constable and Company, Westminster. Price, 31s. 6d. nett.

A Move at Last.—The Limehouse District Board of Works have decided to request the London County Council to modify the plans put before them for approval by the London and Joint Stock Bank for the erection of premises in Commercial Road, which, if carried into effect, will entirely spoil the eastward view of the tower and clock of Limehouse Parish Church.

SANITARY CONGRESS AT STIRLING.

THE twenty-sixth annual congress of the Sanitary Association of Scotland opened in Stirling on September 6th. The members met in the Lesser Public Hall, under the presidency of Provost Forrest, Stirling, who was accompanied on the platform by Dr. Campbell Munro, president of the Association; Bailie Ferguson, convener of the Public Health Committee of Stirling Local Authority; and Dean of Guild S. F. Millar.

After the Chairman, on behalf of the municipality, had given the Congress a hearty welcome to the town, Dr. A. Campbell Munro delivered his presidential address on "1800-1900: a Retrospect." At the beginning of the nineteenth century, he said, the principles of water supply and sewerage were less understood in England than they had been in ancient Rome. In Liverpool in 1800, out of a total population of 56,000, 7,000 dwelt in underground cellars, while the death-rate of Glasgow, they were told, was higher than that of London at the worst period of its history. As had been epigrammatically remarked, nature did not exhibit her uniformity by any pedantic adherence to the decimal system, and so far as the birth of a new century was concerned in regard to public health things became worse rather than better in its earlier years, because of the influx of the rural population into the courts and alleys of the large towns. Indeed, as late as the period 1831-39, the death-rate of Glasgow, which had been 26·4 over the years 1822-30, rose to 31·3 per thousand. The present-day condition of things in the good town of Stirling stood out in strong relief against the picture presented by a witness who appeared before a Commission appointed to enquire into the sanitary condition of the principal towns. "The filth of the jail," it was stated, "containing on an average 65 persons, was floated down the public streets every second or third day, emitting during the whole of its progress down Broad Street, Bow, Baker, and King Streets, the most offensive and disgusting odours." They had travelled far since those days, and the advance in sanitation had had a marked effect upon the health of the people.

In the course of a paper on "Public Health (General View, Special State Department)," Dr. A. F. Wilson, Medical Officer of Health, Stirling, said that the chief objects of the Association were the stimulation of general interest in public health and attention to sanitary legislation. To secure the best results they would require the appointment of a Minister to control public health, who should have a seat in the chief council of the nation, and he thought a movement should be inaugurated in Scotland for the establishment of a special State Department.

Mr. George A. D. Mackay, Inspector of Cleansing, Edinburgh, read the next paper, on "Tact as a Factor in Sanitary Administration."

With regard to the personal qualities that made for success in sanitary administration, there was none, he said, so valuable as tact or manner. Tact had its basis in common sense, and it carried in its train a refined sense of the fitness of things, a nice consideration for the rights and interests of others, a delicate and thoughtful appreciation of circumstances, a unique felicity of speech and bearing, and a spirit that conciliated opposition and made for peace. It was very largely due to the influence of tact that the cause of sanitation stood so well with the public as it did to-day, and in this connection Glasgow had a memorable and inspiring record. At a time when the work of sanitation throughout the country suffered from lack of concentration and from fitful performance, Glasgow in a happy moment wedded foresight to enterprise, and led the way in a new and much required direction. In certain departments of human activity the main thing was to perform the duties of the moment as they arose; the sanitarian who had risen to an adequate conception of his calling would find that he owed a great deal more to himself and the public whom he served. He had not only to insist on conditions that made for health, but to do so in such a manner that those whom he sought to benefit might be imbued with his spirit, and become induced to do for themselves what in the imperfect state of individual education was imposed by collective authority. In other words, he had not merely to be an inspector, but a sanitary missionary, ever recognising that his highest attainment lay in the conversion of the public, without whose co-operation his best efforts would be largely in vain.

Dr. Patrick Murison, Medical Officer of Public Health, Sutherlandshire, read a paper on "The Housing of the Working Classes." He pointed out that it was only within the past fifty years that the Legislature had interfered for improvement in the dwellings of the labouring classes, and year after year had seen an increase of zeal and action. Housing the working classes in the suburbs might solve the difficulty; decentralisation might be the panacea, combined with organised means of transit. Every city could point to moral improvement following improvement in buildings. Tenements had been declared over and over again to be the curse of modern civilisation. Block buildings must not be universally condemned, however, because when substantially built, they were comfortable, and, faithfully superintended, they had been shown to be healthier than were the general buildings of the community in which they were placed. The Peabody buildings in London were a proof of this. He suggested that surveys of all tenement buildings should take place every five years by the burgh surveyor, medical officer, and sanitary inspector.

Mr. J. P. Lawrie, sanitary inspector, Bo'ness, followed with a paper on "The Framing of an Improvement Scheme," and Mr. Robert Lindsay, sanitary inspector of Midlothian, read the last paper, dealing with "The Re-housing Problem."

The company afterwards visited the East and West Churches and the Castle of Stirling, and in the evening the annual dinner of the Association was held in the Public Hall, Dr. Munro presiding.

Surveying and Sanitary Notes.

For the Demolition of Insanitary Property in Liverpool the Liverpool City Council have decided to seek powers to borrow £200,000.

Mr. F. C. Uren, C.E., of the City Engineer's Offices, Oxford, has been appointed engineer and surveyor to the Town Council of Trimley, Surrey.

Sewerage Works at Mellor are proposed by the Hayfield Rural District Council, and the tender of Messrs. Reed and Sons, Burnley, for the carrying out of the works has been accepted conditionally at £2,013.

A Proper System of Drainage for St. Budeaux, Devonport, is to be constructed by the Devonport Town Council. The tender of Mr. Samuel Roberts has been accepted at £8,129, and Mr. W. G. Smith appointed clerk of works.

New Members of the Institute of Sanitary Engineers.—At a meeting of the Election Committee held on the 12th inst. the following gentlemen were elected:—*Members.*—A. Hale, Simla, India; F. D. Stuart, Lincoln; and A. Styles, New Cross. *Associate.*—F. E. Wintle, Berealstone.

Sanitary Measures to Stop the Plague a Glasgow.—The Glasgow correspondent of the "Public Health Engineer" states that the measures adopted by the Glasgow health authorities to disinfect suspected districts were: All walls, ashpits, closes, and passages in the infected district were limewashed, with an addition of chloride of lime in the proportion of 1 in 100. Streets and courts were washed with a hypochlorite of soda solution (Chloros) in the proportion of 1 in 30. The walls, floors and ceilings of rooms were disinfected, first, with sulphur, and afterwards with a preparation known as Formalin.

Bricks and Mortar.

APHORISM FOR THE WEEK.

"If thou seekest to please, behold thou art straightway fallen."—EPICTETUS.

Church House, Liverpool. THE new Bishop of Liverpool has undertaken to further the completion of that Victoria Church House at the corner of Lord Street and South John Street which will serve as a memorial of the first bishop of the diocese and as a thank-offering in connection with the Queen's Jubilee. The total cost of the scheme, including the acquisition of the site, will be between £80,000 and £85,000, of which £48,000 goes for the site. The amount subscribed up to the present approximates £23,000; of this £10,000 has been paid towards the purchase of the site, leaving £38,000 on a mortgage, which will be paid off in the course of years by rents from tenants of shops on the ground floor. With the £13,000 thus free for building purposes, the first section of the Church House is being erected, and hopes are entertained that before the close of the year it will be so far completed as to provide the accommodation required by the Diocesan Finance Association, the Bishop's Registry, and the Ryle Library. The Bishop of Liverpool now asks for £20,000 more to be raised, so that the scheme may be completed for housing all the diocesan institutions in one building. The plans include a hall to seat about 400 persons.

Cave Dwellings. PROFESSOR J. R. S. STERRETT describes in the "Century" a region of Cappadocia in which, as he believes, the inhabitants have been cave-dwellers for nearly four thousand years. Many of them live in cones of stone that have been left by the washing away of the surrounding earth: the height of the cones varies greatly, ranging perhaps from 50ft. to 300ft. Upon entering the doorway one finds within a spacious chamber, about whose walls niches and shelves for the storage of small household effects have been cut into the stone. The stairways leading to the upper storeys are like wells or round chimneys, and one ascended to an upper storey by means of ladder-holes, precisely like those which gave access to the front entrance. The floors between the storeys were usually thick enough to withstand any weight that might be put upon them, but occasionally the excavators miscalculated the thickness of the floor, with the result of making one lofty chamber instead of two. The Professor counted as many as nine storeys in one cone, but most have only two, three, or four storeys. A due proportion of the cones were reserved for the worship of some god, whether pagan or Christian. The period to which these belong is revealed by the imitated architecture. A cone with a portico and Doric columns belongs clearly to the period when Greek civilisation was dominant. An interior with pseudo-arches belongs to the Greco-Roman period. An interior which imitates the characteristic Byzantine church is clearly of Christian origin, though its date may be a matter of dispute. The interior walls of the Byzantine churches are still covered with frescoes, which, of course, are more or less obliterated. Among them are found not merely portraits of Greek saints, each with the characteristic nimbus, but even pretentious paintings embracing a large number of figures. Some of these paintings are ancient in style, others more modern.

The Passing of Christ's Hospital. THE outer bricks and other covering of the picturesque old façade of the southern entrance to Christ's Hospital, in Christ Church Passage, are now being removed; they will be packed and forwarded for re-erection in the new school at Horsham. The same process will be gone through with other characteristic portions of the architecture. The statues of Charles the Second, Sir John Moore, and the Blue Coat Boy have already gone down to Sussex, and the canopied effigy of the founder, Edward the Sixth, has been taken down ready for transit. The cloisters are the most ancient and interesting part of the doomed building. They occupy the site of the old churchyard of the Grey Friars' Monastery. Nothing further is known of the negotiations between the governors of St. Bartholomew's Hospital and the governors of Christ's Hospital with regard to the disposal of the site, except that no decision has been arrived at. So far back as 1872 the Governors were offered £600,000 for the schools and ground for a new street and a railway under it, but upon that occasion the associations connected with the place proved too powerful, and the proposal was rejected.

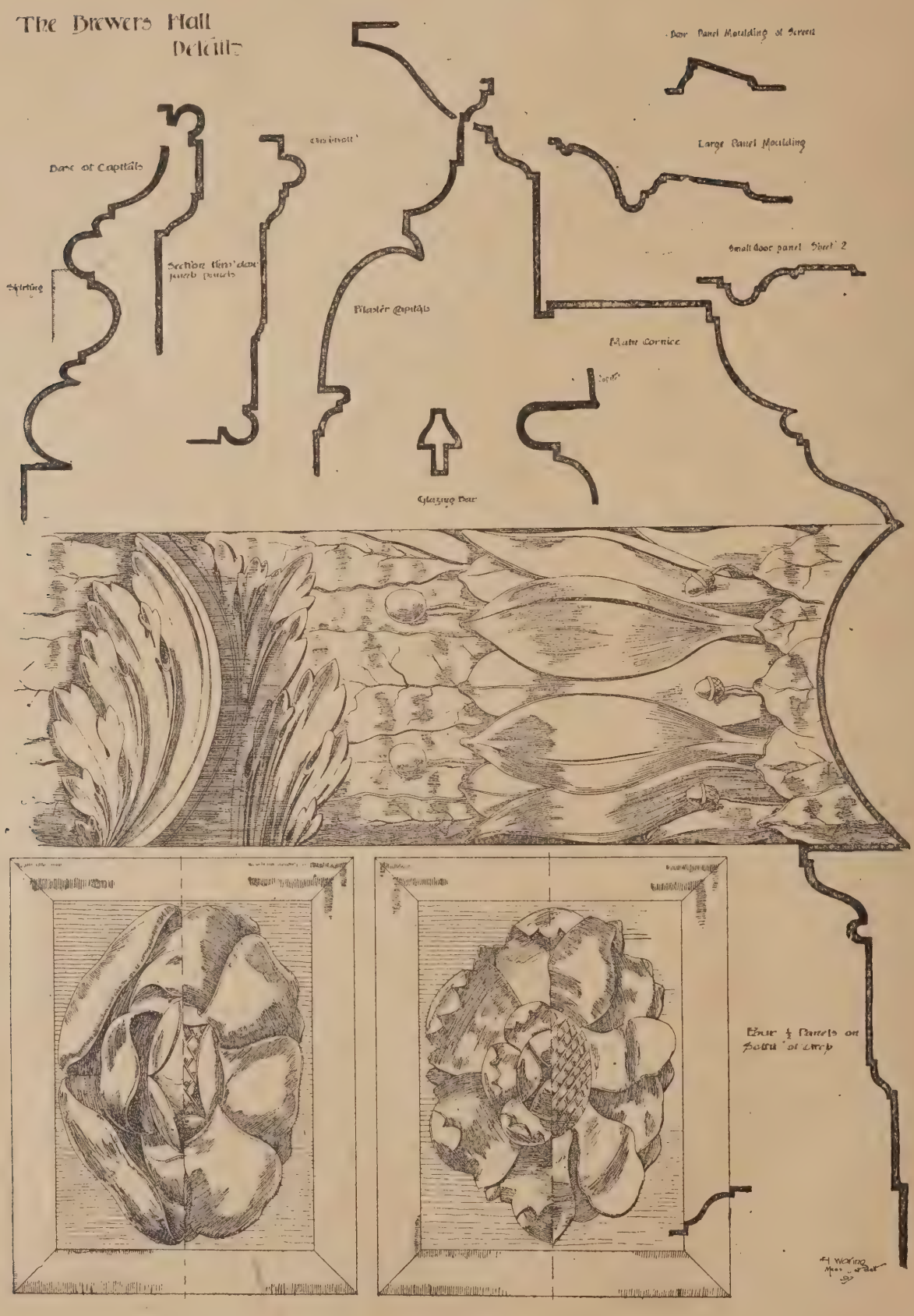
On the Fringe of Manchester. AT Trafford Park, just outside Manchester, a new town is being built. It is the outward sign of a large speculation, and verily there is no sentiment about it. The Park has a total area of 1,183 acres, and extends lengthwise along the south bank of the Ship Canal from Old Trafford to Barton. About 280 acres, or about a quarter of the Park, have been either sold or leased by the Trafford Park Company, and are in process of conversion into sites for factories and warehouses. The building activity on this land is simply astonishing to one who has not visited the Park for twelve months. Apart from a large number of works either erected or in course of erection, there are dotted about contractors' yards, timber yards, and brickmaking yards, all busy with work in part dependent on the developments in the Park. Last, but not least, there are in process of erection many hundreds of dwelling-houses, designed to accommodate the workpeople who will earn their living in the Park. Altogether it is proposed to build about 1,500 houses, or about thirty houses to the acre. Between four and five hundred of the houses are either finished or nearing completion. The land is parcelled out in parallelograms in true American style, with "avenues" running in one direction and streets in another, all designated by a number—first street, first avenue, and so forth.

Money versus Life. THERE is no waste of land. The houses are crowded together just about as closely as possible. There are no gardens or trees, and grass will be unknown when the whole area is covered. It is a model village, chiefly in the sense, however, of demonstrating what a number of houses may be placed upon a small plot of land without offending the essential, simplest rules of hygiene. It may be good to erect a town of dwelling-houses, but surely this is not sufficient. Probably the Dwellings Company will consider they have done their full duty if they make a good paying return out of the land—and the greater the return the better will they have done their duty. What have they to do with schools, churches, halls, recreation grounds, or any other non-productive (in the money sense) sentimentalities? But a writer says:—"Yet the time will come when all these and other necessities to modern sociology will have to be considered; and it is to be hoped it will not be delayed until the little colony of 7,000 or 8,000 people with its 50 acres of breathing space is totally surrounded by factories. What a pity there is not a Lever Brothers or a Cadbury Brothers in Trafford Park. Will the Dwellings Company in their absence combine a little philanthropy with their speculation?"

Rothesay Castle. THE Marquis of Bute has started to build a modern addition in red sandstone to the ruins of Rothesay Castle. The oldest portion of the structure is supposed to have been built in 1098 by Magnus Barefoot, King of Norway, and the more modern part dates from the time of King Robert the Second, who used it as a royal palace. The castle has stood many sieges, and was even captured by an English force, who, however, in 1311 surrendered it to Bruce. The renovation which the Marquis of Bute has commenced is in the northern portion, close to the drawbridge, and the modern stone is said to make a most painful contrast to the old structure. The Marquis's action is the more incomprehensible inasmuch as he did a real public service some years ago in clearing away several tenements which almost hemmed in the castle from view, and in re-excavating and filling up the moat, across which he caused a drawbridge to be thrown.

Glasgow Exhibition, 1901. THE commanding building of the exhibition to be held in the Kelvingrove Park, Glasgow, next year, will be the new art gallery and museum, the future home of the art and science collections of the Corporation. This may be regarded as a direct outcome of the 1888 exhibition, and it is in connection with its inauguration that the exhibition has been organised. With the 1888 surplus as a nucleus, the subscriptions of private citizens have provided towards the cost a total of about £130,000, and the profit of the coming exhibition will be handed over to the Corporation to be applied towards reducing of the balance—the galleries are to cost about £200,000—and for the promotion of art and science generally. Holding that the beginning of the twentieth century affords an appropriate occasion for reviewing the art of the preceding hundred years the Executive Council of the Association have decided to form a loan collection of pictures and sculpture, and the appeal which has been made to art collectors has met with such a cordial and ready response that the display of objects of artistic and historical value promises to be unique. Her Majesty the Queen has intimated her intention of making appropriate loans from the royal collections, and the Prince of Wales readily consented to enrich the section by sending several artistic treasures for exhibition.

Housing Liverpool's Poor. AT the present time the Corporation of Liverpool is carrying out an extensive scheme for housing some of the poor by erecting 182 houses in Dryden Street and Rachel Street, off Scotland Road: 160 of them will be two-roomed houses—namely, a kitchen (or living room) and a bedroom. There are besides a scullery, a corner for coal, a closet, and a space for drying clothes. There will be sixteen houses of three rooms, and six houses of four rooms. It is expected that the cheaper class will be let at 2s. 6d., which would be about 1s. 2d. or 1s. 3d. per room per week, with the other accommodation thrown in. The intermediate class will be let at 3s. 6d. or 4s., and the best at 5s. 6d. These rents, however, will not recoup the Corporation for its outlay. A recreation room for the use of tenants will also form a portion of the buildings, and there will be added an open space where the children may romp and play. The new houses are substantially built, each storey having a concrete floor. Every set of rooms will have a separate supply of hot and cold water, with all modern sanitary arrangements. The installation of a hot-water supply and the provision of a common recreation room is an experiment which Liverpool is the first to try, and one to which the Local Government Board has given ready sanction. The buildings are three storeys high. Access to the ground-floor rooms is to be had from the front, and a staircase at the end of each block of houses leading to a balcony gives access at the rear to the upper storeys. In the better class of houses the rooms are 15ft. by 10ft. 6in., in others 13ft. by 9ft. 3in., and the smallest rooms are 9ft. 3in. by 9ft., with head space of 8ft. A gas service will be installed in each tenement, so that tenants can supply themselves with gas on the penny-in-the-slot principle. The plans were supplied by Mr. Turton, deputy surveyor to the Corporation, and the work of erecting the buildings has been entrusted to Messrs. Holme and Green, contractors. The houses are built of grey bricks picked out with bands of red pressed bricks. The treatment from an architectural point of view is severely simple, the object being to provide cheap dwellings for the very poor, and not to attract tenants who could afford a higher rent.



MEASURED AND DRAWN BY H. F. WARING.

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Wednesday, September 19th, 1900.

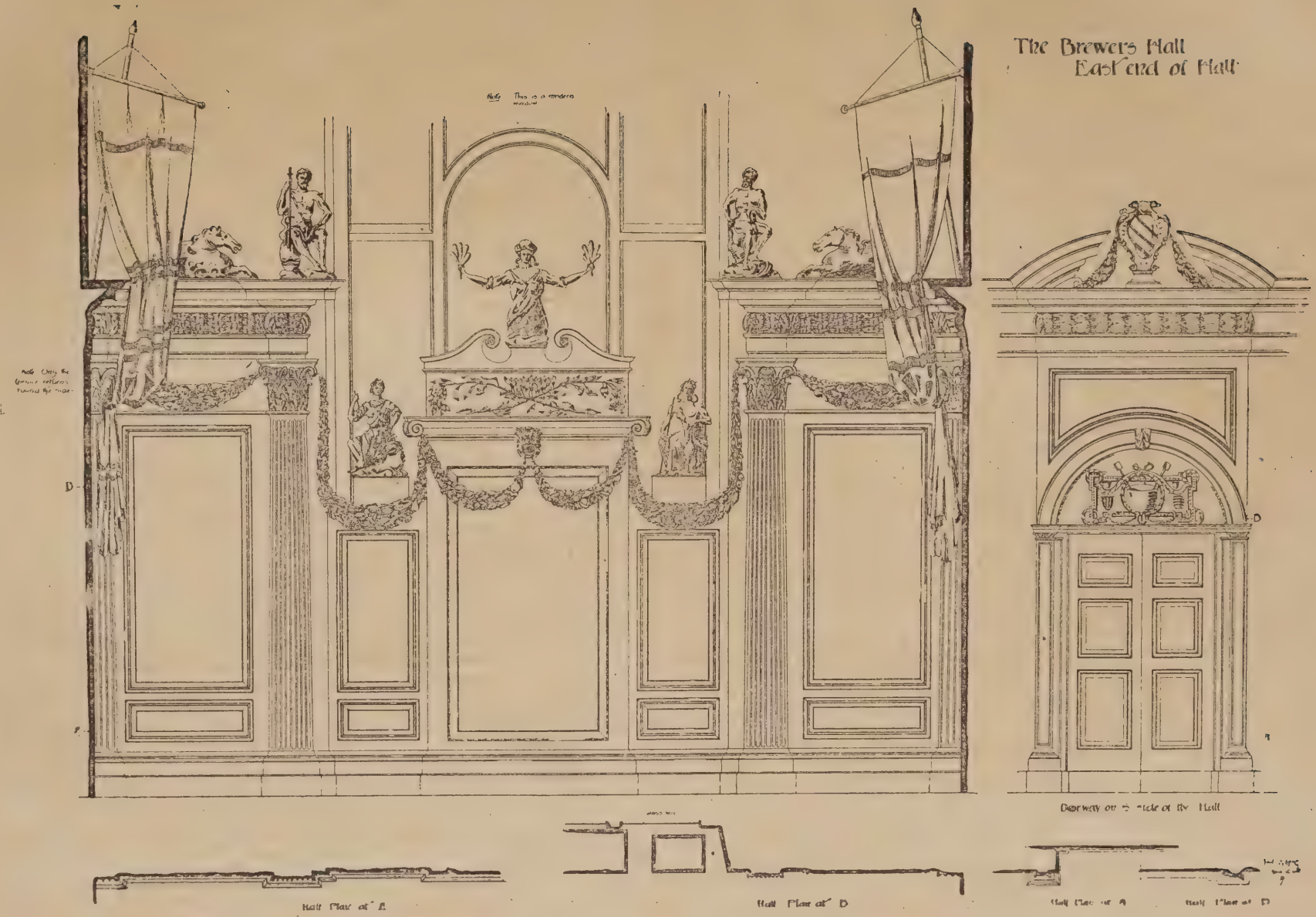


CHURCH OF S. PANCRAS, LEYDEN. Drawn by H. F. WARING.



THE PORTE, HAARLEM. Drawn by H. F. WARING.

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MEASURED AND DRAWN BY H. F. WARING.

THE CHINAMAN AS CLAY-WORKER AND BUILDER.

HIS MATERIALS AND METHODS.

AS a worker in clay John Chinaman began business about four thousand years ago, and he also, at this early date, used the potter's wheel. Chinese tradition says the making of porcelain began about 2697 B.C., but it is thought that the ware produced then was only a common glazed kind, and that the time of the beginning of porcelain was somewhere between 202 B.C. and A.D. 220. But whether he began "early or late," the Celestial soon showed his ability to make things of beauty—first producing exquisite effects in blue tints, and then through various colours to the famous pink tint, finding nearest perfection in the peach-blow hue. And thus the Mongolian potter went on with his work, making improvements and keeping his secrets, and it was not until the early part of the eighteenth century that the Chinaman's method of making porcelain became known to outside nations.

A traveller in the Celestial Empire, in the latter part of that century, in speaking of the manufacture of this fine ware, says that a village, or unwalled town, called King-te-tching, contained three thousand furnaces for baking porcelain, and that when these furnaces were all lighted the place had the appearance of a town on fire. Père de Entrecolles, writing from China at an earlier date, also speaks of this town, and gives an idea of methods, material used, &c. Among other things, he tells us that Chinese porcelain (Tseki) is composed of two kinds of earth—namely, pe-tun-tse, a quartzose felspathic rock, and kaolin, a hydrous silicate of alumina. He says: "These two materials, after having been made into bricks, are brought down the river in flat-bottomed boats. The pe-tun-tse is transported some eighty miles, and the best quality is of greenish hue."

In regard to

Brickmaking in the Flowery Kingdom,

not a great deal is known. Of course the hand-work process is in use, as labour is exceedingly cheap, and, where there are about 400,000,000 people, more than abundant. If machines were introduced, it is more than probable that many, if not all, of them would be destroyed.

For many centuries the Chinese have been makers of bricks, and that they understand this art is fully demonstrated in a great many of their ancient architectural specimens. And this is nowhere better shown than in their Great Wall, which takes its winding way over mountain, valley, plain, hill and river for a distance of nearly fifteen hundred miles. In this stupendous structure there are billions and billions of bricks—all made from the soil of China, coming, it is safe to conclude, from thousands of kilns, constructed in advance of and along the route of the wall. The blue colour of these bricks once led to the belief that they were simply sun-dried, but experiment demonstrated the fact that they were kiln-burnt, and besides this, remains of ancient kilns were found near the wall. Contrary to popular belief,

The Great Wall

is not a solid body of brick or stone, but is composed of parallel retaining walls of brick resting on a stone foundation and filled in with earth and other material. As to the width of the wall, there seems to be a difference of opinion: some writers say 40ft., others much less than that. But there is similarity of opinion in regard to its height—25ft. Sir George Staunton, in his "Embassy to China," published in London in 1793, describes a portion of the Great Wall situated near Koo-he-koo, and gives thickness at cordon as 15ft 6in.; at bottom of brickwork, 21ft., and at stone base, 25ft. The distance of the towers from each other is considered to be about 100yds. In describing one of these the old writer and traveller says: "It consisted of two storeys besides its platform. The lower storey was on a level with the terrepleine of the wall. It was a square and almost solid mass of stone, intersected with arched passages in the form of a cross, at each extremity of which was a window or large port in the centre of each side of the square. Midway between the entrance and the centre of the cross is a narrow staircase, which communicates with the second storey. . . . In the parapet of the platform are twelve embrasures, three in each front, with loopholes in each interval. Total height of the tower is 48ft.; length of each side of square at bottom, 42ft.; at top, 36ft. . . . The quoins of the doors, windows, ports, embrasures and many of the salient angles and staircases in the towers, as well as the stone foundations, are of strong grey granite, with a little mixture of mica in it. The rest of those buildings consist of bricks of a blueish colour. They are laid in laminæ of a brick thick each, forming, as it were, so many distinct walls as there are bricks in thickness. They differ in their dimensions according to the situations in which they are placed. Those in front of the walls and towers are as follows:—Thickness of the bricks, 3¾in.; width, 7½in.; length, 15in. Those for the terraces of the wall and towers differ only from the former in being perfectly square, each side containing 15in. Wherever, for finishing the tapering tops of the parapets, bricks of the usual dimensions would not answer, instead of chipping off to the required size, they were moulded to suit the shape wanted. The cement or mortar between the different layers of brick was upwards of ½in. in thickness, and was of calcined limestone."

Enquiries Answered.

The services of a large staff of experts, including all those engaged on "Specification," are at the disposal of readers who require information on architectural, constructional, or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

New Books on Valuations.

LONDON, W.—E. W. K. writes: "What new books are there on the valuation of house property, &c., and where can they be obtained?"

"Handbook of House Property," by E. L. Tarbuck (4th edition), price 4s. 2d., post free; "Valuations and Compensations," by Professor Banister Fletcher (a new edition of "Compensations," to which are added chapters on valuations), price 5s. 6d.; "Hints to Young Valuers," by A. R. Cragg, price 20s. These books can be obtained from B. T. Batsford, 94 High Holborn, W.C.

Books on Electric Lighting for Architects.

MANCHESTER.—F. B. B. writes: "Please name an up-to-date book on electric lighting and fittings suitable as a reference book for an architect."

"Electrical Installations," by F. J. Warden Stevens, price 2s. 6d.; "The Internal Wiring of Buildings for Electric Lighting," by H. M. Leaf, price 3s.; "Electric Light Fitting," by W. Urquhart (third edition), price 4s.; "Practical Electric Light Fitting," by F. C. Allsop, price 4s. Mr. B. T. Batsford, of 94 High Holborn, W.C., can supply these books. Postage will be extra.

Renaissance Buildings around Bradford.

BRADFORD.—STUDENT writes: "Could you give me the names of a few buildings in the Renaissance style in the neighbourhood of Bradford which are worth measuring?"

St. John's Church, Leeds (1631-1633) is the largest and best church which was built entirely from the foundations in the seventeenth century. "Student" will find he can spend a considerable time in measuring work in this church. Leeds is nine miles from Bradford. *Oakwell Hall*, near Birstall (six miles away) is the original of "Field Head" in Charlotte Brontë's "Shirley." It is now unoccupied, and contains a panelled inner hall with a gallery and various interesting apartments. I do not know its exact date. *Swinsty Hall* (1527) is about six miles north of Otley (that is, about fifteen miles from Bradford). There is a fine mantel in the dining hall, and above this room there is what is known as the "Oak Room," which is well preserved. *Farnley Hall* is close to Otley, and partly in this style. It has a fine Turner collection and other interesting relics (some of the Civil War). *Arthington Hall* is about ten miles away and is of average interest. A wing was added in 1877 from designs by Alfred Waterhouse, R.A. *Fountains Hall*, near the Abbey, is a splendid mansion. It perhaps can hardly be called in the neighbourhood of Bradford, but a visit would ample repay anyone for the distance.

W. J. MORLEY, F.R.I.B.A.

Engineering Notes.

For Supplying Enfield with Water a new waterworks is proposed to be constructed at a cost of £41,000.

Tondu Board Schools are being fitted with the "Small Tube" hot-water heating apparatus by Messrs. John King, Limited, engineers, of Liverpool, who are employing their latest improved economical coil heater.

The Royton Scattered Homes for the guardians of the Oldham Union are being warmed and ventilated by means of Shorland's patent Manchester grates, supplied by Messrs. E. H. Shorland and Brother, of Manchester.

Midland Railway Extension.—The contractors (Messrs. Walter Scott and Co., of London and Newcastle-on-Tyne) who have had the task of widening the Midland Railway between Swinton and Cudworth have now completed that section of the line known as the Darfield and Wath widening.

The Doom of Cannon Street Station.—It is stated, though with what authority seems a little doubtful, that Cannon Street Station is doomed. According to a railway official, it is a "bogus terminus," and the cause of all the delays on the line. But, in view of the recent baseless rumour regarding Ludgate Hill Station, it is not safe to believe the rumour yet.

An Engineering Institution and its Title.—At the recent annual meeting of the Chesterfield and Midland Counties Institution of Engineers much discussion took place over the recommendation of the Council to change their title to "The Midland Counties Institution of Engineers." A poll of the whole of the members (who total 334) was demanded, and this the president (Mr. Maurice Deacon) undertook to arrange. The institution has now £713 18s. 2d. in hand.

Lighting the Embankment.—The scheme for electrically lighting the Victoria Embankment will be commenced probably about the beginning of November. Tenders have already been accepted for laying the mains, and the whole of the lamp standards have been purchased. The scheme is expected to be completed by early summer next year. The total number of the lamps will be 144: they will be divided into nine electrical circuits. The lamp standards will be 24ft. high, and the lamps will be suspended over the roadway from an extending arm.

Messrs. John Spencer, Limited, of the Globe Tube and Engineering Works, Wednesbury, have just issued the twentieth edition of their catalogue of iron and steel tubes and fittings. This well-known firm give in their catalogue prices, illustrations and particulars of tubes for gas, water, steam and hydraulic purposes; boiler tubes; compressed-air tubes; water mains; well tubes; telegraph, electric-light and telephone poles and tubes; overhead electric tramway poles and their bracket arms, bases and fittings; high-pressure steam mains; sewer ventilating columns; coils for heating purposes; boiler mountings; valves; and an innumerable number of small fittings. As this list cancels all previous issues a copy should be obtained.

SOME NOTES ON DRY ROT.—III.

By A SPECIALIST.

(*Concluded from p.* 88, No. CCXCI.).

THE illustrations accompanying this article are given as examples in which ventilation can be obtained only by resorting to some unusual means; in each of the cases shown it was stated that ventilation was not possible.

Fig. 1 shows the section of two ordinary rooms; the one has a boarded floor, the joists being supported on sleeper walls in the usual way, and the other has a tiled floor, the tiles resting on ballast or mortar. Now in cases like this one, the usual provision for ventilation is to insert two or three air-bricks in the front wall and the end wall (if it is an outside wall); failing this, the front air-bricks have to suffice, and, as may readily be seen, a circulation of air is impossible, so that with the slightest chance dry rot will ensue, and will obtain a firm hold before it is discovered.

By inserting air-bricks in the back wall opposite the front ones and laying ordinary drain pipes from them to the opening below the boarded floor (as shown at A, Fig. 1) ventilation is assured throughout all the space under the floor. The extra cost is very little, certainly much less than the first batch of repairs would be. Some persons object to the drain pipes because they form runs for vermin. This they may do to a certain extent, but if the runs are not there the vermin will make some for themselves, so that the argument is a feeble one; besides, in any case vermin are preferable to dry rot, as it is less expensive to get rid of them. In cases where a boarded floor comes between and parallel with two tiled floors, it is a very good plan to place drain pipes under both of the latter leading from the space under the wood floor to air-bricks in the outside walls, even if there are already others running at right angles to them, as the more fresh air under the floor the better for the wood, and the drier will be the house. Many misguided persons cover up all the openings of air-bricks to prevent a draught being felt in the rooms, forgetting that this draught is the sign of good ventilation, and consequently a lasting floor. If the draught finds its way up into the room, it shows that the workmanship of the floor is at fault, and this is where the remedy should be applied.

In Fig. 2 is shown the proper method of ventilation when the floor is unavoidably below, or level with, the ground line. The air-brick, B, is inserted well above the ground, so that the surface-water cannot enter. Air is thus admitted into the cavity of the wall, and an opening is made opposite each air-brick, but below the joists (as at C), admitting the air into the space below the floor. The tubes can be used in such a case as this equally as well as in Fig. 1.

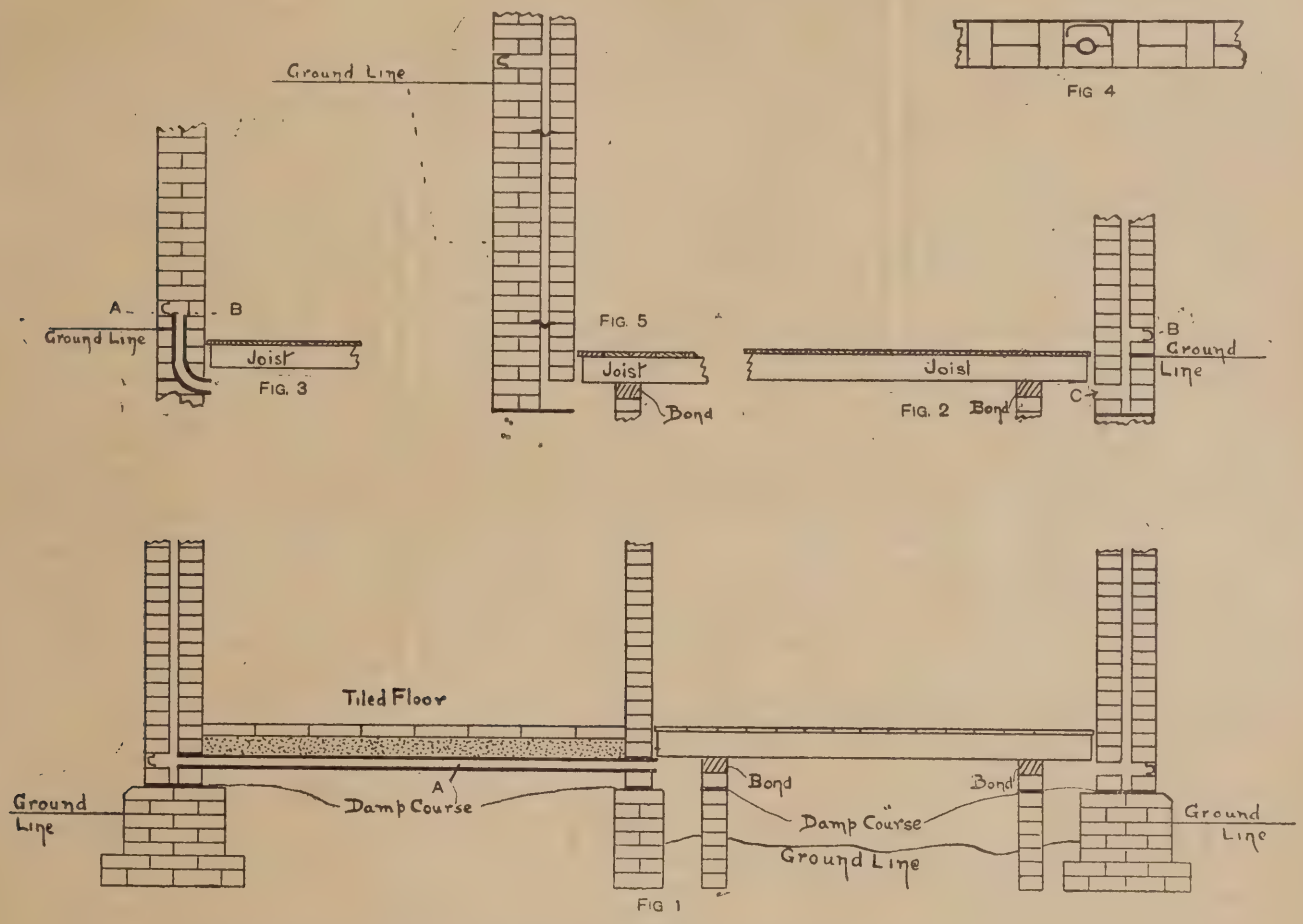
Should the walls be solid, so that no cavity is available as a connection between B and C, the device shown in Fig. 3 is very effective. It is simply an ordinary drain pipe and bend built into the wall to form the air passage (a section on line, A—B, is given in Fig. 4). This may seem a considerable trouble, but it is no more than building pits and trenches as described in the preceding article, and while the latter do no good, and often actual harm, the pipes serve their purpose without the slightest risk of harm.

In Fig. 5 is shown the method of ventilating a basement floor on the same principle, but here, owing to the air not having a direct entrance, double the number of air-bricks are necessary to make up for the deficiency. If the walls are solid, the tubes can be built in, in the same way as shown in Fig. 3. Basements are usually lighted by means of windows opening into an area, as shown by dotted lines in Fig. 5. One or more air-bricks can be inserted in the area, being kept up one course above the bottom to prevent them acting as drains as well as air inlets. In basements which have wood floors badly infested with dry rot a cure is very difficult to effect; in such cases, wood blocks laid on concrete are advisable.

It will be noticed that in the accompanying drawings hollow walls are shown in all cases but one. The reason for doing so is that the cavity in hollow walls forms an excellent ventilating shaft, especially if air-bricks are inserted at the top as well as at the bottom, as they should be. Some authorities condemn hollow walls as being weak, but if properly tied together they are as strong as solid walls, and far better for many reasons.

The sleeper walls on which the joists are supported should be built not less than 6in. away from the main walls, perforated as shown in the preceding article; the bond should be placed on them dry, not bedded with mortar, which is quite unnecessary, and often the cause of decay. The ends of the joists and the outside joists should be kept clear of the walls, the former fully 1in. and the latter 3in. The floor boards should be kept ½in. away from the walls at the ends and the sides. Damp courses should not on any account be omitted, either in outside, partition or sleeper walls, and in such cases as those shown in Figs. 2, 3 and 5 two damp courses should be used—one above the ground line in the usual way and one below the joists. It is the neglect to do this that is often the reason why joist ends become decayed.

The recommendations made may in some cases seem extravagant and needless, but it should be noted that a sovereign spent at the beginning may before many years have passed be the means of saving an expenditure of ten pounds. The old proverb says: "Don't spoil the ship for a ha'porth of tar."



PREVENTION OF DRY ROT: METHODS OF SECURING VENTILATION IN DIFFICULT CASES.

New Patents.

These patents are open to opposition until October 22nd.

1899. — Keyhole Saws. — 16,921. J. E. FITCHEW, 498 Kingsland Road, London, N.E. The teeth of the saw are formed the reverse way, so that a cut is made when the saw is pulled towards the person using it.

Water-waste Preventers. — 20,470. C. D. MARTIN, Charlotte Place, North Street, Clapham, London, S.W. The object of this invention (for use with syphon discharge cisterns) is to obtain silent action and to simplify construction. Within the cistern and below the normal water-level is a closed chamber with a lift valve at the bottom and a cylinder at the top, the piston in the latter being operated by a counterbalanced lever. A pipe leads from the top of the chamber to the syphon discharge pipe.

Gas-heated Water Heaters.—20,604. E. W. T. RICHMOND, Summercourt, Romford, Essex. The gas and the water are turned on simultaneously by a handle common to both supplies. A pilot light is used, and is arranged so as to first move away from the burners in order that it may be lighted, afterwards moving back to the main burner, and so lighting that.

Filter Presses for Sludge.—20,809. G. MACDONALD, 40 Dalmeney Road, Tufnell Park, London, N. In this filter press the piston is impelled by the sewage for the purpose of straining or filter-pressing the sewage enclosed by the previous operation on the other side of the piston. The action is alternating.

1900. — Roofing Tiles. — 90. E. HUPERTZ, 82 Mastricherstrasse, Cologne, and P. BREIDENBACH, Müllers-Ommer Linde, Cologne, Germany. The roof is perfectly flat—without raised parts—and the tiles which form it have a water collector at their upper ends, a small gutter being provided to direct the water straight down the roof.

Steam Heating. — 12,605. J. RUSSELL, 22 Charing Cross, London, S.W. The object of this invention is to prevent the passage of the steam into the return portion of the system and to avoid short circuiting, whilst permitting the continuous escape of air contained in the condensed vapour and the escape of condensation water. A partial vacuum is formed in the return system and a float valve for condensed water is provided in the outlet of each radiator. This valve is operated by the accumulation of water itself.

The following specifications were published on Saturday last, and are open to opposition until October 29th. A summary of the more important of them will be given next week. The names in italics within parentheses are those of communicators of inventions.

1899.—17,284, DEACON, sash bar for glass roofing. 17,382, KIERSCH, method of glass mosaic decoration. 17,552, TURNER AND DEWHIRST, means for polishing steel, wood and other substances. 18,310, CAMPI AND LAWRENCE, apparatus for cutting, carving, &c. 19,270, BOULT (*Goldschmid*), method of purifying water gas. 19,445, BLONDEL, WEISSMANN AND WYDTS, electric-lighting systems. 19,891, READ, street-orderly bins. 20,062, BLAIR, BLAIR AND BAILLIE, evaporators, &c., for reducing fresh water from salt or impure water. 20,615, BUSH AND JENKINS, electric safety apparatus for lifts and elevators. 20,897, R. BRIDGE, hanging brackets for supporting and providing bearings for shafting. 20,906, MUNRO, WOOD, BRECKNELL AND ROGERS, trolley standards used on cars or waggons electrically propelled from an overhead wire. 21,211, PAWSON, stone saw frames. 21,344, BEAMAN, refuse-consuming furnaces or destructors. 21,353, HOBBS, fire- and sound-proof floors and ceilings. 21,920, WOODWARD, drawing compasses. 21,980, MACKEY, door furniture. 22,485, WESTON, automatic fire sprinklers. 23,514, EADES AND ALLDAY, crab winches and other hoisting and lowering appliances. 24,345, OPPENHEIMER (*Actiengesellschaft Mix and Genest*), plugs for wall sockets. 24,868, KÖNIG, drying apparatus.

1900.—2,391, WOOD, burners. 7,185, FEHSE, support for incandescent mantles. 7,616, GROPPLER, compound for disinfecting purposes. 8,483, GRUBE, gas and vapour burners. 8,871, EWEN, manufacture of prismatically-ridged glass. 10,009, DE SILVA, window-blind furniture. 10,799, EVEREST AND OWEN, combination grinding mill. 10,964, BOULT (*Hinz*), roasting or calcining apparatus. 11,740, JACOBI, apparatus for moistening, cooling and purifying the air in rooms. 11,798, BÖTTGER, building arches with new bricks. 12,407, WALES AND WYMAN, apparatus for shifting belts from one pulley to another. 12,813, REICHARDT, sharpening machine. 13,116, KITE, service lifts, hoists, &c. 13,156, KAEFERLE, method of producing hollow cast-iron heating bodies for steam and hot water. 13,270, WARSCHAUER AND RITSCHEL, air-moistening devices for fans or ventilators. 13285, HOWSON, seat attachments for water closets. 13,287, KÖRTING, sewage boxes for sewage systems.

Builders' Notes.

Mr. Thomas D. Brooks, of York, has been appointed building surveyor to the Hull School Board.

Mr. William Henry Ottewill and Mr. Richard Corben, carrying on business as builders and decorators, at Maidstone, in the county of Kent, under the style or firm of "A. N. Pryer and Co.," have dissolved partnership as and from September 1st, 1900. All debts due and owing to or by the said late firm will be received and paid by Mr. M. L. Crow, Tunbridge Road, Maidstone.

An Example of Roman Plumbing.—At Chester a piece of lead piping supposed to have been laid about the year A.D. 79, when Agricola governed the province of Britain, and used for conveying water to the Roman camp, has just been discovered. Last October some similar lead piping was unearthed at this spot, but special interest attaches to that now brought to light as it bears the words "Julio Agricola," which completes an inscription of which fragments were before known.

The Late Alderman White, of Birmingham, whose death occurred last week, joined the City Council in 1875, when the corporation initiated their now famous improvement scheme, which was destined to sweep away the series of unwholesome rookeries which formed the heart of Birmingham slumdom. He became the chairman of the improvement scheme committee for five years. After nine years' service in the council Alderman White was elected mayor.

Death from Treading on a Rusty Nail.—Mr. Samuel F. Langham, the City of London coroner, held an inquest at St. Bartholomew's Hospital last week, with reference to the death of John William Smith, a scaffolder, of 26 Steel Lane, Acton Lane, Harlesden, who died from tetanus caused by treading on a rusty nail. It appeared that at some new buildings in course of erection at London Wall carpenters had put up a scaffolding, but had not knocked down the nails which protruded. On one of these, which stuck up an inch, the deceased trod, as he did not notice it. The nail went right through the sole of his boot and penetrated deeply into the foot, which became very inflamed, and eventually he had to become an inmate of the hospital, where he died the next day. The jury returned a verdict of "Accidental death."

A Builder Imprisoned for Stealing Water.—At the Central Criminal Court on Wednesday last Joseph Holland, a well-known Leytonstone builder, was convicted of having stolen 900,000 gallons of water, drawn from the East London Waterworks Company's mains. The prisoner was engaged in building operations at Leytonstone, and it was alleged that he was party to the surreptitious laying-on of a water supply for building operations from a domestic supply some distance away, whereby he sought to elude the charges of the Water Company. The defence was that the prisoner was innocent of the fraud, and that so soon as he discovered it he ordered the supply to be cut off, and offered to pay. The Recorder said the evidence against the accused was overwhelming, and sentenced him to nine months' imprisonment in the second division.

A Portable Asbestos House for Count von Waldersee.—Part of the equipment of the German expeditionary force for China is the portable house for the use of Count von Waldersee. This novelty was built by a Hamburg asbestos firm. The framework is of wood, and is filled in with a new kind of asbestos slate, which is also used for the roof. The outside walls are double, with an air space between them. The entire building has a frontage of 56ft., and is about 16ft. high. It contains seven good-sized rooms, three to the front and four to the back. The door opens into a hall, to the right of which is the orderlies' room and to the left the field marshal's work-room. Beyond this is his bedroom. From this is reached the bath and dressing-room and the two rooms occupied by the personal adjutant. The entire building can be dismantled in three hours and set up again in eight hours.

EARTHQUAKE-PROOF WOODEN BUILDINGS.*

THE construction of earthquake-proof buildings differs in method according to the kind of materials used. But the earthquake-proof buildings which will be built at Sakata, Yamagata Prefecture, where great havoc was wrought by earthquake last October, will probably, in view of the conditions of the locality, be constructed of wood. As these structures will comprise public buildings, shops, and city and country houses, the arrangement of rooms will be necessarily diverse, some being simple and others complicated; the outward appearance of the buildings will also differ, for some of them may be of one storey and others of two storeys. The principle of construction, however, cannot but be one and the same, and therefore we give herewith a condensed statement as regards the method of constructing earthquake-proof wooden buildings.

Construction of the Foundation Works. — Materials for the foundation work may be one of three kinds, namely, (1) concrete, (2) broken stone, (3) stone blocks. The concrete may be made either of cement or of lime, or of both cement and lime mixed; any one of which is better than either the second or the third kinds. Cement-concrete is best of all. In constructing the foundation work, if the soil should be found too soft or damp, piles must first be driven to afford a firm foundation; but the driving of piles should be dispensed with in places where the soil is dry. For the foundation or footings to be placed upon the groundwork, flat broad stones should be selected, and they should be buried in the earth for half of their height.

Construction of the Framework. — In constructing an earthquake-proof building, it is deemed advantageous to use either foundation-sills or foot-bracers, and the method of using them may be seen in an ordinary foundation-sill (as in Fig. 1); in a foot-bracer applied to one side of a pillar (as in Fig. 2); in a foot-bracer stuck between the two pieces of timber forming a double pillar (as in Fig. 3); and in two foot-bracers so fixed as to embrace both sides of a pillar (as in Fig. 4). Should more stability be required in the case of Fig. 1, the connection of the pillar and the foundation-sill should be firmly joined by means of iron clamps or straps. In adopting the methods shown in Figs. 2 and 4, foot-bracers having a thickness of more than one-third of the respective pillars should be used. In case of adopting the method shown in Fig. 3, one solid pillar should be used at each corner of a building, notwithstanding the pillar may be weakened by foot-bracer. Still another method is to use pieces of timber as a pillar, as shown in both Figs. 5 and 6. In that case, blocks of wood just fitting the space between the pieces of timber should be inserted at every two or three feet, and should be

* Report of Earthquake Investigation Committee, Japan.

fastened with a metal bond, wire or bolt, in order to prevent the pillar from bending or twisting.

It is desirable that foundation-sills and foot-bracers should be crossed with a brace at the four corners and fastened with bolts, as in Figs. 7 and 8. One or two through-bracers should be used as in the case of foot-bracers and fastened with bolts, as in Figs. 9 and 14; but in the cases of Figs. 11 and 14 the blocks of wood should be inserted at both surfaces of the through-bracers.

In the intermediate spaces between the pillars where no window or door is to be made, or where outward appearance is of no particular consequence, struts should be placed and fastened to the through-bracers and pillars with bolts. The lower and upper grooved beams, respectively, in which doors or shutters slide should be fixed to the pillars simply with screws, if possible, in order to avoid cutting into the pillars and weakening them. Horizontal pieces of timber used in the framework of a building should be attached to the surface of the pillars and fastened with bolts. Moreover, the weak point of the construction at the four outer corners should be strengthened by jointing the horizontal pieces with L-shaped metal straps. In places, however, where outward appearance is of no consequence, the pieces should be overlapped at the ends and bolted to the pillars. In regard to the method of combining with the pillars such lateral timbers as floor-beams and so forth, if possible, only one or two of the timbers should be used in a similar way, as in the case of foot-bracers. The connection of top ties and pillars should always be made in the same way as that recommended for pillars and their foot-bracers. The combination of the roof and walling of a building should be effected as in Figs. 15, 16, and 17, e.g., either by holding the upper part of a pillar between double tie-beams placed on wall plates, or by using double rafters and letting the tie-beam fall upon the tenon of a pillar. In both cases bolts or iron straps should be used in fastening.

Construction of the Roof-framing.—Materials of too great a dimension should be avoided in the construction of the roof, and the construction should be as in Figs. 15 to 20, using such scantlings as will be just large enough to bear the weight of the roof itself together with the pressure of the wind and the weight of the snow; and all connections should be effected with thick wire, iron scraps or bolts. Between the principal rafters struts or braces, or both, should be used, and the whole frame of the roof should be bound, as in Fig. 20, with iron clamps or bolts.

For resisting earthquake shocks, a light roof is preferable, and therefore all roofs should be made as light as is consistent with their function of keeping out the wind and cold. In case of using tiles, it is better to fasten them with nails or wire.

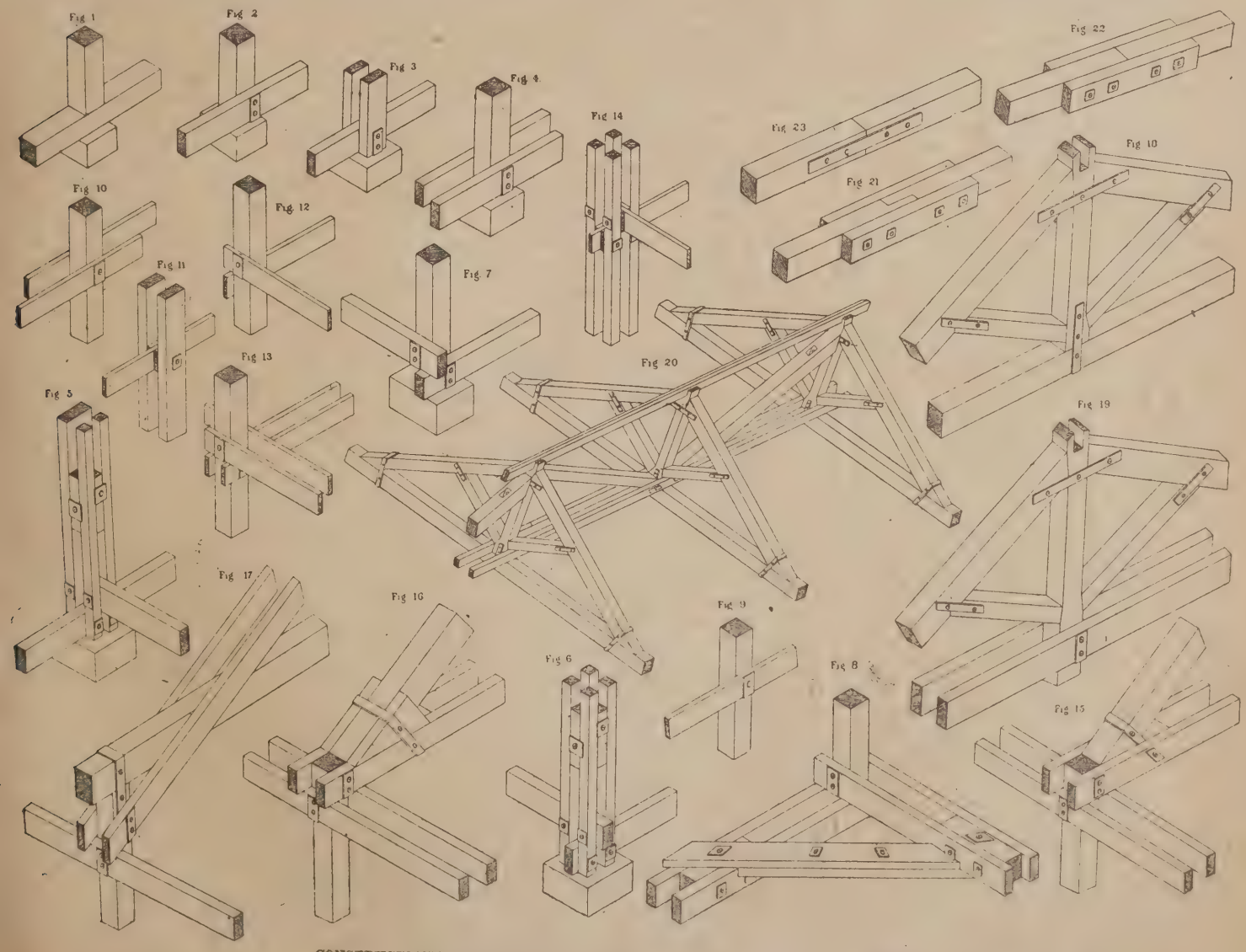
Joints.—Joints in whatever part of a building should be made as simply as possible, for though a complicated joint may seem strong, yet in reality it is weak. It is desirable that a joint should be made as in Figs. 21, 22 and 23, wood or iron fish-plates being fastened with bolts. In making a tenon also, the simpler its form the better. In case a jointed pillar is to be substituted for an ordinary one in building a two- or three-storeyed house, the joint of such post should be made at a point about 2ft. or 3ft. either above or below the upper floor-line of the house. Foundation-sills, foot-bracers, floor-beams and tie-beams should all be fixed so as to project somewhat at their outer extremities.

Attachment of a Porch or a Shed with the Main Building.—As regards attaching a porch or a shed to the main building, the old method of tenoning or nailing should be entirely abandoned, as it is dangerously faulty, and the two structures should be joined in the same manner as top-ties and pillars are connected.

Materials.—As the quality as well as the size of iron materials has an important bearing upon the construction of a building, serious attention must, of course, be called to the selection of materials and also to the number and distribution of bolts. Besides, the size of washers should be considered, large ones being preferable to small. Wooden materials are subject to shrinkage, owing to which the bolts lose their tightness, and therefore well-seasoned timbers should be selected.

Conclusion.—The most essential points in regard to the construction of an earthquake-proof wooden building lie in the method of building the foundation; in the preservation of the entire power and function peculiar to each timber intact as far as possible, and, in case some weakening be unavoidable, reinforcing it by the application of iron that is much stronger than wood; in the use, wherever possible, of triangle frames, in accordance with the principle that a triangle affords an unchanging form of structure; and, finally, in the additional strengthening of the whole framework by the further use of iron materials, thus combining all the parts into a stable and united construction.

A People's Institute for Southwark Park.—The Rev. J. Wallace, vicar of St. Crispin's, Southwark Park, S.E., appeals for help in building a "People's Institute" for the benefit of the dock labourers and costermongers in his poor parish. A site has been obtained and plans have been prepared by Mr. C. Harrison Townsend for a building which will cost £850. Subscriptions may be sent either to the vicar or to Sir W. Roberts-Austen at the Mint.



CONSTRUCTIONAL DETAILS OF EARTHQUAKE-PROOF WOODEN BUILDINGS.

Correspondence.

Leaky Windows.

To the Editor of THE BUILDERS' JOURNAL.

WEST HAMPSTEAD, N.W.

SIR,—Referring to the article on "Leaky Windows" published in your issue for August 22nd last, by Mr. Campbell Douglas, F.R.I.B.A., the breakwater feature F, on his plan, may have something in it, though this "breakwater" does not obviate the microscopic cracks on the screeded face of reveal. So far as the bedding of case sill is concerned, no architect would think of bedding a wood sill on a stone or concrete one without an iron water bar run the full length of the case sill, and this thoroughly bedded in soft red and white lead putty into the stone and wood alike. As to the decay of window sills (sash frames), it is as important to paint the bottom of the case sill before the sash frame is fixed in position as it is to paint any other part of the frame; also the pulley stiles and linings should have a brush of paint applied to the lower joints and fixings when being put together. It is also a good precaution to have a groove on the outside face of the lining which abuts on the reveal so that the soft screeding of lime and hair mortar shall fill it up and break the straight line on the same plane. There are also other methods, such as fixing a fillet or architrave on the outside of frame as shown, tongued into sash frame and scribed to brick or stone reveals. As to Mr. Douglas's contention of giving up the broad sill, because it is not required to make the frame rigid, I am afraid he has little acquaintance with the practical construction of a sash frame, otherwise he would not advise that. The accompanying illustration may be of interest to him and to others.

Yours truly,
H. PENDLEBURY.

To the Editor of THE BUILDERS' JOURNAL.

GLASGOW.

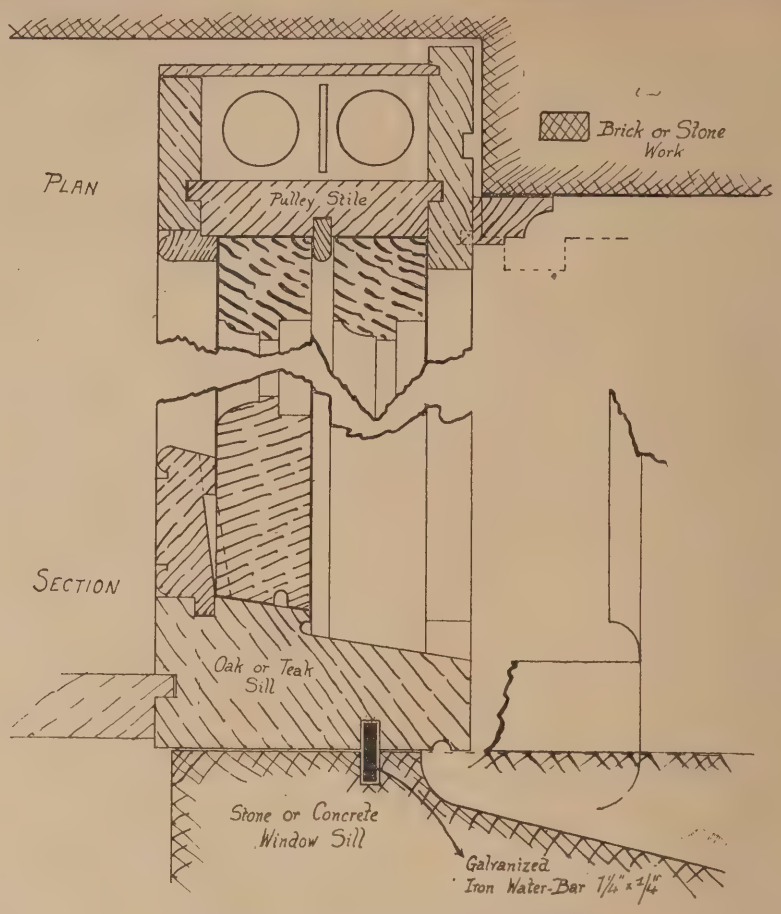
SIR,—There is really little to say in reply to your correspondent's statements. I fail to see any evidence that he has apprehended the natural laws which must be dealt with in a more scientific method than has hitherto prevailed in the "use and wont" method.

The sketches which accompany my paper do not show everything, e.g., the lath separating the two sash-weights and their enclosure at the back; the use made of the groove run along the window sash of the case sill, whether it should be fitted with what your correspondent calls "an iron water bar," or whether, as some think, this might be better done with a different material, and in a slightly different manner; the use of the fillet fixed on the outside of the frame and scribed to the reveal. These things are strictly speaking *non-essentials*, and I have dealt almost exclusively with what is needed to cure the evils of the present system. Possibly your correspondent may have fancied I was ignorant of the features on which he lays stress.

I also infer that he is somewhat aggrieved by my occasional use of Scotch terms, when they differ from what he is accustomed to. But it is a more serious matter when I perceive that he does not take in what I call the essentials, namely, (1) the *breakwater*, for although he is good enough to say it "may have something in in it," he adds that it "does not obviate the microscopic cracks," whatever that means. (2) He is rather hard on me about the narrow case sill, and does not seem to have observed that it is a theory which I have successfully worked out in practice, and therefore I recommend it; it is, however, quite possible he may have had more windows made than I have had. (3) He does not seem to understand the scientific basis on which my V-shaped channel on the inside of the sash and case sills rests.

I will only add that it is somewhat depressing to see that one who seems to be what is called "a practical man" appears to be unable to realise the evils of the system which has hitherto prevailed, and gives no evidence of being able to appreciate the reasons for my attack on what has been, I suppose, hitherto the almost universal system of constructing sash windows and the stone sills they rest upon.

Yours truly,
CAMPBELL DOUGLAS.



CONSTRUCTION OF WATER-TIGHT WINDOWS.

Architects' Assistants' Salaries.

To the Editor of THE BUILDERS' JOURNAL.

SOUTH SHIELDS.

SIR,—Being one of the priggish assistants referred to by "H. T. B." in your issue for last week I have followed with great interest the correspondence on this matter.

Assistants are poorly paid, it is true, and not till they insist upon getting a minimum salary of 30s. will they be properly paid. I for one have had no cause to complain, having received a reasonable salary since the completion of my articles. I would like to ask "Pen" what time a mason, joiner, or any other workman, has for preparing drawings, even if he had the ability: in the majority of cases they do not know their own work. If he remains at his trade, after perhaps fourteen years' experience, and starts to prepare plans, he will find himself an architect, and of this class of architecture we have some bright specimens. I would also like to point out that a man who is only a draughtsman cannot obtain employment in an office of any repute as an architectural assistant: he is engaged only as a draughtsman. One of your correspondents asserted that all architects were badly paid. Architects in practice have no more cause to complain than any other professional men. If the practice is a good one, the remuneration is also good. I therefore say to all students of architecture "push on"—the profession is not so black as it is painted; for all able assistants there is yet employment to be found, and as long as the world lasts there will be architects.

Yours truly,
STUDENT.

A new Mission Hall at Hove has been built at a cost of about £2,000. The hall has been erected in connection with the Cliftonville Congregational Church in Rutland Road, Hove, and is to be known as Rutland Hall. The building seats 300 persons, with class rooms.

THE BRITISH ASSOCIATION.

(*Concluded from page* 117, No. CCXCII.)

SECTIONAL meetings were held on Monday, Tuesday, and Wednesday, the 12th, 13th, and 14th inst. On Monday, in the Mathematics, Physics, and Astronomy Section, Mr. J. W. Thomas read a paper on the "Physical Effects of Winds and their Influence upon Ventilation." Mr. Thomas's main contention was that ventilators of the ordinary type ought to be sheltered from the wind as much as possible, instead of being exposed to it, the all-important element of outside pressure on the ventilating power of a chimney being usually overlooked.

Municipal Trading.

In the Economic Science and Statistics Section, Mr. Arthur Priestman read a paper on "Municipal Trading." He said that in the returns of the municipal corporations there was very material evidence of the vast increase of municipal trading. The debt incurred by local authorities had increased from £60,000,000 in 1838 to £262,000,000 in 1898; and of this £87,500,000 was estimated to be on account of municipal trading. Thus, nearly four times more capital was employed in municipal trading than was employed by the co-operative societies. There was a growing feeling that the responsibility for the sordid conditions in which so many persons lived should be regarded as a charge on the whole community. It was not sufficient that our streets were well paved, drained and lighted, and that the safety of our people was maintained by an ever vigilant police force, but our citizens must be well educated, afforded every opportunity of healthful recreation, their food must be inspected, the causes of disease must be removed. Within the past three years 300 separate competing firms have been formed into 13 trusts, with £79,500,000 capital. We were face to face with private trading itself becoming a monopoly through combinations of capitalists; and we were in the position of choosing between the Scylla of private monopoly and the Charybdis of municipal monopoly. To limit municipal trading would be to put a stop to the natural development of collective enterprise and to

hinder the progress of the people towards a higher, a nobler and a happier life.

The Hon. Auberon Herbert's paper on "Municipal Building for the Overcrowded" was read in his absence by Mr. E. Cannan. The writer said we could either supply this want by the system of free trade or by enlarging once more the area of compulsion. Undoubtedly compulsion was easy and convenient, but did it not tend to bring serious evils with it—disagreement, careless and expensive management, corruption? Looking round at Europe to-day we saw a general failure of highly-organised systems of compulsion. Almost everywhere minorities were in revolt against majorities. It had been discovered that majorities were very keen to pursue their own particular interests—that to be in a minority meant to lose all control, perhaps for many years, over one's own mind, body and property. The remedy was for our municipal bodies to develop a voluntaryist side to their work. Instead of always compelling, let them sometimes persuade us to help them in some of their many duties. In this very matter let them appeal to us to form building companies, with shares placed at a low amount, so that all might join.

Electric Street Traction.

In the section relating to Mechanical Science Mr. J. G. W. Aldridge contributed a paper on "The Automobile for Electric Street Traction." After a reference to the drawbacks and difficulties incident to the usual means of carrying street traffic, he described a system which had been devised in France. The electric motor vehicles derived power from a pair of trolley wires supported on short brackets along one side of the road; on these wires ran a two-wheel trolley containing a small electric motor for its own propulsion, the whole being connected to the omnibus by a flexible cable attached to a pole on the roof, devices being also provided to keep the cable sufficiently taut and to obviate any risk of derailing the trolley. The system was in actual use in the outskirts of Paris.

Sir William Preece read a paper on "The Manchester and Liverpool Express Railway."

The Demerbe Tramway Rail.

Mr. William Dawson, deputy engineer to the City of Bradford, next read a paper on "Recent Tramway Construction," the chief feature in which was a description of the Demerbe rail. This rail, which differs entirely from other types, consists of a hollow trough rail. The fishplates, by which the different lengths are joined, are placed inside under the ends of the rails and exactly fit their contour, the point of application being immediately under the head of the rail. By means of cotters the fishplates are driven close up to the underside of the rail. When in position the rail is completely filled with concrete. The tie-bars are flat. The rail is inserted into two oblique grooves, one of which is cut so as to exactly fit its outer side, while the other is wider to facilitate its introduction. The space left is filled up with a wedge of soft steel. In this way the rail becomes attached to the concrete foundation and is actually a part of the carriage way. The first cost was shown to be cheaper than ordinary rails, though this was considered by the author as of secondary importance to the saving in maintenance. The life of the rail he would estimate to be about 20 years.

Electricity Generating Stations.

A paper by Mr. Alfred H. Gibbings, former electrical engineer for Bradford, on "The Design and Location of Electric Generating Stations," was taken as read. He stated:—All design and arrangement in regard to electric works must be with a view to securing the highest average efficiency together with reliability in operation. Economical production is only possible where both the generating costs and the standing charges are reduced together as the load increases and the system extends. In constructing generating stations the following points should be attended to: (1) The machinery must be designed to generate at high voltage, suitable for transformation at sub-stations to meet all possible requirements; (2) the type of all boilers, engines, electric generators switchboards, &c., must be simple and mechanically reliable; (3) all complicated gear and fanciful combinations, such as might lead to a possible breakdown, must be avoided throughout; (4) as far as possible the different units of the respective types of plant should be uniform in design and arrangement and made to one standard size; (5) the buildings should be devoid of all unnecessary embellishments, nor should an attempt be made to confine too many departments under one roof; (6) the location should be such as to ensure a cheap and ready supply and delivery of fuel, and where condensing can be accomplished efficiently and inexpensively.

On Tuesday, in the Chemistry Section, Dr. J. B. Cohen, of the Yorkshire College, Leeds, contributed a paper on "Smoke," which was read by Dr. Dawson. Every day twenty tons of soot went into the air in Leeds, of which a ton fell and 20lb. to 25lb. stuck. This meant a minimum loss of fuel in the form of soot to the value of £300 a year, and to the loss account he added a heavy domestic washing bill. Dr. Cohen complained that municipalities did not seriously handle the smoke question. Properly-constructed boiler furnaces, when properly fixed, need not smoke. He believed that scientific smoke inspectors, appointed through the Local Government Board, would be an equal boon to the manufacturer, who would soon be led to discover, as many had already done, that a material economy could be effected by abolishing smoke.

Bradford Sewage.

Mr. F. W. Richardson read a paper on "Bradford Sewage and its Treatment." Bradford sewage was among the worst in the kingdom, owing to the influx of woolcombers' waste-products and of dyeworks effluents. It required much precipitant and produced a great deal of wet and settled sludge. Difficulties arose from the peculiar emulsive character of wool-grease and the excessive amount of nitrogenous impurities. Various experiments had been tried with it, with briefly the following results:—Lime gave a clear but bad effluent with a large amount of sludge; copperas, followed by lime, produced a turbid but better effluent; aluminia ferric, i.e. aluminia sulphate, gave unsatisfactory results at a high cost; acid ferric sulphate gave a high degree of purification, but with an acid effluent; neutral ferric sulphate yielded as good results but with less acidity; and basic ferric sulphate gave a 62 per cent. purification and a neutral or slightly alkaline effluent, but proved costly. With bacterial treatment nitrification ensued and 70 per cent. purification might be obtained, but the grease soon choked the filters. There could be no doubt that if the woolcombers' suds and effluents were entirely removed the whole of the city's sewage could be treated biologically, with an immense saving in the cost of chemicals and the treatment of the sludge. Failing the elimination of the wool-suds, the best method would seem to be a preliminary treatment with the cheapest precipitant obtainable and the biological purification of the effluent either on bacteria beds or on land, preferably on both.

Mr. W. Leach next discussed the treatment of woolcombers' effluents. Chemical precipitation and mechanical treatment not having proved satisfactory, he proposed to concentrate the suds by evaporation, then treat them centrifugally, when the wool-grease would be separated in a semi-solid form and the potassium carbonate remain in concentrated solution, from which it could be recovered by evaporators. The final products were thus pure wool fat, potassium carbonate, distilled water and sand.

Using Sewage Sludge.

Professor W. B. Bottomley, M.A., F.C.S., read a paper on "The Utilisation of Sewage Sludge." In experiments in precipitation which he had made he employed a crude phosphatic rock, too impure to be used in the ordinary process of superphosphate manufacture. The rock was pounded and then treated with sulphuric acid slightly in excess of the amount necessary to combine with the oxidations of iron and aluminium present; and the substance thus obtained—called phosalite—was tried both as a precipitating agent for sewage and as a pressing agent for sewage sludge, the sewage of Glasgow and Chiswick being treated in the experiments. Experiments bore out the conviction as to the increased manurial value of the sludge. By the use of phosalite as a pressing agent for sludge he obtained economy of lime, a much improved press liquor, and a greatly enhanced manurial value for the sludge.

Professor W. H. Perkin, jun., F.R.S., was of opinion that in the present methods of treatment screening removed little or no organic matter, while in septic tanks organic matter was destroyed, so that very little would be left to render any sludge of manurial value.—Mr. Arthur J. Martin pointed out that the author confused road grit and screenings with sludge. They were really different, the former in fact being removed before septic treatment. Any residue removed from septic tanks should be regarded rather as a soil than as manure.

In the Mechanical Science Section, Mr. E. Kitson Clark read a paper on "Machine-Shop Buildings." He advocated generally a standard width of 50ft. for such buildings, and that they should be all on one floor. He thought that many modern workshops were extravagantly costly.

Yorkshire Antiquities.

On Wednesday, in the Anthropology Section, Mrs. Armitage read a paper on "Some Yorkshire Earthworks." She explained that the type to which she referred was found all over England and in parts of Scotland, Ireland and Wales. The type was a very marked one; it consisted of a round or oval hill—frequently artificial, though a natural hill or rock was sometimes utilised—and scarped by art. The hillock was nearly always surrounded by a ditch and bank, and had attached to it a base-court, sometimes round or oval, but more frequently rectangular, which also was banked and ditched. These earthworks had occasionally been attributed to the Romans and to the Scandinavians; they had been described as sepulchral and as moot-hills, but evidence is lacking in support of these descriptions. The most popular theory, however, is that they were reared by the Saxons themselves when they were resisting the attacks of the Danes in the ninth and tenth centuries. The earthworks in question were feudal fortresses, and their rise in England corresponded with the introduction of that more rigid feudalism which the most recent research was tending to associate with the Norman Conquest. There were about fifty mounds known in the county; and there may have been many more, for where a modern house occupies the site of an ancient castle the motte is generally destroyed.

Mr. Butler Wood, in the course of a paper on the pre-historic antiquities of Rombalds Moor, said that that area still consisted of about 50 square miles of country which had not been disturbed since primitive times. Flint and stone implements had been found on the moor, consisting of arrow-heads, spear-heads, knives, scrapers, awls, hammers, and saws. They were all of late Neolithic type, and many were exquisitely chipped. Only about half-a-dozen bronze implements had been found, and these were at a lower level than the flints. All the barrows on the moor were of the round type. On Bracken Hall Green, within four miles of the Bradford Town Hall, there was an interesting double circle of stones. Near Horncliffe shooting-box there was a double circle of upright stones 43ft. in diameter. On the north side of Baildon Hill there were two sides of an ancient earthwork, and there were two extensive camps at Counter Hill, near Addingham. Some bowl-shaped cavities on Baildon Hill, about 10ft. deep and 20ft. in diameter, were suggestive of pit dwellings.

A Memorial Window in Armagh Cathedral has been erected in memory of the Most Rev. Robert Samuel Gregg, D.D., the late Primate. The window was designed and erected by Messrs. Heaton, Butler and Bayne, of London. The figures typify the prominent features in the life of the late Archbishop. It is a two-light window, on one side at the top being the figure of Jehoiada, and below a group in which is represented his death; and on the other the figure of St. Paul preaching, and below it a group showing the Apostle in the act of confirming.

Professional Practice.

Barnstaple.—The foundation stone of the new "Alfred Miller" Institute was laid recently. The building is the gift of Mr. Alfred H. Miller, J.P. Mr. James Crocker, F.R.I.B.A., is the architect. The contractors are Messrs. Sanders and Karslake (local builders), and Mr. A. G. Travena is the clerk of the works. The building, which will cost about £5,000, is designed in the Early English style. It will be about 128ft. long by 54ft. wide, the top spire rising about 60ft. from the ground level. The walls will be of Wellington red bricks, with stone dressings, and the window arches, &c., will be picked out in the brighter red rubber brick, while the roof will be of red Bridgwater tiles. On the ground floor will be four large rooms, 25ft. by 19ft. 7in., which will be adapted as reading and recreation rooms for the men and women, with complete lavatory and cloak rooms, &c., attached. A large corridor, 82ft. long, runs the whole length of these rooms, French casements opening out on a verandah 6ft. or 7ft. above the ground level. An external slope will be laid out with ornamental flower beds. At one end will be the caretaker's house, with parlour, kitchen, and necessary offices and yard, also the refreshment bar, with separate casements communicating with the corridor for the men and women. On the first floor will be a large lecture hall 82ft. by 25ft., with open rounded rib roof. At the higher end will be a large platform, 25ft. by 20ft., with a recess for an organ, and dressing rooms at the rear for the ladies and gentlemen forming the orchestra. These open into a corridor with lavatory, &c., accommodation, and are provided with a separate exit close to the caretaker's entrance on the south elevation. At the rear of this hall will be the bedrooms of the caretaker's house. One of the features of the building will be the three-storeyed 60ft. clock tower, surmounted by a circular red roof. A large three-faced clock will be placed in position, and the tower will be ventilated by Lobley's patent extract ventilators. The tower will also form the entrance to the lecture hall. The chief entrance on the ground floor will be on the south side, approached by steps with ornamental wings. Above the verandah, the full length of the corridor, 82ft., will be an iron balcony. Both the verandah and balcony will overlook the sports ground and pleasure field, and as such, no doubt, will be much frequented. The building will be heated by means of hot-water pipes, and, as at present proposed, lighted by gas, with the exception of the clock tower, where the illuminant will be electricity.

Honiton.—The new branch bank premises, Honiton, for the Devon and Cornwall Banking Company, Limited, of which we give illustrations on this and the next page, has been built from the designs of Messrs. Octavius Ralling and Lewis F. Tonar, architects, of Exeter. The base and plinth as far as the sills of the ground-floor windows are of Royal Blue Aberdeen granite, the dressings above being of Guiting stone. The filling above the first floor is of red Wellington brick. The general contractors were Messrs. J. W. and H. Childs, of Yeovil; the stonework and carving were executed by Mr. Herbert Read, St. Sidwell's Art Works, Exeter; and Messrs. Wilson and Son, of Cathedral Yard, Exeter, carried out the counter and internal fittings of the banking room from the architects' designs. The reception room and bedrooms for the manager are arranged on the first and second floors, a lift working between them and the kitchen.

Leicester.—The foundation stone was laid recently of a new wholesale vegetable and fish market in Halford, Wigstone and Yeoman Streets, Leicester, which is being erected by the Corporation. The new market, when completed, will stand on an area of about 3,850 sq. yds., and will contain, at the Halford Street end, a building having offices set apart for the officials of the market. The building is divided on the front below the first floor by a large central archway and road, for the use of vegetable carts and waggons. On either side of this archway entrance the offices have their entrances, direct from the street, while access is also obtained through doorways leading direct from the market. At each end of this building a lock-up shop is placed, and over the same, on a mezzanine floor, store rooms are provided. All the offices which will be used by the officials are situated on one side of the building. In a well-lighted basement there are offices for the inspector of weights and measures and the meat inspector. On the mezzanine floor are lavatories and conveniences. The superintendent's office has a central position on the first floor. There is a separate office also for clerks and collectors, while other offices are placed on this floor on both sides of the building for letting purposes. The heating of the offices on the upper floors will be by open fireplaces, whereas the basement offices will be on the hot-water system. All rooms will be supplied with fresh air from the outside by means of flues in the walls, and vitiated air will be carried off by the same. Provision is made for a boiler room in the basement. The floors are to be constructed of concrete supported by rolled steel joists and made fireproof. The other portion of the site is to be used by the wholesale vegetable and fish merchants. A roadway 23ft. wide will run through the market, and at the sides of this twenty-three vegetable stalls are placed, with offices over, each pair being approached by one staircase. Into Yeoman Street double doors are provided which will enable the stallholders to have goods delivered by these entrances. These stalls will be fitted with B. and S. folding collapsible gates, and are so arranged that two can be made into one large one if desired. Thorough ventilation is provided by means of louvres over the heads of the doors in Yeoman Street, and in centre windows on the opposite side of the building. The main walls of this market are carried on steel girders, the width between the walls inside being 50ft. The portions of the roof not glazed will be covered with boarding and pan tiles. Two large archways are placed in Yeoman Street, to be used as exits only for both markets. The fish market, the entrance of which is from Vestry Street, is divided into twenty-one stands, the division lines being marked by the columns supporting the girders carrying the offices over, and a curb is placed between each, so that independent swilling of the floors is practicable. The offices over are approached by circular

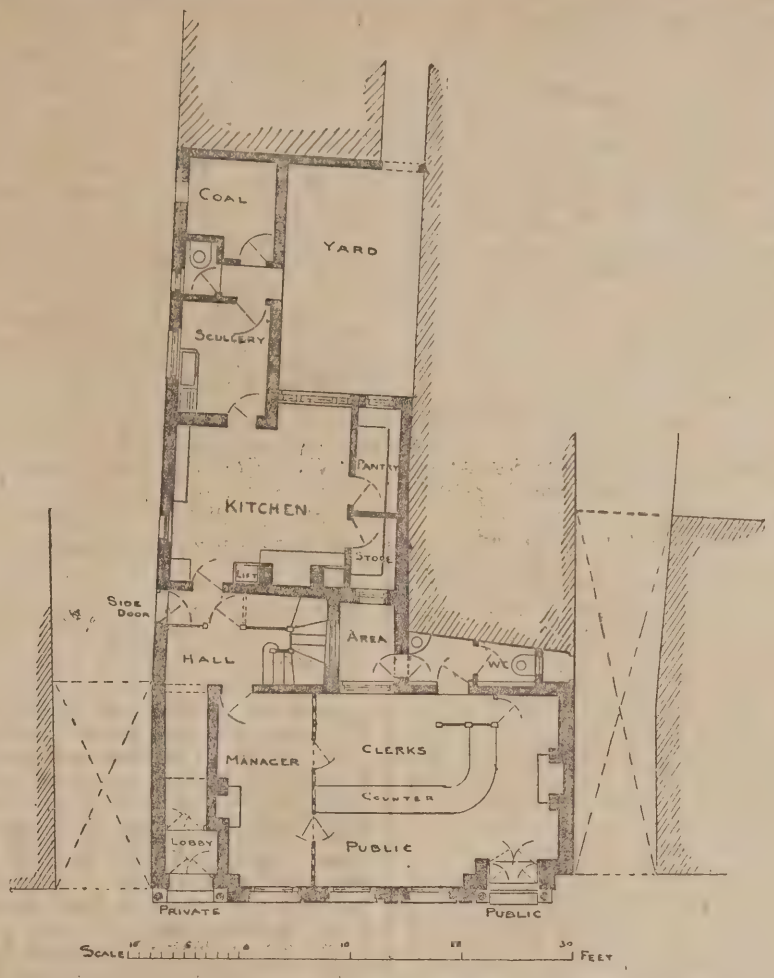


NEW BANK PREMISES AT HONITON, DEVON. OCTAVIUS RALLING AND LEWIS TONAR, ARCHITECTS.

iron staircases, one for each pair. Between the main walls of the fish-washing portion of the building, which is to be carried on an arcade of elliptical arches and piers, is a 51ft. steel span roof, covered with pan tiles, and having light introduced on the north side by patent glazing. A fixed lantern with louvres on each side runs the whole length of the building for ventilating purposes. Lanterns are also placed on the ridges of the vegetable market roof. The floor of this market, which is over the basement, is to be constructed of concrete, with rolled steel joists and girders, supported by steel stanchions. A refreshment room for the stallholders' use is placed on the first floor over the trolley-way, and is approached by a stone staircase. Adjoining this is a kitchen, which will be fitted up with range, sinks and other appliances. The total cubic capacity of the cold stores will be about 32,500ft., and it will be maintained at a temperature of about 25deg. Fahr. Washing hydrants will be placed at different points in both markets on each side of the roadway, and three fire hydrants will also be provided. The whole of the market will be lighted by electricity. The front building is to be faced with terra-cotta, having a plinth of semi-glaze; the dressings of the other external portions of the buildings and portion of the interior are of the same material, the facings to the markets proper being Woodville sand-faced bricks. The front has been designed in an early Elizabethan style. Mr. Walter Brand, A.R.I.B.A., is the architect, he having gained the first award in the recent competition. Mr. Thomas Herbert, of Welford Road, Leicester, is the contractor, and Mr. William Charles Lee the clerk of works.

Liverpool.—The promoters of the National Eisteddfod of Wales have decided to erect a pavilion in the first three bays of the North Haymarket from Juvenal Street, having an area of 32,000 square feet, which will be enclosed from the remainder of the market by boarded partitions. The interior will be divided into four distinct classes. The reserved area, which immediately faces the proscenium, will accommodate about 800 persons, and the first-class in rear of the latter will seat some 1,200 more. The second- and third-class seats, which will be arranged in the form of an amphitheatre, and gradually raised around the reserved and first-class areas, will seat about 8,000 persons, allowing altogether at a crush accommodation for at least 12,000 people. The platform and choir gallery will be at the Cazneau Street or west end of the pavilion, and in that position there will be sufficient room for a choir of 400 and a band of about 100 performers, allowing room on the platform for the presidents, officials, artistes, and others engaged in the proceedings. At the rear of this are the secretary's offices, the choir room, the artistes' dressing room, and the orchestral band room. In addition to the three bays already mentioned, which constitute the main pavilion, two other bays facing Cazneau Street will be utilised as crush room, cloak room, lavatories, post and telegraph offices, &c. The main entrance will be from Cazneau Street, through the crush room, from which will be provided entrances to all parts of the pavilion. In addition to these there will also be entrances and exits to the second and third-class seats from the open yard of the market in Fox Street. The contractors entrusted with the construction of the pavilion are Messrs. Woodhouse and Sons, of Nottingham, and the work will be carried out from designs prepared by the architects, Messrs. Richard Owen and Sons, of Liverpool, under the supervision of the clerk of works, Mr. W. Vaughan. The whole of the auditorium will be lighted by electricity.

Mattishall, Dereham.—A new chapel and schoolroom has just been opened. The building is in the Romanesque style, and has seating accommodation for 200, while the schoolroom will seat 120 children. The building is of red brick, relieved with white string courses and stone sills. It is lighted with six large windows with circular heads. In the front is a large centre triplet window, and a smaller one on either side, glazed with cathedral glass. There is an ornamental triplet porch. The roof is of slate, and is finished with iron finials on the gables. Attached to the chapel is the schoolroom, with a sliding partition between. The whole building is fitted with hot-water apparatus by Mr. C. Gunton, of Norwich. The fittings are of ornamental pitch pine. The rostrum is placed on a raised platform, framed in pitch pine filled in with metal panels, and finished with mahogany capping. The whole is enclosed with a Communion rail on iron stands. The roof shows the curved ribs and hammered beams. The moulded groynes are supported on ornamental stone corbels. The chapel and schoolroom has six powerful central draught lamps of a new design. The architects are Messrs. Kerridge and Sons, of Wisbech, and the work has been carried out by Mr. Lebbel King, contractor, of Mattishall. The whole cost is estimated at £750.



GROUND-FLOOR PLAN OF NEW BANK PREMISES AT HONITON, DEVON.

Perth.—The memorial stone of the new church of Free St. Paul's, Perth, has just been laid. The new church is being erected on the site occupied by the old one, with a slight extension of frontage towards the north, and is designed in the Early Decorated Gothic style. Being situated between high buildings on each side, the side elevations, not being visible from the street, have been kept plain. In the front elevation the principal feature is the end gable of the church, with two four-light windows with cusped and panelled heads in the lower stage, and a large five-light window with traceried head and deeply-moulded jambs lighting the gallery. The gable flanks are enriched with panelling, and the apex has an arcading of cusped panels, with a central niche, over which a floriated cross forms the terminal feature. To the left of the main gable is a projecting stone porch, with wide moulded archway, forming the principal entrance, and to the right another doorway serves as exit from the gallery. The ladies' room and session room form an effective two-storey block to the left of the main entrance. Internally the church is divided into nave and side aisles by moulded columns and arches of wide span. The nave ceiling is semi-octagonal in form, divided into bays by arched timber ribs. Over the side aisles the main couples are also shown, and filled with ornamental timber cusping. The church is planned with side and end galleries, but the side galleries are narrow and recessed at the columns, which are thus shown unbroken from the floor to the ceiling arches. The total number of sittings will be 800, and the estimated cost is about £4,000. The architect is Mr. John B. Wilson, A.R.I.B.A., Glasgow, and the works are being carried out under his instructions by the following contractors: Mason, A. Beveridge; wright, William M'Quibban; slater, D. M'Lauchlan; plumber, James M'Leish; plasterer, John Peebles; glazier, C. Alexander—all of Perth. Mr. Thomas L. Kay is clerk of works.

A new Ward at the Oriolet Hospital, Loughton, has recently been added. The new ward is situate about 50yds from the main building, and has accommodation for four male and four female patients, besides an operating theatre and necessary offices.

The Bristol Police Courts are in need of extension. The City Council have provisionally decided to purchase a group of cottages known as Nelson Court for £5,000, to provide a site, and the sanction of the Local Government Board is to be asked. It has been suggested to advertise for plans and offer a premium, but nothing definite has yet been decided.

Harrogate Water Supply.—At the recent monthly meeting of the Harrogate Town Council the report of the Waterworks Committee was presented on the question of securing an additional water supply for Harrogate. In their report the Committee stated that the best available scheme was undoubtedly the one recommended by their waterworks engineer (Mr. E. W. Dixon) at the junction of the Agill and the Arnagill, to utilise the water from these streams, and construct a reservoir near their junction, on the estate of Lord Masham. The Corporation consequently resolved to instruct their engineer to prepare the necessary plans to be presented to Parliament for such a scheme.

Keystones.

A new Board School at Bideford is to be erected.

A Church at Goldenacre, Edinburgh, to be called St. Serf's, is shortly to be erected.

The Town and Winter Gardens, Cheltenham, are proposed to be altered at a cost of £3,500.

Eight Cottage Homes for about 130 Children are to be erected by the Newcastle Guardians at Ponteland.

A Home for Imbecile Children has been opened at Woodilee Asylum, Lenzie, Glasgow; it accommodates 33 children.

New District Council Buildings at Blaydon have just been opened. The buildings are in red brick, and have cost £4,000.

The Travelling Studentship of the Architectural Association of Ireland, value 10 guineas, has been won by Mr. Henry J. Lyons.

Several Houses and Shops in Dunbar are now being erected to the designs of Messrs. Swanston and Legge, architects, of Kirkcaldy.

A new Parish Church Hall at Lochwinnoch is being erected in connection with Lochwinnoch Parish Church. The architect is Mr. John M'Lelland, of Kilbirnie.

At St. Andrew's Church, Ashburton, a large tablet of polished brass, mounted on a slab of Ashburton marble, has just been added, to commemorate the reopening of the church after restoration and the placing in the tower of the clock and chimes.

A Sanatorium at Dundee for the treatment of consumptive patients is being erected on a site on Greenford Muir, at the foot of Auchterhouse Hill, 800ft. above the sea level, consisting of 21 acres of land, well sheltered from the north and east. The plans are by Mr. William Alexander, the city architect. The building will cost between £12,000 and £13,000.

Staple Inn, under the new London Government Act, will become a sanitary district in itself, but by arrangement the sanitary administration will be undertaken by the Clerkenwell Vestry. The property belongs to the Prudential Assurance Company, Limited, who spent a large sum on underpinning the houses and restoring the old façade when they acquired it, and they do not intend to destroy these historic relics.

Proposed Workmen's Lodging Houses at Kilmainham, Dublin.—A Local Government Board enquiry was held recently into the application of the Kilmainham Urban Council for a loan of £6,500 for the erection of working-class lodging-houses under the Housing of the Working Class Act. A site has been secured at St. John's Garden, held under lease for 999 years at a rent of £60 per annum. It is intended to erect three classes of dwellings—twelve first-class, eighteen second-class, and fourteen third-class buildings. The cost of each first-class house would be £152 16s. 11d.; the second, £137 14s. 1d.; and the third, £105 18s. It is proposed to let the first-class houses at a rental of 7s., second-class at 4s. 6d., and third-class at 2s. a week, which would leave a nett profit of £13 18s. 5d.

The Restoration of Clonfert Cathedral.—The rector of Clonfert appeals for help for this object. This cathedral, which is situated in the county of Galway, was founded in the year 558, and is a building of more than ordinary interest. It is very small, but has a doorway of such remarkable beauty that Mr. Ruskin, who was on principle opposed to all so-called processes of restoration, sent a contribution towards its preservation. During the last six years the work of repair has been going on, and a sum of £2,000 is now asked for. The secretary of the Society for the Protection of Ancient Buildings points out that the most costly portion of the proposed restoration scheme is the building of new transepts, the form of which must be purely conjectural. There is, he maintains, no need for such transepts, as the building is larger than necessary already, and in the Society's opinion the work already done is unfortunate.

A Carved Oak Font Cover in Esher Church has been erected.

The new All Saints' Church at Eastworth, Chertsey, is now being erected.

A new Roman Catholic Church at Enfield is being erected to seat 500 persons.

The Kildare Archæological Society held its annual excursion last week to Ballymore Eustace and district.

Mr. William Corden died last week at the age of 79. He painted a considerable number of pictures for Her Majesty the Queen.

The Fever Hospital at Plaistow is having a steam laundry added from the plans of Mr. E. T. Hall, 57 Moorgate Street, E.C.

The Ruskin Exhibition at Coniston closed on Saturday, after being open two months. The gross proceeds amounted to about £640. Of this a substantial balance remains towards the establishment of a permanent Ruskin Museum at Coniston. Early steps are to be taken towards the furtherance of that object.

A new Lunatic Asylum at Birmingham is to be erected by the Worcestershire County Council to accommodate 570 patients, with administrative buildings. Mr. G. T. Hine is the architect, who estimates the cost of the first buildings at £205,400, which when extended to hold 850 patients will be increased to £246,500.

Prizes for Architectural Drawings.—The Northern Architectural Association again offers to students (and Associates not in practice, nor yet twenty-five years of age) a first prize of books of the value of £2 2s., and a second prize of £1 1s., for the best set of drawings or testimonies of study, as required by the R.I.B.A. to be submitted for their final examination. Similar prizes will also be given for the probationary work for the intermediate examination. All particulars as to the R.I.B.A. requirements may be obtained from the hon. sec., or from the Institute Kalendar. The drawings are to be delivered to the hon. secretary not later than 11 a.m. on February 19th, 1901 (under motto).

Additions to the Tate Gallery.—Four of the nine large rooms recently added to the Tate Gallery have now been hung with paintings in oil and water-colours. The sculpture gallery has been filled with statuary. Among the most recent bequests by private owners are two fine marble statues presented by Mr. Henry Vaughan, one of Sir Joshua Reynolds by Foley, and the other of Flaxman by Mr. Henry Weeks; both of these have been placed in the vestibule of the building. Mr. G. F. Watts, R.A., has presented a bronze bust of Clytie, and Mr. Ralph Peacock his painting entitled "The Sisters." The National Gallery contributions include several works by Landseer, Wilkie, Etty, and a few—to remain there temporarily—by foreign artists, including examples of Scheffer, Dyckmanns, Giovanni Costa and Poussin.

New Books upon Architectural Subjects.—Mr. B. T. Batsford, of 94 High Holborn, W.C., announces for the autumn season the following new books and new editions:—"Old Cottages and Farm Houses in Kent and Sussex," by W. G. Davie and E. Guy Dawber. "Ornamental Details of Italian Renaissance," by G. A. T. Middleton and R. W. Carden. "Some Architectural Works of Inigo Jones," by H. Inigo Triggs and H. Tanner, junr. "Later Renaissance Architecture in England," by John Belcher and M. E. Macartney; complete in two volumes folio. "Flower Studies for the Use of Art Students and Designers," by Jeanie Foord. "New Tables for the Solution of Ganguillet and Kutter's Formula," by Colonel Moore, R.E. "Building Specifications for Architects, Surveyors and Builders," by John Leaning, F.S.I. "Building Construction (Elementary Course)," by Charles F. Mitchell. "A History of Architecture," by Professor Banister Fletcher and B. F. Fletcher; third edition. "Waterworks Distribution," by J. A. McPherson, A.M.I.C.E. "Sanitary Engineering," by Colonel Moore, R.E.; second edition. "Estimating," by George Stephenson; fourth edition. "Stresses and Thrusts," by G. A. T. Middleton; second edition.

A Public Library at Moreton, Hampstead, is being erected. The architect is Mr. Thomas B. Bowring, of 5 and 6 Billiter Avenue, E.C.

A new Borough Bandstand at Tunbridge Wells has been erected on "Ye Olde Pantyles." The structure is octagonal, 22ft. 6in. by 14ft. 6in. and 18ft. high to the apse of the roof. It is of polished oak, roofed with Brockly tiles. Mr. G. F. Featherstone was the architect, and Messrs. J. Mansfield and Sons were the builders.

A new Mission Hall at Bingley in connection with the Bingley Baptist Chapel, which has been erected to serve the needs of the Dubb district, was recently opened. The new building is of stone, erected from plans prepared by Mr. H. Foulds, of Bingley, and furnishes accommodation for about 200 children. Its cost has been about £420.

THE A.A. BROWN BOOK.

THIS well-known publication has just been issued for the session 1900-1901, price 2s. 6d. It contains the ordinary particulars of the Association and its work and the arrangements for the coming session, which begins on October 5th with the annual general meeting, when the President will deliver his address and distribute prizes. The report of the committee for the session 1899-1900 shows that the Association is in a flourishing position financially, socially, and educationally. The report states that there was a nett increase of sixty-one members during the past session, the total membership up to May 31st this year being 1,308: eighty-nine new members were elected, ten members rejoined, and the losses by death, resignation and other causes only amounted to forty-three. Nineteen committee meetings were held. The new common room has been well used by members and students, especially during the evenings, and the committee hopes that during the coming session its advantages will be still further appreciated. The question of obtaining a suitable site for new premises has occupied, we are told, the unremitting attention of the committee, but there is nothing definite to report. The sub-committee appointed last session for the purpose of compiling a list of buildings and monuments of interest in London and the provinces has been considerably augmented, and "Consuls" have been nominated for fifty-five London districts. These gentlemen are now engaged in the compilation of the lists so far as the metropolis is concerned, the provincial districts being deferred until progress has been made in London. The Register of Assistants has been even more largely used than before, and has again fully proved its usefulness both to architects and assistants; the registration fee to non-members has been increased to 2s. 6d. With regard to the educational work, the number of individual students shows a slight decrease, compared with the preceding session.

In the Discussion Section forty-seven members joined, and the average attendance was twenty-three. This enterprising and useful section of the Association has arranged to hold twelve meetings this session, as follows:—On October 12th Mr. Geoffry Lucas will read a paper on "Logical Building and its Influence on Design"; on November 2nd Mr. H. Rose will deal with "Church Bells"; on November 16th Mr. H. Munro Cautley will speak on "Suffolk Cottages"; on November 30th a debate will be held on a subject yet to be chosen; on December 14th Mr. H. V. Urawfurth Smith will deal with "The Churchyard and its Accessories"; on January 25th Mr. W. E. Davis on "The Management of House Property"; February 8th, Mr. G. R. C. Harding on "Professional Education in France"; February 22nd, Mr. J. Osborne Smith on "Domestic Heating, Ventilation and Lighting"; March 8th, Mr. H. P. G. Maule on "The Garden and the Architect"; March 22nd, Mr. S. L. Crosbie on "An English Cathedral"; May 3rd, Mr. E. Greenop on "The Ethics of Professional Advertising"; and on May 17th, Mr. P. E. Newton on "A Tour in Mid-France."

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In connection with an Examination to be held at Carpenters' Hall on NOVEMBER 15th and 17th will be delivered as follows:—

DATE, 1900.	LECTURER.	SUBJECT AND SYNOPSIS.
Thursdays, October 4th	KEITH DOWNES YOUNG, ESQ., F.R.I.B.A.	**Building in its Relation to Health.** Soils, Foundations. The prevention of all that would prove detrimental to Health. Materials; Structure; Planning, &c.
October 11th	A. WYNTER BLYTH, ESQ., Barrister-at-Law, Medical Officer of Health for St. Marylebone.	**Sanitary Appliances.** The Advantages and Disadvantages of various Sanitary Appliances used in Buildings. Principles of Ventilating and Warming Buildings.
October 18th	A. BUCHANAN, ESQ., Instructor in Building Construction at University College, London, and Battersea Polytechnic.	**Plumbers' Work connected with Dwelling-Houses.** Methods of making Lead Soil Pipes, Bends, Traps and various Joints. Connections to W.C.'s, Baths, Sinks, Lavatories, Iron and Stoneware Drains. Ventilation of Soil Pipes and Drains, Flushing and Antisyphonage. Water Supply, Service Pipe, Cisterns and Connections.
October 25th	PROF. R. ELSEY SMITH, A.R.I.B.A., Professor of Architecture, King's College, London.	**The Drainage of a Dwelling-House.**
November 1st	JAMES BARTLETT, ESQ., M.S.A., Lecturer, King's College, London.	**Setting Out Work and Bye-Laws.** Principles of Calculating Areas, Cubic space; Interpretation of Drawings to scale; Methods of Setting out Work, Checking Levels. Knowledge of the Acts of Parliament relating to Buildings. The Model Bye-Laws issued by the Local Government Board, so far as they relate to the subjects of the Examination.

These Lectures are primarily intended for Candidates for the present or future Examinations, and are Illustrated by Take-to-pieces Models, large Diagrams, Photographs, and Specimens of Materials.

Lectures commence at 7.30 p.m.

Entry Forms for the Examination, Tickets for the Lectures, and all particulars can be had from

S. W. PRESTON, ESQ.,
Carpenters' Hall, London Wall.

Property and Land Sales.

October 4th.—Wallington, Surrey.—Freehold Building Plots. Liberal frontages and depths. Eight minutes from Wallington Station, 35 from London Bridge, 40 from Victoria, 20 from Crystal Palace, 7 from Croydon, and 4 from Sutton.

60 CHOICE FREEHOLD BUILDING PLOTS, including eight valuable shop plots, adjoining Wallington Station, will be SOLD by AUCTION on THURSDAY, October 4th, at Six o'clock precisely, at the GREYHOUND HOTEL, West Croydon. These plots form a portion of the Little Woodcote Estate, Wallington, Surrey, charmingly situated, and close to Wallington, Station, and fronting Park Hill Road, Stanley Park Road, and Heathdene Road. The plots occupy an elevated position, command beautiful views, and afford excellent sites for medium-sized villas, which are much needed in the neighbourhood. Free of tithe and land tax. Free conveyances. Purchase money payable over nine years. Particulars, with plan and conditions of sale, may be had from Messrs. Gedge, Kirby, and Millett, Solicitors, 11 Great George Street, S.W.; the Imperial Property Investment Company, Limited, 27 and 28 Basinghall Street, E.C.; and Messrs. Fuller, Moon and Fuller, Auctioneers, 83 High Street, Croydon, and the Estate Office, Wallington, Surrey.

SHEPHERD'S BUSH.—Contractor's Plant and Materials used in the construction of the Central London Railway.

MESSRS. HORNE and CO. are instructed by the Electric Traction Company, Limited, to SELL by AUCTION, in Lots, on the premises, Woodhouse Park, Wood Lane, Shepherd's Bush, on WEDNESDAY, SEPTEMBER 26th, at TWELVE o'clock precisely, the CONTRACTOR'S PLANT and MATERIALS, including four 10 h.-p. portable engines by G. Marshall, Sons and Co., a 3-ton travelling steam crane by G. Smith, set of new 10-ton lifting tackle, vertical boiler by J. Slee and Co., five friction hoists, two circular saw benches, six mortar mills (five 9ft. and one 7ft.), four single and double purchase crabs, three portable forges (27½-yard and 4¾-yard) w.i. skips, bolts, nuts, wrought and cast scrap iron, tar boilers, light rails, 50 tarpaulins, several hundred loads of deals, boards, die squares, and baulk timber, 5,000 scaffold boards, 1,500 putlogs, 2,000 poles, 120 dozen scaffold cords, rope falls, contractor's offices, tool and watchmen's boxes, erection of workshops, temporary sleepers, barrows, ladders, trestles, galvanised iron cisterns, and a large quantity of miscellaneous and useful material.—Catalogues obtainable (when ready) on the Premises, and of Messrs. HORNE and CO., No. 85 Gresham Street, E.C., and 8 Delahay Street, S.W.

ISLINGTON, Upper Street.—Valuable FREEHOLD BUILDING LAND in rear of Nos. 147 to 152 Upper Street, having an area of about 8,000ft. super, suitable for the erection of a factory or workshops, having passage way approach under No. 151 Upper Street. Possession on completion of purchase.

MESSRS. HARMAN BROS. will SELL the above by AUCTION, at the MART, Tokenhouse Yard, E.C., on TUESDAY, SEPTEMBER 25th, at TWO o'clock precisely. Plan and particulars may be had of Messrs. HARMAN & CHALCRAFT, Solicitors, 17 Coleman Street, E.C.; and of the Auctioneers, No 25 Ironmonger Lane, Cheapside, E.C.

Third Portion.—WEMBLEY-HILL ESTATE, opposite the Site of the New Station on the Great Central Railway.—83 Plots of Freehold Building Land, on one of the boldest heights near London, renowned for its health-giving characteristics, commanding grand views over most charming landscapes, and surrounded by a thriving and rapidly-increasing neighbourhood; the Estate is most advantageously located on the gently rising slope of a lovely hill, with frontages to Wembley Hill, and traversed by fine, well-made roads leading therefrom; the plots offer admirable sites for the erection of villa residences and shops, for which there is an ever-increasing demand; the attractions of the neighbourhood include Wembley Park and the splendid golf links, whilst excellent services of trains from Sudbury and Wembley Park Stations afford means of rapid access to City and West End; water, gas, and excellent sewer mains; free conveyances; no land tax or tithes; purchase-money payable by instalments if desired.

MR. WALTER HALL will SELL the above by AUCTION, at the Willesden Junction Hotel, on Monday Evening, October 8th, at Seven o'clock.—Meanwhile plans and further particulars may be had from Messrs. Woodbridge and Sons, Solicitors, 7 New Square, Lincoln's Inn, and Uxbridge; and of the Auctioneer, 38 Chancery Lane.

R.I.B.A. EXAMS. PREPARATION, personally or by correspondence, in three, six, nine, or twelve months' courses. Architectural Lending Library. Special three months' finishing courses.—For full particulars apply to Messrs. HOWGATE and BOND, Associates R.I.B.A., 115 Gower Street, W.C. (close to the British Museum).

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Illustrations sent of Work Executed.
JOHN B. THORP, 98 Gray's Inn Road, W.C.

SANITARY INSPECTORS' EXAMINATIONS.—An Associate of the Sanitary Institute thoroughly prepares Candidates for the above Examinations by correspondence. No books required.—For particulars and testimonials, apply CERTIFIED COACH, "Malabar," New Eltham, S.E.

TYPEWRITING OFFICES, Camomile Street Chambers, London, E.C.—Specification, ten typewritten fcp. pages (about 3,000 words), six permanent ink copies (not carbons), 20s. Send MSS. specimen order. Reporting Lectures, Meetings, &c., 10s. 6d.

ARCHITECTS AND SURVEYORS.—QUANTITIES PREPARED, VARIATIONS ADJUSTED, &c., by experienced Surveyor. Terms by the hour or commission.—"H. R. A.," 22 Ellison Road, Streatham Common, S.W.

ISOLATION HOSPITALS.—Expert Confidential ASSISTANCE rendered. Formerly draughtsman L.G. Board. Highly successful in competitions. Moderate speculative terms.—"G. B.," 90 Monkton Street, Ryde, I.W.

TO ARCHITECTS, UPHOLSTERERS.—PAINTING and DECORATION WANTED. Contract or day-work. Estimates free.—CHAS. STOLLE, 33 Blenheim Crescent, Notting Hill.

QUANTITY SURVEYOR would be glad to prepare Bills of Quantities for Architects or others in spare time. Moderate terms.—Box 1,475, BUILDERS' JOURNAL Office.

APPOINTMENTS VACANT.

ARTICLED PUPIL REQUIRED by a firm of Architects and Surveyors. Principals undertake tuition.—MIDDLETON & CARDEN, Associates R.I.B.A., 19 Craven Street, Strand, W.C.

APPRENTICE WANTED, to learn the Plumbing and Gas Fitting.—Apply Jacob's Well Passage, 20A, Barbican, E.C.

CARPENTER WANTED to erect Factory Roofs.—Apply London Scottish Iron Company, Barking.

CASEMENT HANDS (First-class) WANTED. Apply WHITE AND SONS, Marlboro' Mews, Oxford Street, W.

NORTH OF ENGLAND.—WANTED, an experienced and artistic DRAUGHTSMAN for pure design and charge of drawing office. No quantities, &c.—Apply for particulars, and state nature and length of experience, to P., 57 John Street, Sunderland.

PAINTER.—LAD WANTED to assist in paint shop and make himself generally useful; must have had some previous experience.—Apply before 11 a.m., Works, 32 Commercial Road, Lambeth; near Old Shot Tower, Waterloo Bridge.

BUILDER'S CLERK WANTED for small country office. Must have had experience and used to prime cost.—Apply to NICHOLS BROTHERS, Oakham.

JUNIOR CLERK, Builder's Office. Good writer; square dimensions and neat tracer. State wages.—PATMAN AND FOTHERINGHAM, LIMITED, Park Street, Islington, N.

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AN EXPERIENCED YOUNG MAN aged 24 requires SITUATION as Clerk and Bookkeeper. Highest references.—W. F. P., 30 Corrinne Road, Tufnell Park, N.

ADVERTISER WANTS SITUATION as CLERK OF WORKS, estate or building; 16 years' practical experience; first-class building construction and other certificates; good draughtsman; well up in figures, estimating, &c.—CASWELL, Stratton-on-the-Fosse, Bath.

CARPENTER and JOINER.—Good all-round hand, or would take alterations and repairs; labour only.—R. HAY, No. 1 Block, Burdett Buildings, Westminster Bridge Road, S.E.

BRICKLAYER (Experienced); also good pointer; day or piece.—"J.," 21 Allanmouth Road, Hackney Wick, N.E.

BRICKLAYER.—Practical jobbing builder's work; could take charge.—7 Avon Place, Borough High Street, S.E.

BRICKLAYER (Jobbing) wants Job; well up in sanitary work.—"W. H.," 10 Northampton Street, St. John Street Road.

CARPENTER, JOINER or WORKING FOREMAN, well up in all branches of building trade, alterations and repairs.—"P. W.," 51 Chester Road, Bounces Road, Lower Edmonton.

SHOP FOREMAN of JOINERS DISENGAGED. Thoroughly practical in all joinery work. Excellent setter-out. Energetic and reliable. Used to machinery. Good reference. Aged 33 years.—"X. Y.," 57 Beaconsfield Road, South Tottenham, N.

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Four Lines or under (about 30 words)	1	6
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TENDERS.

Information from accredited sources should be sent to "The Editor." Results of tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the Work.

BODMIN.—For the construction of cattle market and fair park, Westheath, for the Urban District Council of Bodmin. Mr. E. J. Oliver, Borough Surveyor, architect:—

J. R. Hancock	£1,938	Brown & Son	£1,600
Shelley & Sons...	1,705	E. Harris*	1,532
F. Ham & Son	1,700		

* Accepted. [All of Bodmin.]

BOURNEMOUTH.—For alterations, for new branch of London and South-Western Bank, Bournemouth. Mr. J. F Fogerty, architect, 2 St. Peter's Terrace, Bournemouth:—

Wm. Hoare	£2,254 0	George & Harding	£1,990 0
Jones & Son	2,138 0	Jenkins & Sons*	1,988
Miller & Sons	2,030 15		

* Accepted.

BRIGHTLINGSEA (Essex).—For making-up Nelson Road and several others for the Urban District Council:—

Dupont & Co.	£2,859	W. Manders	£2,534
Moran & Son	2,742	Mackenzie & Son, Clacton-on-Sea*	2,492
Burgoyne & Son	2,703		

* Accepted.

BRIGHTON.—For the erection of a house, two cottages, walls, &c., Mile Oak pumping station, near Portslade, for the Corporation of Brighton. Mr. J. Johnston, waterworks engineer:—

C. Y. Smith	£3,920 0 0	S. Pearce	£2,748 0 0
Longley & Co. ...	3,886 0 0	Cook & Sons, Crawley*	2,515 0 0
A. E. Nunn	3,069 8 6		

* Accepted.

BRIGHTON.—For the construction of a concrete groyne, Lewes Crescent, for the Town Council. Mr. F. J. C. May, C.E., Town Hall, Brighton:—

J. & F. Binns ...	£6,742 12 6	Cooke & Co.,	
Fasey & Son	5,286 9 8	London*	£4,500 0 0

* Accepted.

DEVONPORT.—For the erection of workmen's dwellings, James Street, for the Town Council. Mr. John F. Burns, Borough Engineer, 30 Ker Street, Devonport:—

H. E. Skinner ...	£7,797 11 6	Lethbridge & Son	£6,477 0 0
Thos. May	6,769 15 0	A. N. Coles	6,400 0 0
Wakeham Bros....	6,665 0 0	W. E. Blake* ...	6,362 0 0
S. Roberts	6,542 10 6	* Accepted. [All of Plymouth.]	

DURHAM.—For rebuilding premises, No. 29 Silver Street, Durham. Mr. H. T. Gradon, architect, Durham:—

Draper & Sons ...	£2,532 5 10	J. Shepherd	£1,868 0 0
G. T. Manners ...	2,085 0 0	Gradon & Son ...	1,715 0 0

DURHAM.—For two houses, Nos. 4 and 5 Fieldhouse Terrace, Durham. Mr. H. T. Gradon, architect, Durham:—

Wm. Lodge	£1,750 15 01	Gradon & Son ...	£1,520 0 0
J. Shepherd	1,699 0 0	C. W. Gibson... ...	1,500 0 0
G. T. Manners ...	1,645 0 0	Draper & Son ...	1,450 0 0
T. Coates	1,535 0 0		

FENNY STRATFORD.—For the erection of school buildings, for the School Board. Mr. John Chadwick, architect, Fenny Stratford:—

Wm. Wade	£4,788	Walter & Austin	£4,413
Thos. Yirrill	4,697	A. Taylor, Fenny Stratford*	4,360
H. Coleman	4,585		
Alf. Atkins...	4,497	* Accepted.	

HISTON (Cambs.).—For the erection of minister's house, Histon, Cambs. Messrs. Geo. Baines, F.R.I.B.A., and R. P. Baines, architects, 5 Clement's Inn, Strand, W.C.:—

Ernest West	£1,100	Coulson & Lofts	£910
J. G. Cowell	1,075	William Wade	896
N. Pamphilon & Son ...	1,053	Geo. Page & Son, Buckden*	825
Scales & Robins	1,000		
F. Thoday & Co.	905	* Accepted.	

HULL.—For additions, &c., to school, Wawne Street, for the Kingston-upon-Hull School Board. Mr. B. S. Jacobs, architect, Lincoln's Inn Buildings, Bowlalley Lane, Hull:—

Blackburn & Son	£5,685	W. Hodgson	£5,330
J. Houlton	5,598	Jackson & Sons	5,319
V. Knowles	5,580	Hockney & Liggins ...	5,298
G. Houlton	5,540	C. Greenwood	5,118
W. Sanderson	5,420	M. Harper*	5,087
T. Goates	5,354	* Accepted. [All of Hull.]	

LONDON.—For the erection of a refuge dwelling, Reeve's Place, Hoxton, for the Shoreditch Vestry. Mr. J. Rush Dixon, C.E., Town Hall, Old Street, E.C.:—

Ridgway & Sons...	£3,550 12 0	J. Ivory, Great Cambridge Street, N.E.*	£1,368 10 0
Wells & Co.	2,190 0 0		
Elkington & Son	2,012 15 0½		
J. Welbking	1,645 0 0	* Accepted.	

MAESTEG (Wales).—For the erection of a hospital, with administrative block, &c., for the Hospital Committee. Mr. J. Humphreys, C.E., Town Hall Chambers, Maesteg:—

Isaac Rees	£4,486 0 0
Lewis Williams 12 Queen Street, Maesteg*...	3,625 0 0

* Accepted.

PAISLEY.—Accepted for converting old infirmary buildings into an administrative block. Mr. Lee, Master of Works:—

Joiner.—A. McNaughton	£675	
Mason, &c.—R. Morton	616	
Plumber.—W. Allison	244	Total, £1,655.
Plasterer.—Collins & Sons... ...	96	
Slater.—Jeffrey & Co....	24	

New Goods Station for Devonport.—Excellent progress is being made with the new goods station that is being built in Valletort Road, Stoke, for the Great Western Railway Company, by A. N. Cole, of Plymouth, whose contract amounts to £27,000. The work was commenced in June last. There will be two entrances to the station, the main one being in Valletort Road, and a second at the end of Fitzroy Terrace. The main building will consist of a shed 123ft. long; the office, 31ft.; and a lock-up room, 20ft. 6in. At the end of this block there will be provided a platform 160ft. in length. The station will be connected with the main line by a roadway underneath Portland Road. This piece of ground will be cut through, and an iron bridge with brick arches will span the road. The work has to be completed in eighteen months from June last.

CURRENT PRICES.

	£ s. d.	£ s. d.
FORAGE.		
Hay, best .. .. .. per load	4 0 0	4 7 6
Sainfoin mixture .. do.	3 10 0	4 10 0
Clover, best .. .. do.	4 5 0	5 0 0
Beans .. .. .. per qr.	1 8 6	1 10 0
Straw .. .. .. per load	1 8 0	1 18 0
OILS AND PAINTS.		
Castor Oil, French .. per cwt.	1 11 6	1 12 8
Colza Oil, English .. do.	1 10 9	—
Copperas .. .. .. per ton	2 0 0	—
Lard Oil .. .. .. per cwt.	1 17 0	—
Lead, white, ground, carbonate do.	1 3 10	—
Do. red .. .. .. do.	1 0 4½	—
Linseed Oil .. .. do.	1 13 7½	—
Petroleum, American .. per gal.	0 0 6½	0 0 6⅝
Do. Russian .. do.	0 0 5 1/12	0 0 6⅛
Pitch .. .. .. per barrel	0 8 6	—
Shellac, orange .. .. per cwt.	2 15 0	3 0 0
Soda crystals .. .. per ton	3 0 0	3 2 6
Tallow, Town .. .. per cwt.	1 3 6	1 7 6
Tar, Stockholm .. .. per barrel	1 6 0	—
Turpentine .. .. per cwt.	1 7 9	—
METALS.		
Copper, sheet, strong .. per ton	86 0 0	—
Iron, Staffs., bar .. .. do.	9 10 0	11 10 0
Do Galvanised Corrugated sheet .. do.	12 10 0	13 0 0
Lead, pig, Spanish .. do.	17 12 6	17 15 0
Do. do. English common brands .. .. .. do.	18 0 0	—
Do. sheet, English, 3lb. per sq. ft. and upwards do.	21 0 0	22 0 0
Do. pipe .. .. .. do.	23 0 0	—
Nails, cut clasp, 3in. to 6in. do.	12 0 0	13 0 0
Do. floor brads .. do.	11 15 0	12 15 0
Steel, Staffs., Girders and Angles .. .. do.	8 10 0	9 0 0
Do. Mild Bars .. .. do.	9 7 6	9 15 0
Tin, Foreign .. .. do.	134 15 0	135 5 0
Do. English ingots .. do.	139 0 0	—
Zinc, sheets, Silesian .. do.	23 10 0	—
Do. do. Vieille Montaigne do.	24 5 0	—
Do. Spelter .. .. do.	18 15 0	18 17 6
TIMBER.		
HARD WOODS		
Ash, Quebec .. .. per load	3 17 6	4 10 0
Birch, Quebec .. .. do.	3 12 6	3 17 6
Box, Turkey .. .. per ton	7 0 0	15 0 0
Cedar, 1in., Cuba .. per ft. sup.	0 0 3	0 0 3½
Do. Honduras .. do.	0 0 3 3/16	—
Do. Tobasco .. .. do.	0 0 3½	—
Elm, Quebec .. .. per load	0 12 6	5 10 0
Mahogany, Average Price for Cargo, Honduras .. per ft. sup.	0 0 4 7/16	—
Do. African .. do.	0 0 4 1/16	—
Do. St. Domingo do.	0 0 6 7/16	—
Do. Tobasco .. do.	0 0 4 8/16	—
Do. Cuba .. do.	0 0 4 2/16	—
Oak, Dantzic and Memel per load	3 15 0	5 7 6
Do. Quebec .. .. do.	4 12 6	5 0 0
Teak, Rangoon, planks .. do.	9 0 0	21 0 0
Wainscot, Riga (Baulk) do.	3 15 0	5 15 0
Do. Odessa Crown do.	3 15 0	5 15 0
Walnut, American .. per cub. ft.	0 1 9	0 3 4

	£ s. d.	£ s. d.
SOFT WOODS.		
Fir, Dantzic and Memel .. per load	3 0 0	4 0 0
Pine, Quebec Yellow .. do.	4 7 6	6 0 0
Do. Pitch .. .. do.	3 8 0	—
Laths, log, Dantzic .. per fath.	4 10 0	5 10 0
Do. Petersburg .. per bundle	0 1 1½	—
Deals, Archangel 2nd & 1st per P. Std.	12 15 0	18 0 0
Do. do. 4th & 3rd do.	13 5 0	15 10 0
Do. do. unsorted do.	11 0 0	12 10 0
Do. Riga .. .. do.	6 15 0	8 10 0
Do. Petersburg 1st Yellow do.	18 0 0	—
Do. do. 2nd „ do.	10 15 0	13 15 0
Do. do. Unsorted „ do.	8 15 0	13 0 0
Do. do. White do.	8 5 0	11 15 0
Do. Swedish .. .. do.	10 15 0	22 10 0
Do. White Sea .. do.	13 5 0	17 15 0
Do. Quebec Pine, 1st .. do.	13 15 0	23 15 0
Do. do. 2nd do.	18 15 0	—
Do. do. 3rd &c. do.	9 0 0	9 15 0
Do. Canadian Spruce, 1st do.	10 10 0	11 15 0
Do. do. 3rd & 2nd do.	8 10 0	10 0 0
Do. New Brunswick .. do.	7 5 0	8 0 0
Battens, all kinds .. do.	8 10 0	9 10 0
Flooring Boards, 1in. prepared, 1st .. per square	0 12 9	—
Do. 2nd .. do.	0 9 9	—
Do. 3rd &c. .. do.	0 7 0	—

COMING EVENTS.

Wednesday, September 19.

INSTITUTION OF MINING AND MECHANICAL ENGINEERS (Annual Meeting in the Crown Court, Bristol, second day).—Visit to the Bristol Tramways Company's Electric-power Station, Counterslip at 9 a.m.; Excursion to Bath, Roman Baths, &c., and Bath Stone Quarries at 11 a.m.

IRON AND STEEL INSTITUTE.—Autumn meeting at 44 Rue de Rennes, Paris (second day). Mr. Louis Katona (Resicza, Hungary) on "Rolling Mills;" Baron H. von Jüptner (Donawitz, Austria), on "The Constitution of Slags;" Mr. E. F. S. Lange (Manchester) on "A New Method of Producing High Temperatures;" Messrs. Godfrey Melland, B.Sc., Assoc.R.S.M., and Mr. H. W. Waldron, Mason University College, Birmingham, on "The Action of Aluminium on the Carbon of Cast Iron;" Mr. J. E. Stead, Member of Council, on "A Micro-chemical Research on Iron and Phosphorus." Visit to Exhibition at 2 p.m. Banquet at the Hôtel Continental, Rue Castiglione.

SANITARY INSTITUTE.—Lectures and Demonstrations for Sanitary Officers: Part I. Mr. John Castell-Evans on "Natural Forces; Light, Heat, Electricity; Chemistry," at 8 p.m.

CUMBERLAND AND WESTMORELAND ANTIQUARIAN AND ARCHÆOLOGICAL SOCIETY.—Meeting at Bowness, Windermere (second and last day). Excursion through the Winster Valley to Grange-over-Sands. Mr. H. Swainson Cowper, F.S.A., on "Cawmire (Comer) Hall." The Rev. Canon Rawnsley on "William Pearson of Borderside, Winster."

Thursday, September 20.

INSTITUTION OF MINING AND MECHANICAL ENGINEERS (Annual Meeting in the Crown Court, Bristol, third and last day).—Excursion to Cheddar and Wells at 9.30 a.m.

IRON AND STEEL INSTITUTE.—Autumn Meeting at Paris (third day). Visit to Exhibition at Vincennes (Locomotives, Railway Plant and Machine Tools), at 10 a.m.

Friday, September 21.

INSTITUTE OF SANITARY ENGINEERS.—Examination in Practical Sanitary Science.

IRON AND STEEL INSTITUTE.—Autumn Meeting at Paris (fourth day). Visits to St. Chamond Works at 7.48 a.m. and to Hayange Works at 8 a.m.

SANITARY INSTITUTE.—Lectures and Demonstrations for Sanitary Officers: Part I. Mr. John Castell-Evans on "The Atmosphere: Pressure and Composition; Air; Combustion and Respiration," at 8 p.m.

THE RUSKIN UNION.—First Congress at Sheffield (first day).

Saturday, September 22.

INSTITUTE OF SANITARY ENGINEERS.—Examination in Practical Sanitary Science.

THE RUSKIN UNION.—First Congress at Sheffield (second and last day). Presidential address by Lord Windsor.

NORTHERN ARCHITECTURAL ASSOCIATION, NEWCASTLE-UPON-TYNE.—Excursion to the County Hotel and the Newcastle Breweries' new works, Haymarket, Newcastle, at 3 p.m.

Monday, September 24.

SANITARY INSTITUTE.—Lectures and Demonstrations for Sanitary Officers: Part I. Mr. John Castell-Evans on "Ventilation, Warming and Lighting," at 8 p.m.

Tuesday, September 25.

CHURCH CONGRESS.—Meeting at Newcastle (first day).

Wednesday, September 26.

CHURCH CONGRESS.—Meeting at Newcastle (second day). Mr. G. F. Watts, R.A., the Bishop of Chichester, Mr. W. Hole, Mr. Stirling Lee, Mr. E. S. Prior and Mr. Selwyn Image on "The Relation of Art to Religion."

SANITARY INSTITUTE.—Lectures and Demonstrations for Sanitary Officers: Part I. Mr. John Castell-Evans on "Meteorology," at 8 p.m. Inspection and Demonstation in the Parish of St. George's, Hanover Square, at 2 p.m., conducted by Mr. Albert Taylor.

Thursday, September 27.

CHURCH CONGRESS.—Meeting at Newcastle (third day).

Friday, September 28.

CHURCH CONGRESS.—Meeting at Newcastle (fourth and last day). The Rev. J. W. Horsley, Dr. Bowmaker, Professor Steggall, Sir T. Wrightson, M.P., and Councillor Thompson on "The Housing of the People."

SANITARY INSTITUTE.—Lectures and Demonstrations for Sanitary Officers: Part I. Mr. John Castell-Evans on "Sanitary Law," at 8 p.m.

Saturday, September 29.

SANITARY INSTITUTE.—Lectures and Demonstrations for Sanitary Officers: Part I. Inspection and Demonstration at Wimbledon Sewage Works, at 3 p.m., conducted by Mr. C. H. Cooper, M.I.C.E.

The Excavations in the Forum at Rome have led to the discovery of the head and forepart of a marble horse. The fragment is of beautiful execution, and great value is attached to it. It is believed that it dates from the second century before Christ.

COMPLETE LIST OF CONTRACTS OPEN.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
	BUILDING.		
Sept. 21	Merthyr Tydfil—School	School Board	J. L. Smith, Architect, Aberdare.
„ 21	Limerick—Residence		W. H. Byrne, 20 Suffolk Street, Dublin.
„ 21	Nottingham—Power Station	City Council	A. Brown, Guildhall, Nottingham.
„ 21	Workington—Alterations	Mr. J. Taylor	W. G. Scott and Co., Victoria Buildings, Workington.
„ 22	Lichfield—School	Governors of Grammar School	H. H. Brown, Clerk to the Governors, Lichfield.
„ 22	Halifax—Stabling		Horsfall and Son, Lord Street Chambers, Halifax.
„ 22	Annfield Plain, Durham—Out-offices	Industrial Co-operative Society, Limited ..	G. T. Wilson, 121 Durham Road, Blackhill.
„ 22	Blackburn—Tiling	Gas Committee	S. R. Ogden, Municipal Offices, Blackburn.
„ 22	Ponthirwen, Wales—Stable		Mount Pleasant, Ponthirwen.
„ 24	Barnes—Shops		F. and W. Stocker, 90 Queen Street, E.C.
„ 24	Hatfield—Police Cottages	Herts County Council	County Surveyor, 41 Parliament Street, S.W.
„ 24	Tunbridge Wells—Brick Chimney Shaft	Corporation	Borough Engineer, Town Hall, Tunbridge Wells.
„ 24	Catchgate, Durham—Church		G. T. Wilson, 121 Durham Road, Blackhill.
„ 24	Chester—Cottage Homes	Guardians	T. M. Lockwood and Sons, 80 Foregate Street, Chester.
„ 24	Scarborough—Hospital	Town Council	H. W. Smith, Town Hall, Scarborough.
„ 24	Silsden, Yorks—Arching	Co-operative Society, Limited	R. P. Holdsworth, Co-operative Society, Limited, Silsden, Yorks.
„ 25	Sheffield—Bridge	Health Committee	C. F. Wike, Town Hall, Sheffield.
„ 25	Sheffield—Baths, &c.	Health Committee	C. F. Wike, Town Hall, Sheffield.
„ 25	London, E.—Quarter Sessions Court	West Ham County Council	Borough Engineer, Town Hall, West Ham, E.
„ 25	London, S.W.—Post Office	H.M. Office of Works	Mr. Wager, Office of Works, Storey's Gate, S.W.
„ 25	Bradford—Inn	Corporation	J. H. Cox, Town Hall, Bradford.
„ 25	Feiling—Schools	Heworth School Board	G. Bell, Collingwood Street, Newcastle-on-Tyne.
„ 26	London, W.—Alterations and Additions	Chiswick Urban District Council	A. Ramsden, Sutton Court, Sutton Court Road, Chiswick.
„ 26	Withington, Lancs.—Additions	Urban District Council	A. H. Mountain, Surveyor, Council Offices, Withington.
„ 27	Tunbridge Wells—Technical Institute	Corporation	W. C. Cripps, Town Hall, Tunbridge Wells.
„ 27	Holyhead—Room		Chapel House, Hyfrydle C. M., Chapel, Holyhead.
„ 27	Kensington—Additions	Guardians	G. Flint, 80 Coleman Street, E.C.
„ 27	Morley—Houses	W. and N. Blakeley	S. A. Buttery, Architect, Morley.
„ 29	Redruth—Alteration	School Board	S. Hill, Architect, Green Lane, Redruth.
„ 29	Shifnal—Infirmary	Guardians	Clerk, Guardians' Office, Market Place, Shifnal, Salop.
„ 29	Thakeham, Sussex—Police Station	County Council	W. B. Purser, 31 Bedford Road, Horsham.
„ 29	Wales, near Sheffield—Vicarage		Rev. C. Ellis, Vicarage, Wales, Sheffield.
Oct. 1	Pleasley Hill, near Mansfield—School	Mansfield School Board	Vallance and Westwick, White Hart Chambers, Mansfield.
„ 1	Bury, Lancs.—Abattoirs	Health Committee	A. Neill, 18 Cookridge Street, Leeds.
„ 1	Erith, Kent—Cottages	Urban District Council	Clerk, Council Offices, High Street, Erith.
„ 2	London, N.—School	Edmonton School Board	H. W. Dobb, 54 London Wall, E.C.
„ 2	Bradford—Warehouse	Lancashire and Yorkshire Railway Co. ..	Engineer's Office, Hunt's Bank, Manchester.
„ 3	Willesden—Infirmary	Guardians	A. S. Snell, 22 Southampton Buildings, W.C.
„ 4	Limerick—Generating Station	Town Council	J. J. Peacocke, Town Hall, Limerick.
„ 4	St. Albans—Alterations and Erection of Schools ..		F. W. K. Tarte, 12 St. Peter Street, St. Albans.
„ 8	Gallow's Plain, near Hertford—Porter's Lodge ..	Hertford and Ware Joint Hospital Board ..	G. H. Gisby, Town Hall, Ware, Herts.
„ 9	Pembroke—Schools	School Board	G. Morgan and Son, 24 King Street, Carmarthen.
„ 9	Pwllheli—Town and Market Hall	Town Council	E. R. Davies, 6 Church Place, Pwllheli.
„ 11	Middleton Lancs.—Buildings		Stones and Stones, 10 Richmond Terrace, Blackburn.
Nov. 30	Port of Recife—Works	Federal Government	Commercial Department, Foreign Office, S.W.

COMPLETE LIST OF CONTRACTS OPEN—*continued.*

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
	ENGINEERING.		
Sept. 21	Sunderland—Dynamos	Corporation	J. F. C. Snell, Dunning Street, Sunderland.
„ 22	Horton, Surrey—Dynamos	London County Council	R. W. Partridge, 6 Waterloo Place, S.W.
„ 22	Horton, Surrey—Pumping Machinery	London County Council	R. W. Partridge, 6 Waterloo Place, S.W.
„ 22	Fryston, near Castleford—Heating	Ferryfrystone School Board	Mr. Fox, Fryston Schools, near Castleford.
„ 24	London, S.W.—Mains	London County Council	Engineer, County Hall, Spring Gardens, S.W.
„ 24	Burnham, Somerset—Valves	Urban District Council	W. J. Press, Town Hall, Burnham.
„ 24	Burnham, Somerset—Pipelaying	Urban District Council	W. J. Press, Town Hall, Burnham.
„ 24	Epsom—Surface Condenser	Urban District Council	W. V. Graham, 5 Queen Anne's Gate, Westminster, S.W.
„ 25	Walthamstow—Electric Lighting Plant	Urban District Council	J. Enright, 47 Victoria Street, S.W.
„ 25	Exmouth—Pumping Machinery	Urban District Council	J. Mansergh, 5 Victoria Street, Westminster, S.W.
„ 26	Uganda—Steel Trestle Viaducts and Traveller	Railway Committee	Crown Agents for the Colonies, Downing Street, S.W.
„ 26	Ulverston—Water Mains	Rural District Council	W. F. Y. Molineux, 3 Benson Street, Ulverston.
„ 26	Howden, Yorks—Gas Lighting	Parish Council	Clerk, Council Offices, Bridegate, Howden.
„ 26	Dundee—Crane	Gas Commissioners	W. H. Tittensor, Dudhope Crescent Road, Dundee.
„ 26	London, N.E.—Engineering Work	Hackney Vestry	Gordon and Gunton, Finsbury House, Blomfield Street, E.C.
„ 27	Glasgow—Graving Dock	J. Shearer and Son	J. Deas, 53 Bothwell Street, Glasgow.
„ 27	Hull—Pipework	Electric Lighting Committee	City Treasurer, Town Hall, Hull.
„ 28	Glasgow—Piping	Corporation	J. Young, 88 Renfield Street, Glasgow.
„ 29	Aberdeen—Generating Plant	Electric Lighting Committee	J. A. Bell, Cotton Street, Aberdeen.
„ 29	Manchester—Culverts	Rivers Committee	Secretary, Rivers Committee, Town Hall, Manchester.
„ 30	Wellington, New Zealand—Engines	Corporation	J. Duthie and Co., Limited, 23 Lime Street, London, E.C.
Oct. 1	Llandebie, Wales—Widening Bridge	Carmarthenshire County Council	T. Jones, Council Offices, Llandovery.
„ 2	Barcelona, Spain—Elevators	Harbour Commissioners	Commercial Department, Foreign Office, S.W.
„ 2	Madrid—Steam Tramway	Spanish Government	Commercial Department, Foreign Office, S.W.
„ 2	Acton—Works for Public Baths	Urban District Council	D. J. Ebbetts, Surveyor, High Street, Acton.
„ 2	Salford—Destructors	Cleansing Committee	W. H. Hamblett, Wilburn Street Depot, Salford.
„ 2	Radcliffe, Lancs.—Gasholder	Gas Company	Secretary, Gas Offices, Radcliffe.
„ 3	Dublin—Pumping Engines	Corporation	Engineer, City Hall, Dublin.
„ 4	Dublin—Electricity Supply Mains	Electric Lighting Committee	S. Harty, City Hall, Dublin.
„ 4	Eastbourne—Electric Lighting Plant	Corporation	H. W. Fovargue, Town Hall, Eastbourne.
„ 9	London, S.W.—River Wall	County Council	Engineer, County Hall, Spring Gardens, S.W.
„ 17	Gainsborough—Pumping Machinery	Urban District Council	P. Griffith, 54 Parliament Street, London, S.W.
Nov. 14	Lahore, India—Tramway Materials	Municipal Committee	Secretary Municipal Committee, Lahore.
	IRON AND STEEL.		
Sept. 22	Leigh, Lancs.—Pipes	Gas Committee	J. Foster, Gas Works, Leigh.
„ 24	Burnham, Somerset—Pipes	Urban District Council	W. J. Press, Town Hall, Burnham.
„ 26	The Hague, Holland—Socket Pipes		M. Nydoff, Noblestreet 18, The Hague, Holland.
„ 26	London, E.C.—Wheels and axles	Bombay, Baroda & Central India Rly. Co.	Company's Office, Gloucester House, Bishopsgate Street Without, E.C.
„ 27	Ulverston—Pipes	Rural District Council	W. F. Y. Molineux, 3 Benson Street, Ulverston.
„ 27	Moss Side, Lancs.—Fencing	Urban District Council	H. B. Longley, Council Offices, Moss Side, Lancs.
„ 28	Glasgow—Piping	Corporation	J. Young, 88 Renfield Street, Glasgow.
Oct. 1	Brighton—Tramrails	Council	T. B. Holliday, Town Hall, Brighton.
„ 2	London, W.—Girder Work	G.W.R. Company	Engineer, Paddington Station, W.
	PAINTING AND PLUMBING.		
Sept. 24	Bacup, Lancs.—Painting	Irish Young Men's Association	M. Carty, Association Offices, Irwell Street, Bacup.
	ROADS.		
Sept. 22	Tredegar, Mon.—Limestone	Bedwellty Urban District Council	J. A. Shepard, Town Hall, Tredegar.
„ 22	Bexhill—Street works	Urban District Council	G. Ball, Town Hall, Bexhill.
„ 22	Dewsbury—Paving	Corporation	Surveyor, Town Hall, Dewsbury.
„ 24	Waterloo, Lancs.—Street works	Urban District Council	F. S. Yates, Town Hall, Waterloo.
„ 25	London, E.—Making-up	West Ham County Council	Borough Engineer, Town Hall, West Ham.
„ 25	Ilford—Making-up	Urban District Council	H. Shaw, 7 Cranbrook Road, Ilford.
„ 25	London, N.W.—Road Making	Willesden District Council	O. C. Robson, Public Offices, Kilburn, N.W.
„ 26	Birkenhead—Flagging	Corporation	C. Brownridge, Town Hall, Birkenhead.
„ 26	Litherland, Lancs.—Passages	Urban District Council	W. B. Garton, 25 Sefton Road, Litherland.
„ 26	Muswell Hill—Road Making		Vigers and Co., 4 Frederick's Place, Old Jewry, E.C.
„ 27	Heswall, Cheshire—Road	Wirrall Rural District Council	W. H. Churton, Eastgate Buildings, Cheshire.
„ 29	Walmer, Kent.—Quartzite	Urban District Council	R. A. Wilson, Council's Surveyor, Walmer, Kent.
	SANITARY.		
Sept. 21	Osmaston, Derbyshire—Removal of Nightsoil	Shardlow Rural District Council	J. W. Newbold, Becket Street, Derby.
„ 22	Durham—Sewers	Urban District Council	H. W. Taylor, St. Nicholas's Chambers, Newcastle-on-Tyne.
„ 25	Epsom—Sewers	Rural District Council	H. D. S. Wood, 157 Wool Exchange, Coleman Street, E.C.
„ 25	Erdington, Birmingham—Sewer	Urban District Council	H. H. Humphries, Public Hall, Erdington.
„ 25	Salford—Sewers	Corporation	Borough Engineer, Town Hall, Salford.
Oct. 1	Normanton-by-Derby—Sewers	Shardlow Rural District Council	T. A. Fuller, The College, All Saints, Derby.
„ 1	Aughton, Lancs.—Sewers	West Lancs. Rural District Council	C. Law Green, 50 Hampton Road, Southport.
„ 1	Southwick, Sussex—Removal of Refuse	Urban District Council	G. W. Warr, Council Offices, Albion Street, Southwick.
„ 4	Rottingdean—Sewer	Newhaven Rural District Council	T. W. Franks, Seveirg Buildings, Lewes.
„ 9	Lymington, Hants—Sewers	Town Council	I. Pym-Jones, 14 High Street, Lymington.
	TIMBER.		
Sept. 21	Hull—Timber	Corporation	A. E. White, Town Hall, Hull.
„ 22	Horton, near Epsom—Fencing	London County Council	R. W. Partridge, 6 Waterloo Place, S.W.
„ 25	London, E.—Fencing	West Ham County Council	Borough Engineer, Town Hall, West Ham, E.
„ 28	Uganda—Sleepers	Railway Committee	Crown Agents for the Colonies, Downing Street, S.W.

COMPETITIONS OPEN.

DATE OF DELIVERY.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	BY WHOM ADVERTISED.
Sept. 27	Willington Quay—Store	£10	Secretary, Industrial Society, Limited, Willington Quay.
„ 27	Ashford, Middlesex—Schools		E. Brooker, Ashford, Middlesex.
„ 30	Devizes—Hospital	£20, £10	O. Sheppard, Clerk to Joint Committee, Devizes.
„ 30	Musselburgh—Town Hall	£26 5s. and £16 15s.	Town Clerk, Council Offices, Musselburgh.
Oct. 30	South Shields—Municipal Buildings	£200, £100, £50	J. M. Hayton, Town Clerk, Court Buildings, South Shields.
Nov. 30	Swansea—Harbour Offices	£100, £50	T. Strick, Harbour Offices, Swansea.
Dec. 1	Bridlington—Parade Extension	£36 5s., £15 15s.	A. E. Matthewman, Town Hall, Bridlington.
March 25	Basford—Sewerage Scheme		C. J. Spencer, Clerk, Public Offices, Basford.

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THE BUILDERS' JOURNAL & ARCHITECTURAL RECORD

SEPTEMBER 26, 1900. No. CCXCIV.

EFFINGHAM HOUSE, ARUNDEL STREET, STRAND, W.C.

An Architectural Causerie.

Photography and Architecture.

THE most enjoyment to be gained from the new exhibition of the Photographic Salon at the Dudley Gallery, Egyptian Hall, is in the contemplation of the frames, mountings and marginal arrangements, which show decided taste, and are themselves objects of genuine delight—all show the influence being exerted by the Arts and Crafts movement. The effects produced by the camera, as witnessed in the photographs on view, are at the same time both wonderful and wrong. No one can deny the skill that is evident in some of the "pictures" (many of them "impressionistic" carbon prints), but nevertheless it is a kind of affectation, which is sure to be the case when "effect" is sought after. The real sphere of photography in connection with architecture and archæology does not lie in that of the fine arts, because, first and foremost, it is for *absolute record*. It is not the place of the camera to take pleasing effects of masses of stone, however skilfully the negatives are touched up and printed: we should be content to let this remain in the hands of the water-colourist. Out of all the photographs produced none come near to any of Turner's architectural colour sketches. But for recording evidence of curious carvings, particular mouldings, angles, joinings, portions of arcades, capitals and fragments generally, that is where the true value of the camera comes in. No doubt the present exhibition makes a decidedly pretty show (though only two of the prints can be called architectural, which shows that not too much thought is given in this direction), but as an exhibition of any permanency it is worthless.

Particular places on the earth are of course bound to be attractive to individual minds owing to some incidental occurrence, which means nothing to the uninterested. But real architectural photographs are worthy of the attention of all educated and artistic persons, whether professional architects or not. And, further, the individual architect, with a camera at a cathedral, can take whatever strikes his fancy (which will naturally at the same time interest his brother architects), items which the professional photographer never thinks of dealing with (nor can he be expected to do so), but goes on year after year taking comprehensive views of the whole building, the west front, &c., which are of less value to an architect, and have been engraved (far more excellently) years ago in such works as Britton's and Winkle's "Cathedrals."

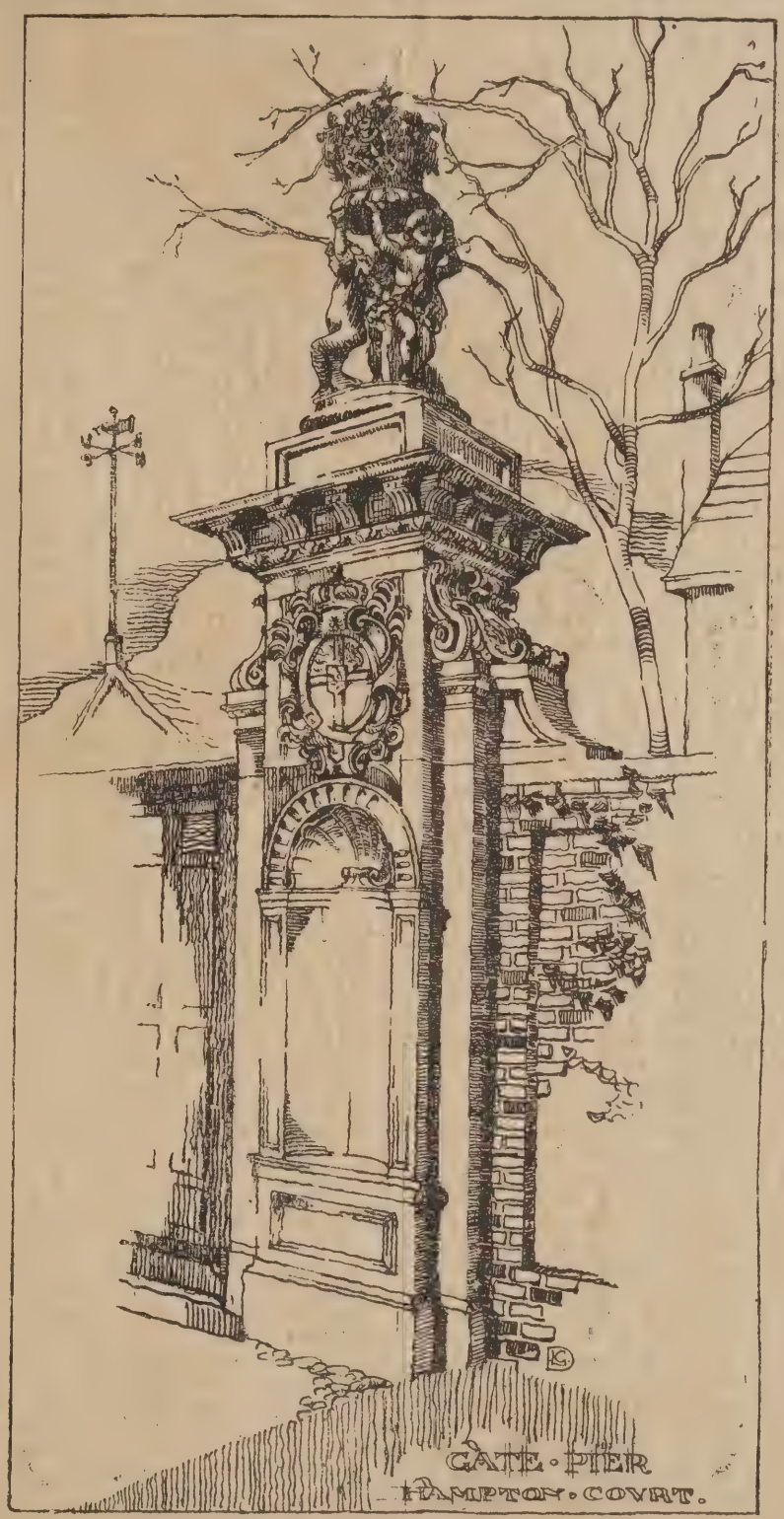
As before stated, great taste is displayed in the setting of the photographs at the exhibition which has suggested the above remarks, some having the mount and glass bound at their edges with a thin strip of paper, without any frame. But I cannot do otherwise in concluding than repeat the maxim, which should be taken seriously to heart, that photography, at least in its relation to architecture, is not a fine art, but a record. M. J.

Gate Pier, Hampton Court.

THE Gate Pier illustrated on this page forms one of the pair at the northernmost end of the Great Terrace at Hampton Court, opposite Wren's garden front, and was designed by him, with the rest of the work. The gates are known as the Flower-Pot Gates, and the stonework is remarkably well preserved, the sculpture retaining all its original sharpness.

A Church Legend of North Devon.

THERE can be no doubt that the townsfolk of Barum were much put about on hearing the latest news concerning the new church in process of erection in the valley of the Yeo. Rumour said that no sooner had the walls risen three or four feet from the foundations than they were thrown down and flung into the River Yeo overnight. It was causing a great deal of excitement in the town: the narrow streets were crowded; groups of men and women stood at the corners and in the roadways excitedly discussing the turn of events. "They do say," said one of a knot of men gathered near the Guildhall, "that the Devil has been seen about these parts of late." "Od rot you, friend," said another of a cheerful countenance; "dost still hold to the old notions in these parts?" "Ay! that we do, Master Stubbs; you fat folk of the big town up along are too quick to hold with newfangled notions. If you concerned yourself less with the foreign ideas coming into these parts the Devil might not be so fond of visiting the West Country." "Ha! ha!" laughed Master Stubbs, "it would seem as if the Devil was over-fond of you Barum folk, and yet methinks he shows his affection in a strange and curious manner. He has twisted your leaden spire, and made the neighbouring folk of Brauntane build their church in the valley; and now, alas! for you, my friends, he has been paying a visit to your new church on the banks of the River Yeo." "Come! come!" said another who had not yet spoken: "Don't quarrel; fat Master Stubbs will have his gibe, and means



DRAWN BY L. G. DETMAR.

no offence. Whether it be the Devil or some apprentices on the spree, the matter must be looked into, and that quickly. The building must be watched day and night, and a body of the town archers should be sent down to defend the walls if the work is to go on." During the same day and the one following the authorities were busy: they sent carpenters, sappers and diggers down to the river bank, and by the evening of the next day there was a strong but roughly-made stockade at the water's edge opposite the church, the river forming an additional security for the town archers against the sacrilegious ruffians bent on harassing the builders of the church. Late in the evening the bowmen took up their position behind the wooden barrier, and Master Stubbs, with several of the citizens armed with the parish church flintlocks, flanked them right and left. A small cannon was placed to cover the east end of the church walls, the Mayor for the time being holding the position of gunner to the town of Barum. The darkness deepened; some men standing about, and others sitting quietly, prepared for the worst. For a long while nothing could be heard but the chirp, chirp of the cricket in the long grasses, and the swish, swish of the rushing water as it played about the overhanging bushes that fringed the bank. Three times during the evening the town clock clanged out the hours. It was now near midnight, and the archers were beginning to get impatient, to grumble and to murmur among themselves: "What wild-goose chase is this that we are out on?" "By our Lady!" quoth fat Stubbs, with a chuckle; "I'm thinking the Devil hath no stomach for our town cannon." "Tut, tut, fat man," said the Mayor, "thy humour is ill advised; this is no time for jest; be it fiend or man, we must be ready. Hist! friend, see yonder on Pylton Hill; what do you make of it?" "Pish, Mr. Mayor, you are too easily aroused; that is only the lantern of some belated country traveller." The next ten minutes passed very quietly: numbers of other lights now appeared flitting to and fro. "Now, Master Stubbs," whispered the Mayor, "think you still that they are lanterns? If I am not much mistaken there is going to be some hot work." Suddenly, a loud clap startled the watchers, and then almost directly the walls of the church stood out clearly thronged with many figures, flashes coming and going from the bright beings across the river. The archers, at first dazzled, were presently sending showers of arrows on the walls, but the bright figures danced on, catching the arrows and throwing the stones from the walls as they went. Nothing seemed to disturb the Devil and his imps, but the Mayor was not to be discouraged, and determined to carry on the fight to the end. Amid the noise of the flintlocks, the whistle of the arrow in flight and the twang of the bowstring, the Mayor was coolly aiming and loading his cannon. Carefully shifting it into position he lighted the fuse; a moment, and then the cannon roared, half the lights disappearing from the eastern wall. Two or three minutes went, and another roar burst and echoed round the valley, and then all was dark. "'Ods, bobs," came the unmistakable voice of fat Stubbs from out of the night. "The Devil is dead this time; but, by my halidome! never shall I be doubting again that the Devil roams the country as of old. Light the lanterns, men, the other lights are out, and there will be no more disturbance for some time to come; the building of the church can go on in the morning." Strange to say, the people of Barum, with characteristic obstinacy and contrariness, determined to erect the church on the Pylton Hill as a beacon to the weary traveller, that he might know that in the hollow beyond lies the chief town of North Devon, full of good men and true.

G. Ll. M

On Reflection.

Architects' Assistants' Salaries.

WITH this issue we bring to a close the correspondence which has been going on in our columns for the past eleven weeks with reference to the salaries of architects' assistants: the present is therefore an opportune moment to express our own opinion on this subject. Of three things there can be no doubt, namely, (1) that there are a number of competent assistants who do *not* receive a fair salary for the work they do; (2) that it is very difficult to get a capable assistant; and (3) that the profession is full of young men who have not the qualities which go to make a good architect, and who have been articled through the well-meant efforts of misguided and misinformed parents. It is often the case that the premiums paid by pupils form a goodly part of an architect's income, and that the pupils in return are allowed to pick up in their own way what architectural knowledge they can, being looked after by an underpaid head assistant, who is *really* the author of all the work produced by the office—in fact, he acts in the dual capacity of manager and ghost to his principal. We do not wish to cast aspersions on practising architects, but it is certain that many of them do not pay a sufficient salary to the assistants on whom they are so greatly dependent. On the other hand, the ordinary assistant is far from being perfect. He does not seek to improve himself as he should by close study, diligent practice, and intelligent observation, but often wastes his time in a way which is both contemptible and exasperating; and such stupid negligence is hardly calculated to produce an architect who can design a building that is worth looking at. It is largely due to this fact of the profession being crowded with incompetent assistants that we hear so much of insufficient salaries; and it is true that young men of this calibre lower the status of assistants as a whole, bringing discredit and inadequate salaries to the men who, by natural aptitude and praiseworthy study, have made themselves competent. But in the majority of cases the parents are largely to blame, and they should therefore be included in the indictment. To adopt an old maxim, architects are born, not made, and it is a pure waste of time and money for parents to article their sons to architects just because they have a taste for drawing, as it is called. An architect needs to be more than a draughtsman, a platitude which fathers and mothers and guardians still fail to grasp; if they only did, what a weight might be removed from the profession, and what excellent additions might be made to the Army, the Navy, stock-broking, cattle farming, or, perhaps, to the drapery warehouse business!

Suggested Remedies.

HAVING set forth the condition of things, the suggested remedies have next to be considered. There is merit and demerit in the idea of establishing a central body, with branches all over the country, for controlling the minimum salaries paid to assistants, in the same manner as the Institute schedule fixes the fees chargeable by an architect. Details for such a scheme have already been published in our columns. Its merit lies in the guarantee, practically, that the assistant will receive a salary justly proportionate to his ability; its demerit is that many assistants newly-released from their articles will be paid more than they are worth. But in working out the scheme the methods adopted for the professions should be followed rather than those for the trades, in which conditions are different. The suggested remedy that assistants should throw up their positions and become working builders, though based on the principle in vogue when the beautiful mediæval buildings were erected, would necessitate too drastic a change to be practicable nowadays; it contains, however, a germ of real worth, that which is directed against the current prevalent practice of grovelling copyism and the employment of misunderstood forms. Other remedies have been suggested in a rather meagre manner, such as the formation of a new Institute, but these are less feasible, and they are not for us to carry into practical effect. All we can do is, firstly, to urge parents and guardians not to article their charges to architects unless they possess *considerable* natural talent for the profession; secondly, to urge architects to pay their assistants what they really know they are worth, not to get them "on the cheap"; and, thirdly, to urge the assistants to do all they can to improve themselves in design, in constructional knowledge, and in business ability. If all concerned would only act according to these principles the trouble would be at an end; we can but state the case and let who will apply the practical remedy.

London University and Architecture.

THE failure of the University of London to recognise the claims of Architecture has again been brought under notice by a letter in the "Times" newspaper from Mr. William Emerson, President of the Royal Institute of British Architects. He points out that when the Cowper Commission was appointed in 1892 (it was a Royal Commission and derived its name from the fact that the chairman was Earl Cowper) the Institute obtained permission to attend and give evidence of its efforts for improving the education of the architectural student. In the report of the Commission it was recommended that the Institute should nominate one member of the new Senate, and that Architecture should be recognised as one of the branches in the Faculty of Applied Science. "If these recommendations had been adhered to," says Mr. Emerson, "official recognition of Architecture and of the Royal Institute as one of the agencies 'concerned with the intellectual life of London' would have been of great public value, but, unfortunately, in the Act of 1898 this was entirely ignored, and no mention of Architecture or of the Institute occurs in the 'statutes' for the University. The council of the Royal Institute of British Architects endeavoured to induce the University Commissioners to meet a deputation to discuss the matter, but without success." It should be mentioned that during the hearing of the evidence by the Commission it was admitted that the artist would profit by a knowledge of scientific and æsthetic laws, but the predominant importance of execution, mastery and spontaneous imaginative power was insisted upon; there was no sympathy for establishing a distinct position of Art for Art's sake. There are eight faculties of the University, namely, theology, arts (this means the Liberal Arts, not the Fine Arts), laws, music, medicine, science, engineering, economics and political science; and it is very much to be regretted that a Faculty of Architecture is not also included. Candidates for Oxford and Cambridge degrees have to pay certain fees, pass certain examinations, be males, and reside within the precincts of the Universities for a prescribed time; but only the two first conditions need be complied with for a London degree. Unfortunately, there seems little hope at present of a Faculty of Architecture being established, though it certainly deserves such recognition, especially when one sees what has been done by the Victoria University in this country and by nearly all similar institutions in the United States.

DUNSTABLE AND ITS NEIGHBOURHOOD.

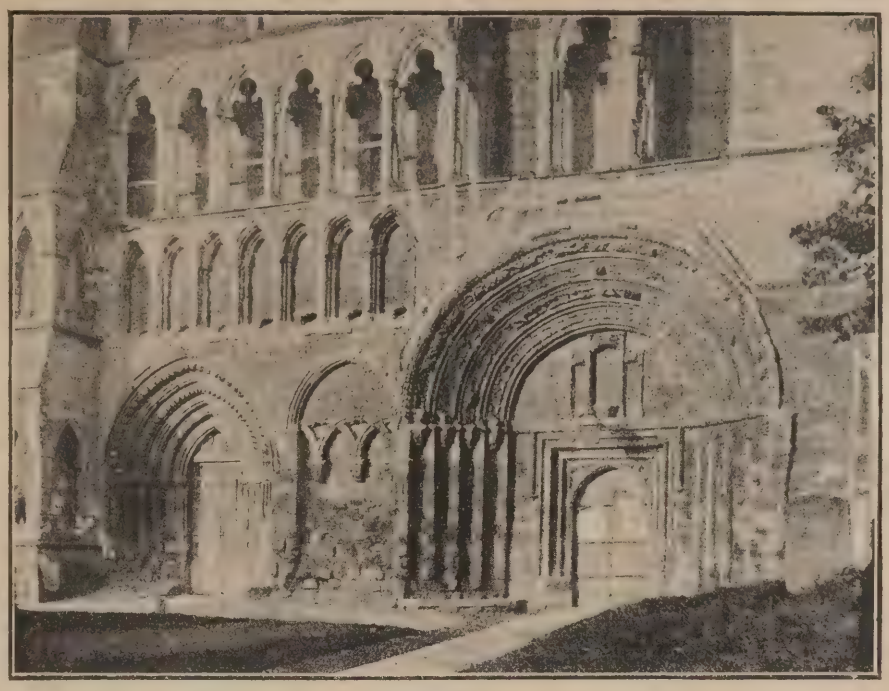
By WORTHINGTON G. SMITH, F.L.S.

THE town of Dunstable is eleven miles north of St. Albans and thirty-three miles from London. It is situated on the Great North Road—formerly a Roman and British road—and is crossed in the middle of the town by another Brito-Roman road called the Icknield Way. The Great North Road was the Via Vitellina of the Romans, the Icknield Way the Via Iceniana.

Dunstable is enclosed by hills on the east and west, and on these many Celtic tumuli and earthworks are situated. Stone implements, like celts and arrow-heads, are found all over the district, and Roman relics, such as cinerary and other urns and coins, are constantly being unearthed.

Dunstable was the Celtic position of Dorcomriv, the Durocobrivis of the Roman Itinerary, and in Roman times a temple dedicated to Mars stood in the neighbourhood. Traditions obviously as old as Roman times are still heard in some of the villages round the town, and some positions (Campum-dunum, for instance) still retain Roman names.

At the time of the Conqueror the site of the present town of Dunstable was a waste. The Saxon houses of wood had all been burned, and the people murdered by the Danes; consequently the name does not occur in Domesday. In Norman times, according to contemporary documents, the place was infested with robbers, who preyed upon the wayfarers using the roads which crossed where the town now stands. To improve this state of things Henry the First founded a church and monastery of Augustinian canons close to the cross-roads, and built a palace for himself on the north side of the church. A farmhouse with massive stone foundations, called Kingsbury, now occupies the site of the king's demolished house. Very little of the Priory remains: there is not a stone above ground of the presbytery, choir, central tower, transepts or Lady Chapel. The Norman nave is, however, fairly intact, but both aisles and east end are almost entirely modern. The south aisle is mainly a modern restoration of Norman work, the north a restoration of Perpendicular. The restorations were fairly well done by the late Mr. George Somers Clarke, who, however, introduced a beautiful but incongruous pulpit of marble, Italian Gothic in style, and quite foreign to the rest of the architecture of the church. In 1891 Messrs. Bodley and Gardner erected a new east end, built over a stone screen which formed the entrance to the former choir. The wall is painted and gilt in a florid manner with a Crucifixion, with St. Mary, St. John and other saints, in strong contrast to the beautiful massive Norman work which it abuts. The old clerestory of the church has long vanished, and the triforium, now filled with restored Perpendicular fillings, forms a kind of clerestory. The date of the interior Norman work is about 1150.



DUNSTABLE PRIORY CHURCH: THE WEST FRONT.



DUNSTABLE PRIORY CHURCH: SOUTH SIDE OF NAVE.

The accompanying illustrations show parts of this noble church. The Perpendicular work in the west front belongs to about 1400 or 1450, the Early English from 1270 to 1300. The magnificent semi-circular Transitional arch dates from 1180 to 1200. Some parts, as the interlaced arches between the Norman and Early English doors, closely resemble work at St. Albans.

In the High Street, at a house still called the "Priory," there exists an Early English substructure dating from about 1300. This is part of the old Guest House or Hospitium of the Priory. It is now transformed into three apartments divided by wooden partitions, and forms a large hall and two living rooms. The grand old stonework is painted and varnished to represent a country decorator's idea of oak! A great deal of the stonework of the demolished parts of the Church and Priory exists in the neighbourhood of the town, having been built into houses, barns, walls and foundations. The majority of the brasses have gone, and modern tiles have taken their places. A knight's helmet which once existed in the church has disappeared; the whole accoutrements of a thirteenth-century knight (belonging to the church) were once in private possession in the town. Nothing of the kind is here now. The carved stalls which once existed have all vanished. A former rector destroyed the holy-water stoup. At the time of Mr. Clarke's restoration the old pulpit was sold by auction, and was at length acquired by a publican for a tea garden; other objects were robbed from the church at the same time. A very old hour-glass, with some ancient floor tiles, then disappeared.

The font is new—in the "Norman style"; the old Norman font was thrown away.

Things are changing very rapidly at Dunstable, and the good old houses are vanishing, being replaced by structures like those in the minor suburbs of London.

One of the accompanying illustrations shows four old passages in the town, but since the drawing was made the fourth has been burned twice, and its appearance has consequently been changed.

Richly-carved stones occur in gardens in the town, and portions of the missing columns of the great portal help to adorn some "rock-work." A vast number of the carved stones belonging to the choir were dug out some years ago and carted to the western downs, where they were buried in a large hole south-east of the five Celtic tumuli. A stone coffin was used as a horse-trough and then broken up for road metal. A life-size figure in stone of St. Frehemund also vanished.

The inscribed Sanctus bell is preserved on the side of the Town Hall; it is now a fire bell.

The ancient church at Kensworth, two doorways of which are here illustrated, is one mile to the south of Dunstable. There may be Saxon work in the church where the rough-cast is placed on the north side; at any rate, the illustrations show that early Norman work is to be seen there. The south door is now protected by a modern porch, but a much better wooden porch existed formerly. One capital has a figure subject, the other has interlaced work similar to that on Celtic crosses. The nave door, like the south door, is structurally external, and has been protected by a Perpendicular tower, now covered with rough-cast. The carving on the arch and capitals is remarkable, though at some period it was tooled up and renovated. It has been stated that this was done by a cleric who was an amateur carver. On an impost near this door a grotesque bird, of the date of the old Norman work, is carved.

In some labourers' cottages close to the church some massive stonework is to be seen. This is traditionally said to be part of a former residence of King John. The old form of the village name is Kings-worth; it occurs in Domesday as Kene's-worth. A few years ago zig-zag work from a Norman arch was taken from a stone wall of a farm close to the church. Norman windows occur on the north side and a stone staircase to a demolished rood gallery still exists.



SOUTH DOOR, CHURCH OF ST. MARY, KENSWORTH, NEAR DUNSTABLE. DRAWN BY WORTHINGTON G. SMITH.



WEST DOOR, CHURCH OF ST. MARY, KENSWORTH, NEAR DUNSTABLE. DRAWN BY WORTHINGTON G. SMITH.

RUSKIN UNION CONGRESS.

THE first congress of the Ruskin Union, which was formed early this year for the purpose of promoting the study of the works of John Ruskin, was opened in Sheffield on Friday last. About fifty delegates from London and the large provincial towns were welcomed in the Town Hall. In a brief address the Lord Mayor dwelt on the relationship between Ruskin and Sheffield, which induced him to present to the city the magnificent museum of which they were so justly proud. The reasons Mr. Ruskin gave when he selected Sheffield to deposit his treasure were four. He acknowledged, first, that ironwork was an art necessary and useful to man; secondly, he acknowledged that in cutlery ironwork, which of course included steelwork, they had in Sheffield the best of its kind. The next reason was that Sheffield was situated in Yorkshire, and Ruskin paid the county the compliment of believing it to be in the main old English, and capable yet of the ideas of honesty and piety by which old England lived. Finally, he chose Sheffield as being within reach of beautiful natural scenery, and the best art of English hands at Lincoln, York, Durham, Selby, Fountains, Bolton and Furness.

At the close of the mayoral reception the delegates inspected the Ruskin Museum, where the collection was described by Mr. Parker, the curator. In the evening a reception at the Town Hall by the Lord and Lady Mayoress was attended by 500 guests.

In the course of his presidential address, delivered on Saturday, Lord Windsor said he did not think Ruskin was infallible, either as an art critic or as a teacher of practical political and social economy. Ruskin's voice was first heard among us when art, in the main, had withered under the cold conventionalities and narrow rules of pseudo-classical school teaching. There were exceptions, no doubt, but Ruskin saw that if any new life was to be infused into artistic work in this country our artists and craftsmen must go to a totally new source of inspiration, that the true source was Nature itself, and that upon a reverent study of Nature alone could real artistic work be produced. He looked to Ruskin as the "seer" and the prophet, who, with deeper vision than most men, taught us the everlastingly true principles of art, rather than to his own application of these principles, which are apt to be enforced by more vigour than fairness. He did not draw that distinction which was not infrequently drawn between Ruskin as the art critic and as the social reformer, because in spirit he saw none. The same principles which coloured his art criticism led him inevitably to prove their application to all phases of life. The secretary announced, with reference to the question of placing a tablet in Westminster Abbey, that it was arranged that the Union should make no appeal until this was settled, and it was also decided that the memorial committee, which was not a Union committee, should endeavour to obtain the necessary funds for the tablet without making a national appeal. The Union passed a resolution "in full sympathy with Canon Rawnsley and others who are working with him in the

Lake district against the proposed introduction of light railways and electric traction in the best and most picturesque part of that district; in this they are acting in harmony with Mr. Ruskin's life-long endeavour.

THE CITY CHURCHES.

HOW TO OBTAIN PERMISSION TO SKETCH AND PHOTOGRAPH IN THEM.

IN view of the fact that so many persons are interested in sketching, making measured drawings or photographing in the churches of the City of London, the "City Press" is greatly to be praised for publishing particulars about the necessary permits that are in most cases first required. The list which appeared in our contemporary we now take the liberty of reprinting, but a few explanatory remarks are necessary in order that it may be thoroughly understood.

(1) Applications to clergymen are preferably made by letter, and should give some idea as to the writer's intentions and qualifications. A suitable reference is sometimes advisable. (2) Permission should always be obtained for photography (with two exceptions), and for studies involving measuring, the use of ladders, &c. (3) Except when specified below, no fixed period exists for permits which may be granted. Each application is considered individually; hence a reason for stating the object in view. (4) In most cases it is impossible to give concisely the hours during which studies may be pursued. Festivals and Bank Holidays must be considered excepted. "Saturday cleaning" does not necessarily mean that the church in question is closed for prayer or meditation. The method aimed at has been to give only the hours of opening and closing, but in cases where the church opens with Matins or closes with Evensong the time occupied has been left out of consideration, e.g., Allhallows, Barking, is open for prayers between 7.30 and 8 a.m., is reopened at 10 a.m., and closes after Evensong, which is said from 5 o'clock to 5.30 p.m. The hours listed are merely 10 to 5. It is, of course, distinctly understood that no study can be pursued in any portion of the sacred edifices during the hours of service, or immediately preceding them.

ALLHALLOWS, BARKING. — Applications should be addressed to any of the clergy at 9 Trinity Square. Permits last three months. A voluntary subscription suggested to Restoration Fund. Hours, 10 to 5.

ALLHALLOWS-ON-THE-WALL.—Sketching freely permitted. Hours, 10 to 4; Saturday, 10 to 2.

ALLHALLOWS, LOMBARD STREET.—Apply to the rector, or, in his absence, to the curate-in-charge. Wednesday and Friday, 12 to 2.

CHRIST CHURCH, NEWGATE STREET.—Apply to the vicar. Permits last three months. Hours, 12 to 2; Saturday, 12 to 4.

ST. ANDREW UNDERSHAFT.—Apply to the rector. Church opens 12 to 2 for prayer and meditation only. Arrangements should be made with the verger as to times of sketching, &c.

ST. ANNE AND ST. AGNES, ALDERSGATE.—Sketching, &c., not permitted.

ST. AUGUSTINE, WATLING STREET.—Apply to the rector and churchwardens.

ST. BARTHOLOMEW-THE-GREAT.—Apply to the rector or churchwardens. Measuring not allowed. Permits granted at a charge of 6d. per week, or 2s. 6d. for photography. Hours, 9.30 to 4.30.

ST. BOTOLPH, ALDERSGATE.—Apply to the rector. Church open 12 to 5 for prayer and meditation only. Arrangements can be made for properly qualified students in the forenoon.

ST. BOTOLPH, ALDGATE.—Apply to the vicar. Hours, 11 to 12, or by arrangement. *Pro tem.*

ST. BOTOLPH, BISHOPSGATE.—Apply to the rector or churchwardens. Hours, 11 to 1. Saturday cleaning.

ST BRIDE, FLEET STREET.—Apply to the vicar. Notice that a permit has been obtained must be given to the parish clerk.

ST. CLEMENT, EASTCHEAP.—Apply to the rector. Hours 12 to 3.

ST. DUNSTAN-IN-THE EAST.—Sketching freely permitted. Hours, 10 to 4; Saturday, 10 to 2. Permits granted for measuring and photography; such studies must be carried on before noon.

ST. EDMUND THE KING AND MARTYR.—Sketching freely permitted. Hours, 10 to 1 and 3 to 4. Mondays preferred. Saturday, cleaning.

ST. ETHELBURGA, BISHOPSGATE.—Apply to the clergy. Hours, 10 to 2, or at other times by arrangement with the verger. Saturday, cleaning.

ST. ETHELDREDA, ELY PLACE (without the City).—Sketching freely permitted in the body of the church and crypt. Apply, for photography, to the rector. Measuring cannot be permitted owing to the extreme softness of the stonework. Hours, 10 to sunset. Crypt occupied on Saturdays.

ST. GEORGE, BOTOLPH LANE.—Closed by authority. Students and others desirous of obtaining admission should apply to the rector or churchwardens, and arrange with Miss Ward, 32 Botolph Lane and 10 Love Lane.

ST. GILES, CRIPPLEGATE.—Apply to the vicar. Hours, 10.30 to 4; Saturday, 10.30 to 1.

ST. HELEN, BISHOPSGATE.—Apply to the rector. Hours, 11.30 to 4. Saturday, cleaning. The brasses being in a chapel set aside for private prayer, any rubbings must be taken before or after these hours, and by arrangement with the caretaker.

ST. JAMES, GARLICKHITHE.—Apply to the rector. Hours, 12 to 2.

ST. KATHERINE COLEMAN.—Sketching freely permitted. Apply for measuring or photography to the curate in charge. Hours, 10 to 4.

ST. KATHERINE CREE.—Sketching freely permitted. Hours, 12 to 2. Written application to the rector or churchwardens necessary for measuring or photography, and these studies to be pursued at other times by arrangement with caretaker.

ST. LAWRENCE JEWRY.—Apply to the rector, who will arrange times, &c.

ST. MAGNUS-THE-MARTYR.—Apply to the rector. Arrangements can be made for study during the hours of daylight.

ST. MARGARET, LOTHBURY.—Apply to the rector. Hours, 10 to 5; Saturday, 10 to 2.30.

ST. MARGARET PATTENS.—Apply to the rector. Hours, every week-day, 11 to 3; Saturdays also, 7 to 9 p.m. After 3 p.m. on Saturday by arrangement with sexton.

ST. MARY-AT-HILL.—Sketching freely permitted between 10 and 12, and also between 2 and 4. Saturday, cleaning. Measuring and photographing on application to the rector.

ST. MARY ABCHURCH.—Apply to the rector. Hours, 12 to 2; Saturday, cleaning. Students may attend at other times by arrangement, and this is preferred.

ST. MARY THE VIRGIN, ALDERMANBURY.—Apply to the vicar. Hours by arrangement, the church being open only for service.

ST. MARY ALDERMARY.—Apply to the rector. Hours by arrangement. Saturday, cleaning.

ST. MARY-LE-BOW.—Apply to the rector. Hours by arrangement. Saturday, cleaning.

ST. MARY WOOLNOTH.—The rector grants permits. Hours, 10 to 4; Saturday, 10 to 12.

ST. MICHAEL, CORNHILL.—Apply to the rector. Hours, usually 12 to 2; closed on Saturdays.

ST. MICHAEL, PATERNOSTER ROYAL.—Sketching and photography freely permitted between 12 and 2, except on Wednesdays and Saints' Days.

ST. MILDRED, BREAD STREET.—Church open at present 1 to 3. Sketching generally permitted provided it is accompanied by due recognition of the character of the building.

ST. NICHOLAS COLE ABBEY.—Apply to the rector. Hours, 11 to 4; Saturday closed. The facilities of electric light or ladders may generally be obtained on a small payment.

ST. OLAVE, HART STREET.—Small pencil sketches may be freely made, but for more lengthy work, for measuring, or for photography, permission should be obtained from the rector. Hours, 12.30 to 2.30; closed on Saturdays.

ST. PETER, CORNHILL.—Sketching and photography freely permitted between 12 and 2; closed on Saturdays. Apply for measuring to the rector and churchwardens.

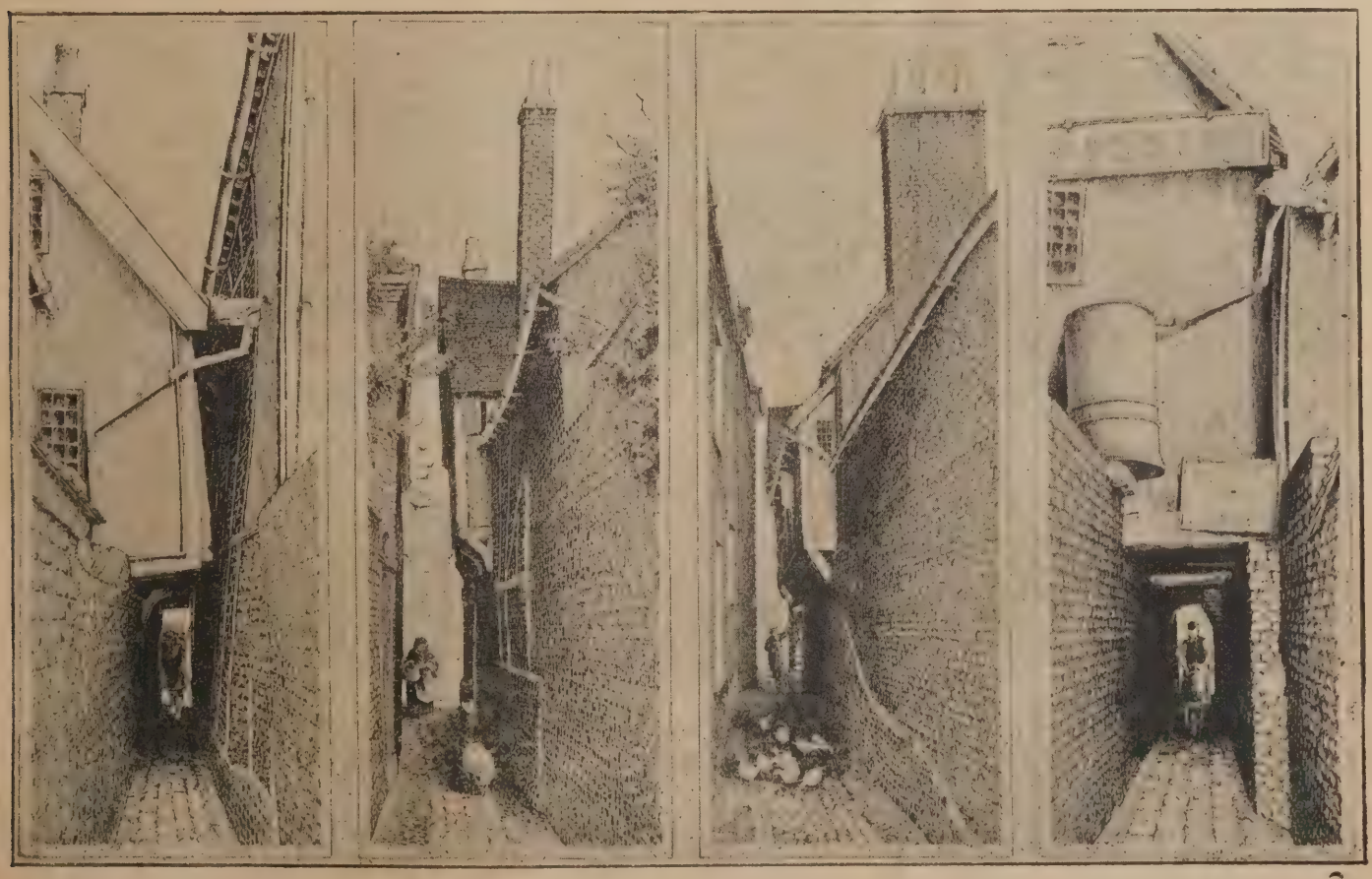
ST. SEPULCHRE.—Apply to the vicar. Hours, 9 to 4.30; closed on Saturdays, except by special arrangement.

ST. STEPHEN, WALBROOK.—Apply to the rector. Hours 1 to 3; closed on Saturdays.

ST. STEPHEN, COLEMAN STREET.—Apply to the vicar. Hours, 12 to 2; closed on Saturdays.

ST. SWITHIN, LONDON STONE.—Sketching freely permitted on Monday, Tuesday, Thursday, and Friday between 1 and 3. Apply to the rector and churchwardens for measuring or photography.

ST. VEDAST, FOSTER LANE.—Apply to the rector. Hours, 12 to 5.



Between Ashton and High Street. In Church Street: "Little Alley." From High Street to Church: "Church Alley." Between Ashton and High Street.

FOUR OLD PASSAGES AT DUNSTABLE. DRAWN BY WORTHINGTON G. SMITH.

THE NEW METROPOLITAN TABERNACLE.

ON Wednesday last the Metropolitan Tabernacle at Newington, founded by the late Mr. Charles Spurgeon, was reopened. The fire which almost totally destroyed the building (which was erected in the years 1859–61 from the designs of Mr. W. W. Pocock, Mr. William Higgs, senior, being the builder) took place in April, 1898.

It was found that the walls and portico front, which were of very substantial construction, had not suffered to such an extent as to render it necessary to rebuild them, and as the building committee were very desirous of retaining all that they could of the former Tabernacle, and of reconstructing the edifice as nearly as possible on the former lines, it was decided that the portions left standing should be worked into the new construction.

The first thing to be considered was the accommodation of the church and congregation while the rebuilding took place, and at the suggestion of the architects (Messrs. Searle and Hayes, of Ludgate Hill) it was decided to clear away all walls and partitions from the old Sunday school, lecture hall, and classrooms which formed the basement of the former building, and to construct a large hall over the whole space capable of accommodating about 2,000 persons. To make this sufficiently high for so large an area, the basement floor was lowered several feet, and the hall was covered in by an iron and concrete flat, which was carefully asphalted, and on which the floor of the new Tabernacle has since been laid. This plan proved very successful, as it enabled the various organisations of the church to be carried on under its own roof, the rebuilding going on overhead all the time without any disturbance or difficulty. The cost of this lower hall was about £8,000.

The reconstruction of the Tabernacle itself presented at the outset considerable problems, owing chiefly to the difficulty of adapting the former staircase buildings and approaches to the present requirements of the London County Council, and there were long negotiations between the district surveyor and the architects before a solution satisfactory to all parties could be arrived at. As now carried out, each of the two galleries has four stone staircases, and all the staircases are carried up separately, with brick walls between, and with short flights of steps and square landings, all communicating independently with the open air. The arrangements with regard to widths of staircases and exits are really considerably in advance of those actually required by the Building Act, but it was thought that everything possible should be done for the safety of the public in a building of this capacity. The chief alteration in plan that has been made is in the length of the auditorium, which has been decreased about 13ft. (or the length of one bay of the construction). The space thus obtained has been utilised by making the vestry building in the rear much larger, and has enabled the architects to very much improve the access to this part of the premises, as well as to increase the size of the rooms. Special baptising vestries have also been arranged for at the back of the platform, which will be a great convenience.

With regard to the materials and general construction of the Tabernacle, great alterations have been carried out, as it was felt necessary to make it as fire-resisting as possible, although the main appearance was to be kept intact. As formerly built, the roof, galleries, and vestries were all of timber and plaster, and the effect of this was apparent in the disastrous rapidity with which the place was burnt down. The vestry building is now entirely shut off from the main building by a brick party wall, and the rooms are divided off by pumice brick partitions. The galleries are constructed with bent plate steel girders, those to the first gallery projecting as cantilevers to form the balcony in front of the columns. These main girders support a network of steel joists, the whole being filled in with concrete made of coke-breeze and Portland cement, forming a strong and fireproof floor, upon which the dwarf walls supporting the staging for the seats are placed. The floors of the galleries are formed of thick planking, so as to resist fire and avoid the use of cross joists of timber. The roof of the Tabernacle is rather intricate in its construction: it consists of steel framed ribs, which cross the building from side to side, resting upon the main columns, the ribs being arched between the columns to the curves of the ceiling. These main ribs are braced together longitudinally with steel lattice girders, forming a strong skeleton framework; upon the ribs are placed the roof purlins, which are covered with stout boarding and slates, no rafters being used. The ceiling to the auditorium is formed with large slabs of fibrous plaster, which are fixed to binders resting on the main roof ribs; the centre part of the ceiling is oblong in form, the ends being semi-circular on plan.

The ornamental panels and shields in the dome are all capable of easy removal from the back; this will allow scaffolding to be put out at the upper level at any time for the purpose of painting or repairing the ceiling, and will save the heavy expense and inconvenience of constructing scaffolding from the floor below.

The arrangement of the pewing has been carried out much on the old lines, but the seats have been spaced out wider, and improved in various important details. The present accommodation is for 2,703 persons, including the officers' seats in the first gallery, which number 28. It will be seen that the seating capacity is considerably less than in the former building, and this is accounted for not only by the decrease in the length of the auditorium, but also by the wider spacing of the seats and the fact that the London County Council regulations demand more space for passages and aisles than used to be given.

The whole of the Tabernacle windows have been glazed with tinted glass, in lead lights, and with ornamental scrolls and borders, &c., adding much to the general effect of the building. The walls internally are painted a light olive-green colour. The lighting of the building is chiefly by electric light, but there are four large sunlights in the roof of sufficient capacity to light up the whole area in case of the failure of the electric current. The sunlights are also a useful adjunct to the ventilation, to assist the upward current through the ventilators in certain conditions of the atmosphere. The general ventilation consists of a system of vertical inlets, chiefly in connection with the heating coils, four large exhausts on the "air-pump" principle, and a complete arrangement of apertures in the upper lantern under easy control. The Tabernacle is heated throughout by hot-water radiators. The work of rebuilding has been admirably carried out by Messrs. Higgs and Hill, Limited, of South Lambeth, at a total cost of about £40,000.

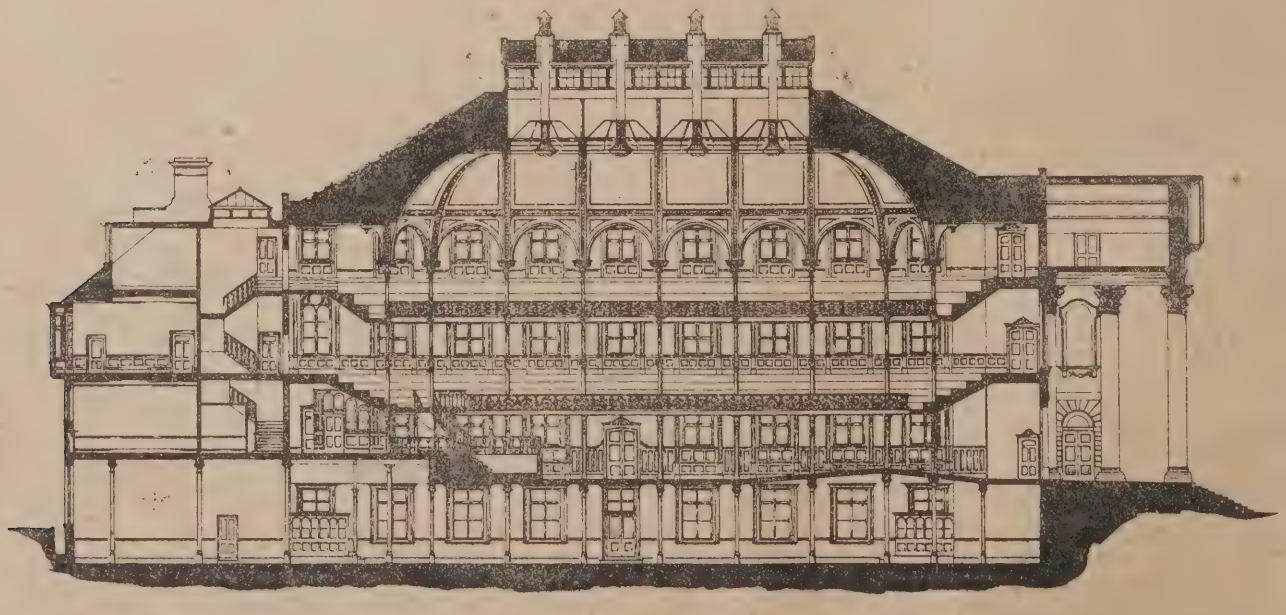
Correspondence.

Bricklaying.

To the Editor of THE BUILDERS' JOURNAL.

LONDON, N.W.

SIR,—In reply to "Sylas Syntax" (see page 114 of issue for September 12th), taking £4 19s. as prime cost per rod, a mean average is given as 550 bricks per day of nine hours. These figures are derived as follows:—Number of bricks per rod, 4,400; bricklayer's wages at 10d. per hour, 7s. 6d.; labourer's wages at 7d. per hour, 5s. 3d.; scaffolding not included. These figures are misleading, and they never came from a builder's or a surveyor's office, nor from a practical general foreman or bricklayer, but from a price book, which is often compiled by men of theory who know little about contracting. Builders are not inclined to make their secrets public, but the following particulars obtained from leading builders' managers, and proved correct, may be of interest. A rod of brickwork in practice contains only 4,000 bricks; one labourer to each bricklayer is a luxury—on buildings being erected as quickly as possible there are only two labourers to three



THE NEW METROPOLITAN TABERNACLE, NEWINGTON, S.E.: LONGITUDINAL SECTION. SEARLE AND HAYES, ARCHITECTS.

bricklayers (this does not refer to North of England). Apply these figures to price quoted and it will be found that 450 bricks per day will then be laid, and considering that my previous letter stated 500 to 600 per day, there remain 150 bricks to allow for several plumbing places and to prove me still "honest." Nobody would deny the facts stated by your correspondent about the number of bricks laid in the base of a chimney, but first-class men would not condescend to do such work. Imagine a solid wall sixteen bricks thick, and compare it with one two bricks thick; why it is like loading cargo into a vessel's hold.

The present price per rod for speculating work in London, including profit, labour, wear and tear and fixing scaffolding, is £4 10s. Allow 15 per cent. for profit, 5s. for scaffoldings, and there remains the sum of £3 11s. 6d. for bricklayers' and labourers' wages. Taking two labourers for three bricklayers and 4,000 bricks per rod, the average number laid per day will be 615. Now bear in mind how field-ranging is done. The walls are never flushed with mortar, except the last course, when left for next scaffold; corners are seldom plumb, and the work will not bear inspection. As the number stated is laid in the fields, a considerable reduction can conscientiously be made for warehouses and substantial structures. The three numbers mentioned in my previous letter are at present a little indefinite: 20 was for a large gauged arch with moulded soffit; 1,200 for footing and heavy breasts in flats; 2,300 for shaft bases and railway viaducts. "Sylas Syntax" should bear in mind that bricklayers are honourable human beings and not automatic machines working by the minute. There is still skill required in bricklaying, and it cannot be acquired through books at a technical school, or by working on a building for one month; proficiency is gained only by years of practice among qualified men.

Yours truly,
AN HONEST BRICKLAYER.

Trafford Park Estate, Manchester.

To the Editor of THE BUILDERS' JOURNAL.

MANCHESTER.

SIR,—I am sure you would not knowingly print anything in your excellent journal that was not perfectly correct; but what you said in last week's issue respecting the Trafford Park Estate cottages and that estate is not at all accurate. The Dwellings Company have erected about 300 cottages for the working classes, but the streets will have trees on each side; the cottages are to be fitted with electric light, and each house has a bath. The main roads and streets are all to be handsomely lighted with electric lamps. In addition to this, spaces are reserved for workmen's institute, for schools and for a church: these are now under discussion. Your description is, therefore, misleading, and I should be obliged if you would kindly endeavour to undo some of the harm you may unwittingly have caused.—Yours faithfully, CHARLES HEATHCOTE.

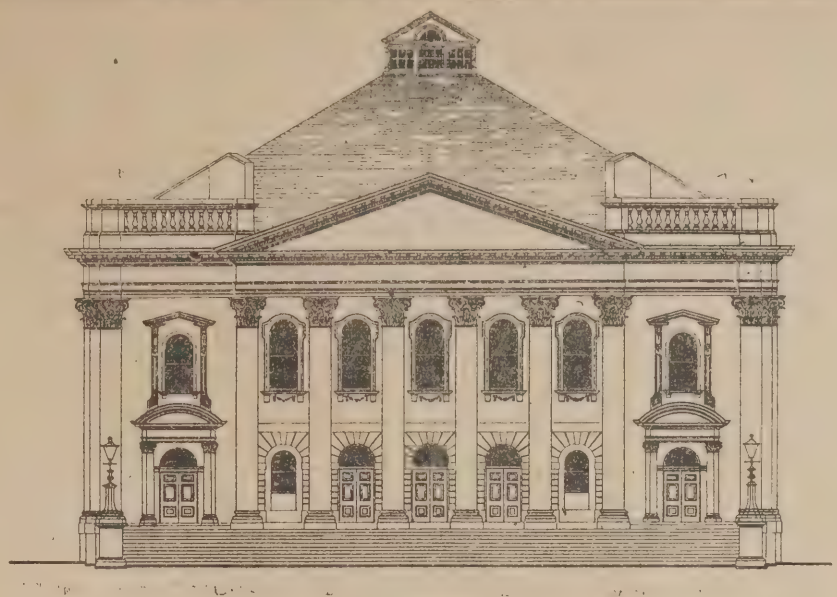
[The information upon which our remarks were based came from a Manchester source, and there was every reason to believe that it was perfectly accurate. It appears, however, from Mr. Heathcote's letter that in some particulars at least our statements are incorrect.—ED.]

Architects' Assistants' Salaries.

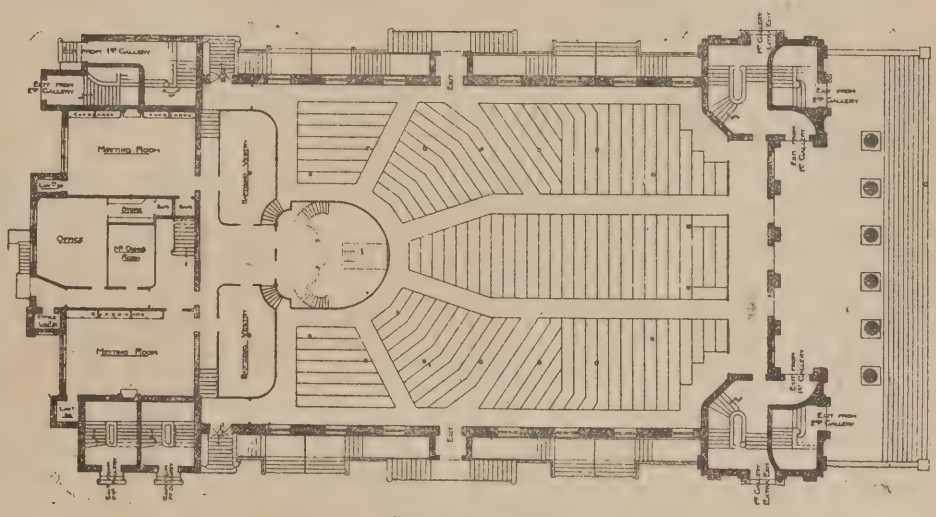
To the Editor of THE BUILDERS' JOURNAL.

LONDON, S.W.

SIR,—My letter in your issue of August 9th has called forth several criticisms which need a reply. The hysteria of "Linear" hardly needs serious attention. The letter by "W. E. C.," however, evidences a most careful and consistent argument and deserves to have my position made clear. Perhaps the greatest principle of architecture is what has been called "functional expression." Without insisting too much upon exactness of wording, this principle applies generally to other art work, the material and function suggesting the form. Design should be constructive—or shall I say architectonic—and this is doubtless the reason architects succeed better than painters in designing, the latter being too prone to pictorial



Front Elevation.



Ground Floor Plan.

THE NEW METROPOLITAN TABERNACLE, NEWINGTON, S.E. SEARLE AND HAYES, ARCHITECTS.

effect. Of course "Linear" fails to understand how helping in draughtsmanship is not helping in building in proportion to one's position. The predominancy of drawing has been one of the great curses of architecture; it leads to pictorial expression. A composition on paper should be only a rough note at most. I quite agree with him that buildings are now often products of the head assistants—and nice things they are.

The Renaissance architects (equally with the Romans), struck by the refined austerity of Classic architecture, strove to recreate it. But the traditions that had produced the Classic style had run their course, and consequently these builders had to copy principles they thought to have been those of the originators. If this had stopped short at the mere elements of architectural effect all would have been well, but the decorative forms, the product of many brains and hands working for generations in one groove, were copied. With natural forms, the bases of all decoration, the same sources could have been gone to, but with the product of human tradition the sources had been stopped. While striving to reach a definite ideal the Renaissance architects did well, but the struggle for perfection ended in formalism, and of that they, like ourselves, soon tired. Then followed the Boroque and Rococo periods. The Renaissance diverted architecture from its orderly course of evolution, and gave it into the hands of the amateur. It made architecture a thing of fashion instead of a natural product of the people. We can admire St. Paul's Cathedral (instanced by "W. E. C.") in much, but we cannot take that intimate interest and admiration in its every part as we can in Mediæval or in original Classic work.

My opinion is that we shall never regain that architectonic character and invention in each and every part of a building until the producers have intimate knowledge by actual work of the material and its function. And in this we cannot start half-way; we must start at the beginning by refusing to copy anything and rejecting the amateur. In time building will again become traditional.

Of course, as "Linear" says, many assistants could not become master builders, but would be dressing stones or working timber, and quite rightly; many are not good for anything else. There are many now acting as architects and as assistants that would under the old Guild system never have risen to the position of head builder, or even of foreman. One must expect, where somebody's pocket and false pride are touched, to stir up bitter opposition. Such a guild system as they had in the past I would suggest for the future of architecture and of art. Such a system would not cause any loss of time in building operations, for all time-saving machinery we now have would be used, and ornate work that would take time would simply be omitted. What ornament we should have would probably be little, but it would be good.

The whole system of modern building seems to me to be out of joint. The trades' unions, brought into being to resist the action of "trusts," should not exist, but there should be one combined trade guild—"union," if you will—in which capitalist and workman are combined, with a regular system of promotion according to ability. The most capable should be the best paid; there should be no "percentage on the cost." I wonder some assistant does not suggest he should be paid a percentage; it

would be just as logical. I would say in conclusion: Mark, learn, and inwardly digest Ruskin's letter to the R.I.B.A. when rejecting the offer of the Royal Gold Medal; and remember: No "styles," but "style"; and: Be original, which is not necessarily the same as being new or novel.—Yours truly, UNTRAMMELLED.

[The correspondence on the above subject is now closed. See p. 142.—ED. B. J.]

Leaky Windows.

To the Editor of THE BUILDERS' JOURNAL.

LONDON, W.C.

SIR,—It might interest both your correspondents and your readers generally to know that the narrow case sills Mr. Campbell Douglas advocates are invariably used in the south-west of Ireland. It is certain that all round the extreme west from the Hebrides to County Cork the ordinary English method of construction does break down when the Atlantic gales are driving the rain in sheets against the sashes. I have in Skye seen under these conditions a jet like a miniature fountain actually playing out into the room from the leeward corner of the sill, as though the window formed the front of a leaky aquarium, and this although practically all the precautions your correspondent Mr. Pendlebury shows upon his section had been taken, and some others in addition. Actual experience, too, soon convinced me of the necessity of following the local custom in Ireland, and I now always specify "single" sills for use there. It is the only real cure, nor in practice do any untoward results appear to follow; at the same time, I confess a preference for the English plan, as making more solid work when conditions permit. The difference of climate between West Hampstead and the West Highlands is far greater than the difference of opinion between your correspondents—greater probably than either of them realises, and the argument inevitably suggests the additional one concerning the silver shield.—Yours truly,

ALFRED C. HOUSTON.

Concrete Roofs.

To the Editor of THE BUILDERS' JOURNAL.

CROYDON.

SIR,—In a short article on "Concrete Roofs" which appeared on page 68 of your issue for August 29th last, it is stated that few roofs are more durable and effective, and that if cracks arise in the cement they can easily be stopped with cement and sand. As a matter of fact, no concrete and cemented roof will keep out rain for any length of time, except it be of very small dimensions, owing to the expansion and contraction which concrete undergoes when exposed to sudden changes of temperature, which is the case with all building materials. When cracks arise from expansion and contraction it is useless to stop them with cement, as they are sure to open again. The only way to make a concrete roof water-tight is to cover it with foreign mineral asphalt, which, being to some extent elastic, is not liable to crack. A roof of this kind is extremely durable, and costs next to nothing to maintain.—Yours truly,

T. POTTER.

Views and Reviews.

Cheap Houses.

THIS little book makes its appearance most opportunely at a time when the housing problem is engaging close attention. Of course, the subject is one that lends itself to fine writing, but this is not a defect, as it will make the book very readable to the ordinary building owner; but we cannot quite follow the authors when they speak, dealing with the working poor and the humanity of trying to raise them, of their "richer brothers" who would build a house 'far from the maddening (*sic*) crowd." Rural housing is perhaps more important than the housing of the working classes in towns, because, in addition to the distress, the agricultural districts cannot keep labourers there. The prices of labour and building materials have gone up of late years 30 per cent., and, in addition, the by-laws of the local authorities with regard to new buildings have become more stringent, thus defeating the principal objects they were framed to effect. Timber houses covered on the outside with plaster or tile hanging and plastered inside are as a rule far more weather-proof than those of 9in. brick walls, and are cooler in summer and warmer in winter than those of brickwork; yet this form of construction is usually barred by the by-laws. With the object of cheapening the building of small houses, Messrs. Clare and Ross suggest the use of their new patent mode of construction, consisting of a skeleton framework of fire-proof timber filled in with coke-breeze or other concrete, known as "Clare's Patent Concrete and Fireproof Timber Construction." This is claimed to reduce the cost by 33 per cent. compared with brick or stone walling.

The authors give some interesting and useful figures of the rents obtainable from small houses. They say that the cost at the present time of a pair of five-roomed cottages, planned with the most rigid economy, but built in stone or brick, which are practically the only materials recognised by the by-laws, is about £300, to which must be added £20 for the cost of land. Supposing the labourer to pay 3s. a week rent—a sum quite out of the question for the majority—the nett rent would be about 12 guineas per annum, a return of only 4 per cent. per annum on the outlay, which is not a fair return considering the risks of non-letting. The usually stated fair proportion of income to be devoted to rent is one-sixth, but the lower a man gets in the social scale the less he ought to pay for rent, and for the class under consideration the proportion ought not to be higher than one-tenth. The following table is worked upon this basis, and gives approximately the amount of rent that ought to be paid by the various working classes in country districts:—

	Average Wages per Week. £ s. d.	Rent per Annum. £ s. d.
1. Ordinary farm labourers.. ..	0 18 0	4 10 0
2. Foremen, team-men, shepherds and mechanical labourers	1 1 0	5 5 0
3. Signalmen, railway porters, mechanics, clerks, brewers' draymen, &c.	1 10 0 to 2 0 0	7 10 0 to 10 0 0
4. Small tradesmen and farmers	3 0 0 to 4 0 0	17 0 0 to 26 0 0

Messrs. Clare and Ross state that, assuming a minimum return of 5 per cent. on the gross outlay, allowing for rates, repairs and land, the outlay for Class 1 would have to be £71; for Class 2, £81 10s.; Class 3, £136 10s.; and for Class 4 £396. At present, no system seems to have been devised to meet the by-laws that makes it possible to build at the prices named for Classes 1 and 2. Of course this means that the by-laws ought to be altered. Clare's system can only deal with these classes if the building owner is prepared to rest con tent with a return of 2½ per cent. on the outlay. This is now being done by several philanthropists, but the authors make a mistake when they say local authorities make up the deficiencies from the rates. The Local Government Board insists upon the land and houses being bought by the rent within a certain number of years, and after that paying the same sum for the relief of the rates. The patent construction suggested complies with the local by-laws, and is stated to be more rigid and damp-proof than brick, and if rendered outside with cement rendering or tile hanging is proof against damp. It is claimed that the system can be carried out by unskilled workmen at a greater speed than in brickwork, and saves much labour. The book goes into full particulars and is illustrated with twenty-five plates of plans and sketches of cottages, bungalows and small country houses, farm buildings, schools and churches, with their cost stated. The buildings are usually planned square for economy.

With regard to the design of these small buildings the authors rightly state that "there is no reason why the smallest cottage or the simplest bungalow or country house, or even semi-detached villas, should not be as artistic in design as the manor-house or the vicarage. . . . True beauty in buildings is not proportionate to their cost, but depends on the degree in which they harmonise with their surroundings, they express their use, and their sound construction is evident. It also depends on the proportion of their various parts to each other and the skill of the designer in combining the various materials so as to produce a harmonious scheme of colour." It is rather surprising after this to find that the authors recommend "sham half-timbering," and introduce it rather freely into their designs. They also deal with the fallacy of supposing pleasing elevations to depend on applied ornament, and point out the waste of money by the speculative builder in that which is vulgar and meaningless. This, however, applies to plates 16 and 25. But on the whole the designs are estimable, the plans being well arranged and the elevations good, with the exception of the sham half-timbering before mentioned. Taking it as a whole, we can highly recommend the book. D.

"Ideal Homes for the People," by George E. Clare, M.S.A., and Walter G. Ross, A.R.I.B.A. Price 1s. 6d. nett. Published by the authors at 1 West Street, Finsbury Circus, E.C.

Builders' Notes.

Officers of the Joiners' Company.—Mr. Alfred Holt has been elected the master, Mr. Thomas Batten the upper warden and Mr. Frank Milton Ponder the renter warden of this guild.

Accident to a Carter.—Thomas Almond, a carter in the employ of Mr. Thomas Smith, a builder, of Croston, was in the act of getting some water from the River Yarrow behind a factory the other week, when the horse of which he was in charge became frightened by the steam from the exhaust-pipe. In endeavouring to pacify the animal Almond was knocked down, and the horse ran over him, injuring his spine and breaking two ribs.

Dearth of Houses at Elland.—Judging by the cases of ejectment which were before the Halifax West Riding Court recently, the Elland district seems to present a favourable opening for the operations of the speculative builder. In one case the defendant, who had admittedly paid his rent regularly, told the Bench that he could not get another house in Elland; and in another case the defendant, a widow, said she had been all over Elland, and there was not a house to let.

The Imports of Cement into Chili last year were valued at £48,494, as against £50,715 in 1898, when the total imports reached 16,637 tons. Germany was by far the largest sender of cement, her share being 9,972 tons, Great Britain only sending 4,428 tons. Chili is one of the largest consumers of cement in South America. Lately the average import has reached 100,000 barrels per year. Work on the sewers at Conception is now being pursued, and it is hoped that the Government will soon undertake the building of those at Santiago, in which case large quantities of cement will be needed. The yearly imports of the port of Talcahuano amount to from 15,000 to 20,000 barrels; those of Valparaiso from 40,000 to 60,000; those of Valdivia and Iquique from 5,000 to 15,000 barrels each. The importations at the ports of Talcahuano and Valdivia tend to increase owing to important railway constructions being executed in the South. Last year at Valdivia 41,199 barrels were unloaded, 27,569 of which came from Hamburg, 11,050 from London and 2,580 from Antwerp. Not one barrel was shipped from the United States. In regard to other markets in South America, Belgium furnishes three-fifths of the cement imported by Rio de Janeiro, Brazil, or 118,000 barrels per year. Even in Canada the Belgian imports exceeded 80,000 barrels, against 95,000 furnished by England. Belgian cement is also favourably known in Chili, and the Belgian consul urges that its importation could be successfully attempted on a much larger scale.

Dewlands, Black Notley, Essex, formerly the residence of Dr. John Ray, the first great English naturalist, was totally destroyed by fire last week. The house was almost entirely built of oak and plaster.

Bricks and Mortar.

APHORISM FOR THE WEEK.

"Remember, child, that nothing is ever done beautifully which is done in rivalship; nor nobly which is done in pride." RUSKIN.

Our Plates. THE vicarage to St. Etheldreda's, Fulham, S.W., designed by Mr. A. H. Skipworth, is built in red brick, with tiled roofs, alternate courses of grey headers being inserted round the windows on ground floor. The wall over hall roof and front stairs is hung with weather slating. The builders were Messrs. Holloway Brothers, of Battersea, and the cost of the house was £1,800. —Mr. Pite's design for the staircase, Highcombe Edge, Hindhead, was exhibited at the Royal Academy last year.—An article dealing with the Shrewsbury sketches of Mr. Reginald M. Copnall will be found on page 153 of this issue.

Rossetti's Tomb by Madox Brown. A CORRESPONDENT to the "Times" says that whilst he was in the churchyard at Birchington recently he was much concerned to find that Rossetti's richly-sculptured monument, "designed," as the inscription tells, "by his life-long friend Ford Madox Brown," is injured irreparably by the action of the weather. Every part of the delicate and beautiful carving is sadly blurred and defaced. Some of it, alas! is almost obliterated. Most unfortunately, the stone on which the work was wrought appears to be of a very soft and perishable character. "If the Madox Brown designs are still in existence, as probably they are, it would seem to be no very difficult matter to substitute for the present monument an exact facsimile of it in its first condition, but wrought in some material much harder and more enduring. Doubtless amongst those who hold Dante Rossetti and his various 'things of beauty' in admiring and affectionate remembrance there are many who would right gladly contribute the necessary funds to carry out the work, and who would feel no little pleasure in thus erecting a most beautiful, appropriate, and lasting monument to the great poet-painter, the memory of whose brilliant genius 'the world would not willingly let die.'"

The Royal College of Art. THE premises of the Royal College of Art, under the Board of Education, at South Kensington, are being modified to meet the requirements of the reorganisation which has been adopted by the Board upon the advice of the Council for Art. This Council consists of Sir William Richmond, R.A., Mr. T. G. Jackson, R.A., Mr. E. Onslow Ford, R.A., and Mr. Walter Crane. The head master of the college is Mr. Agustus Spencer. M. Lantéri is the Professor of Sculpture and Modelling, and the appointments to the professorships of painting, of architecture, and of design are likely to be announced shortly. The total number of students to be admitted to the college is 350, of whom 150 may be fee-paying students. The fee for each fee-paying student will be £12 10s. per term, and there are two terms in each session of twelve months. All students admitted (either free or on payment of fees) must have satisfied the Council of their ability to profit by the special courses of instruction, to provide for which the college has been divided into an upper and a lower school. Students will be placed in one or other according to their proficiency, and will be required to pass through the four divisions of each school—namely, those for ornament and design, drawing and painting, modelling, and architecture. As part of the upper school course technical instruction will be given at evening classes in a few of the following subjects:—Book illustration, etching and lithography, stained glass, stone and marble carving, wood carving, mosaic, plaster and gesso work, metal work, shuttle weaving, tapestry weaving, embroidery, furniture and cabinet work, pottery, &c. The day classes will meet from 9.30 a.m. to 3.30 p.m., and the evening classes from 6 p.m. to 8 p.m. The college will be opened on October 16th next instead of the 3rd prox., as previously announced. Full information is given in the prospectus of the college, copies of which may be obtained from the offices of the Board of Education at South Kensington.

Building By-Laws and Old Houses. THERE is some force in the arguments now being offered in support of a relaxation of certain by-laws in the case of buildings in what is known as "Old Devonport," Plymouth. In Fore Street, for instance, where most of the houses were in existence long before present-day regulations were heard of, the by-laws practically prohibit improvements, as the houses cannot be rebuilt in conformity with the by-laws without a very great sacrifice, and owners prefer to allow the old buildings to remain. The Borough Council has decided to attempt the task of revising the by-laws, apparently with the view to their being modified in their application to these streets; but there is evidently a commendable desire to apply the regulations very strictly in the laying-out of new sites. Sufficient was said at the last Council meeting to show that to give discretionary powers to committees who pass building plans is not desirable. Even county councillors are but human, and one member expressed the fear that the granting of discretionary powers would result in favouritism in the case of those who had friends on the committee.

Army Huts. MESSRS. HUMPHREYS, of Knightsbridge, have recently been entrusted by the Government with the construction of a number of huts for the officers, non-commissioned officers, and men who are to form the army of occupation in South Africa at the close of the war. Huts providing accommodation for 30,000 troops have already been ordered, and the work is being carried out as quickly as possible. The warrant officers' quarters will be 60ft. long and 20ft. wide inside, divided into twelve rooms. The hut is constructed of timber framing, covered outside with corrugated iron, lined with felt, and inside with deal match-boarding. The men's huts, accommodating thirty men and one non-commissioned officer, are 113ft. long and 20ft. wide. The huts are being fitted up complete in every detail, and are thoroughly ventilated. Some of them are now being erected at Chelsea Barracks, where they are inspected by the officials of the War Office. They are then taken down and packed for shipment. When packed the men's huts each weigh about thirty-five tons, and the warrant officers' about twenty tons.

London Residences of Famous Persons. THE Society of Arts are to be much commended for their practice of erecting memorial tablets on the houses in London occupied by famous men and women. Two have been erected in Gerrard Street, Soho —one to Edmund Burke and the other to Dryden; a similar number in Leicester Square, to commemorate the houses of Sir Joshua Reynolds and of Hogarth; and others to Robert Browning (19 Warwick Crescent, Paddington), Lord Byron (16 Holles Street), Mrs. E. Barrett Browning (16 Wimpole Street), George Canning (16 Conduit Street), George Cruikshank (263 Hampstead Road), Madame D'Arblay—better known as Fanny Burney when she lived with her father in Sir Isaac Newton's old house in St. Martin's Street, which is also commemorated —(11 Bolton Street, Piccadilly), Charles Dickens (Furnival's Inn), Michael Faraday (2 Blandford Street, Portman Square), Benjamin Franklin (7 Craven Street, Strand), Thomas Gainsborough (Schomberg House, which forms a part of the existing War Office in Pall Mall), David Garrick (5 Adelphi Terrace), George Frederick Handel (25 Brook Street), Dr. Johnson (17 Gough Square, Fleet Street), Lord Nelson (147 New Bond Street), Mrs. Siddons (27 Upper Baker Street), William Makepeace Thackeray (Kensington Palace Green), Sir Robert Walpole (5 Arlington Street), Napoleon the Third (3A King Street, St. James's), and Peter the Great (15 Buckingham Street, Strand).

Cost of Building Country Cottages. WITH reference to the discussion about rural housing which has been going on in the columns of the "Times" Mr. T. Barrett-Lennard says:—"You cannot in England, under ordinary conditions, build a pair of cottages containing five rooms—viz., living room, back kitchen, parents' bedroom, boys' bedroom, and girls' bedroom—and provide privies, coal-house, and a well for less than £350 the pair, and this is, I believe, a considerably lower price than in most localities it could be done for. The rent in agricultural districts for such cottages would be about £7 the pair, rate free. This represents less than £1 15s. per cent. interest on outlay, without allowing anything for the value of the land upon which they are built or for the value of their gardens, and without deducting anything for the necessary continual repairs and for rates which the landlord has to pay, whether they be occupied or not. Obviously these deductions would more than swallow up the £1 15s. per cent. margin. Therefore desirable cottages cannot be built in the country to pay interest on the money they cost to erect. The only persons who, in fact, do build such houses are the owners of more or less large estates, who have considered it part of their duty to provide them regardless of the question as to whether it pays them to do so or not."

Proposed Municipal Buildings at Dorking. AT the last meeting of the Dorking Urban Council considerable discussion took place on the recommendations of the Office Accommodation Committee with reference to the proposed municipal buildings. These included (1) that the architect (Mr. W. Shearburn) be instructed to amend the plans in compliance with the following modifications:—(a) the cupola to be retained; (b) Bath stone to be substituted for Ancaster at a reduction in price of £150; (c) corridor on ground floor to be shortened at a reduction of £23; (d) one committee room to be dispensed with, the reduction being £190; (e) caretaker's rooms not to be erected, reduction £260; (f) skylight to be retained as on original drawing; (g) door to strong room not to be provided, the cost of which was estimated at £10—total, £633. (2) That the Council be recommended to instruct the architect to lay the amended plans before the General Post Office authorities for approval. (3) That the Council be recommended to pay Messrs. Bargman and Benison £15 15s., the amount decided to be paid to the architect whose plans were not accepted. Mr. Chaldecott moved the adoption of the report. Mr. Hubbard moved as an amendment that the original plan be adhered to, with the exception of the substitution of Bath stone for Ancaster. The Chairman said, even dispensing with a caretaker's room, they were still £1,000 over the estimate. The plans were prepared on the assumption that the outlay would be £5,000, but Mr. Tanner (the adviser to the Council) said it could not be done for less than £6,000, probably £7,000. Having heard these explanations Messrs. Hubbard and White withdrew their amendment, and the report was unanimously adopted.

Artisans' Dwellings in St. Pancras. THE St. Pancras Vestry last week approved an amended plan for the erection in Mornington Road, by the London and North-Western Railway Company, of a block of artisans' dwellings to accommodate persons dislodged by the extension of the Euston terminus. The Local Government Board being of opinion, contrary to the view of the London County Council, that the latter could legally contribute towards the cost of industrial dwellings on sites other than, and in addition to, the insanitary areas cleared the Board has asked the Vestry whether they were in a position to acquire by agreement sites outside the cleared areas for the rehousing of persons displaced by the Brantome Place and Prospect Terrace improvement schemes. The Vestry decided to inform the Board that "the Vestry are already in possession of land upon which dwellings for the working classes could be erected, outside the cleared areas."



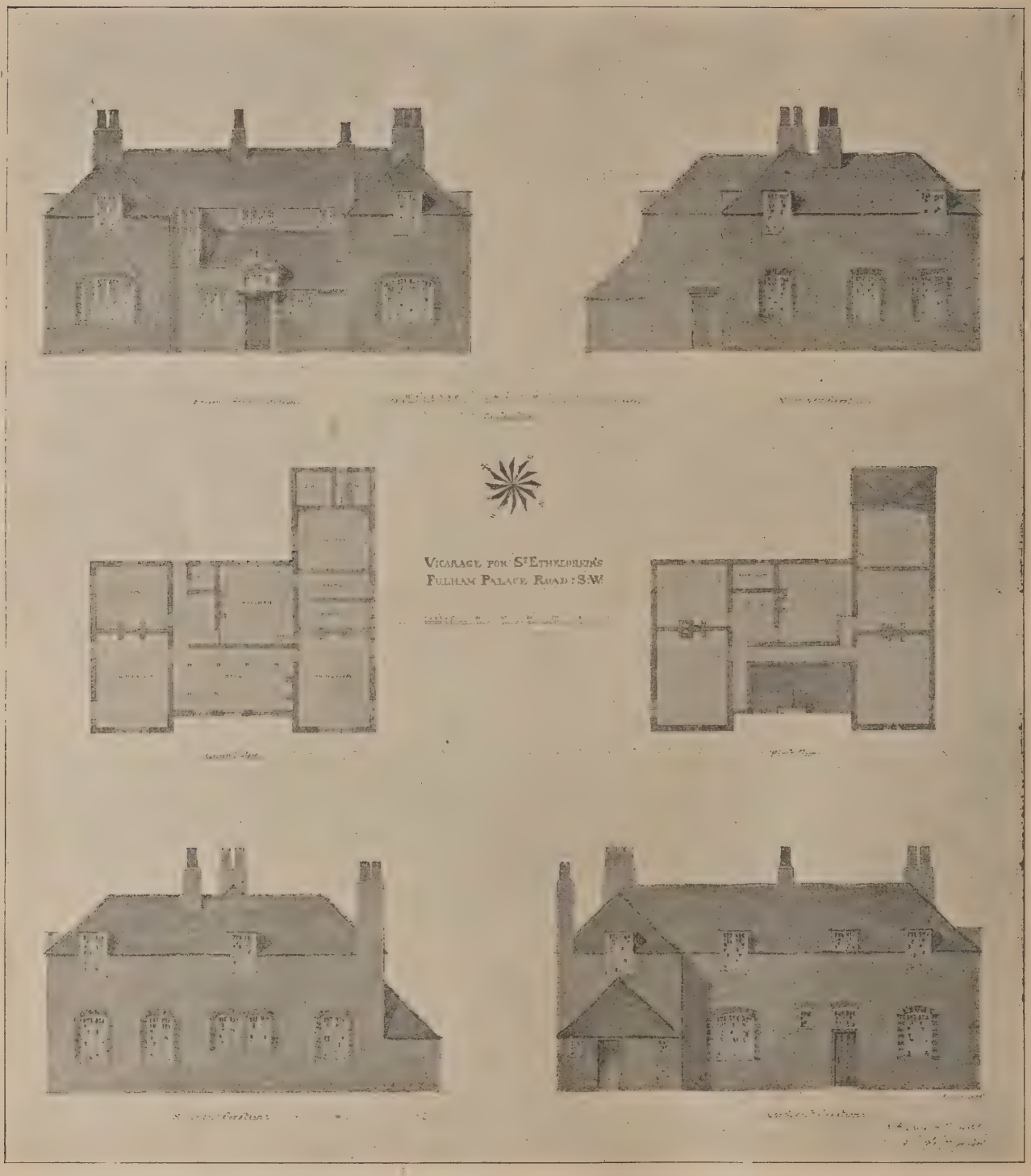
GROPE LANE, SHREWSBURY.



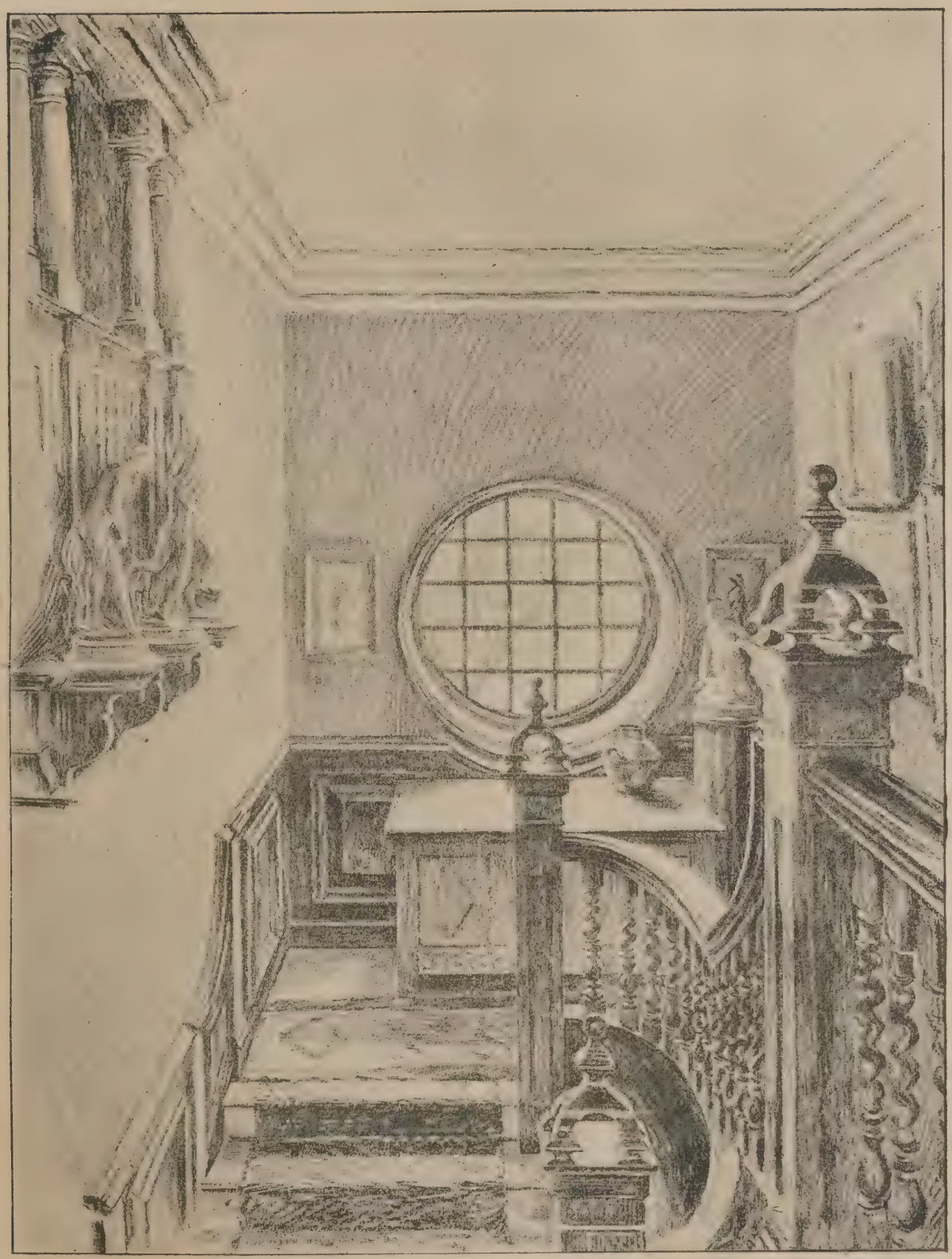
FISH STREET, SHREWSBURY.

DRAWN BY REGINALD M. COPNALL.

Library
of the
University of Toronto



VICARAGE FOR ST. ETHELDREDA'S, FULHAM PALACE ROAD, S.W. A. H. SKIPWORTH, Architect.



HIGHCOMBE EDGE, HINDHEAD: THE STAIRCASE. W. A. PITE, Architect.



OLD HOUSES IN HILL'S LANE, SHREWSBURY. Drawn by Reginald M. Copnall.

Engineering Notes.

Messrs. E. H. Shorland and Brother, of Manchester, have just supplied some more of their patent Manchester stoves to the Dinorwic School for the Llanddeiniolen School Board.

Electric Tramways at Folkestone.—The Folkestone General Purposes Committee has decided to recommend an electric tramway scheme, involving an outlay of £95,000. Councillor Jones proposed that the line should run along the beautiful Undercliff, but this was rejected.

Messrs. Graham and Co., Limited, of Black Bull Street, Leeds, have issued a new catalogue, illustrated by photographs, of the elevating and conveying plants which they have erected during the last twelve months. The firm have specially designed many plants for all classes of work and are ready to supply machinery for handling all kinds of building and engineering materials and goods.

A Remarkable Gas Meter.—At a meeting of the Rotherhithe Vestry last week a letter was read from the South Metropolitan Gas Company stating that it had just been discovered that the Vestry's gas meter at the public baths and wash-houses had been recording only one-tenth of the actual quantity consumed during the last eighteen years. The dial had registered hundreds for thousands and thousands for tens of thousands. The company, therefore, sent in a bill for these arrears, which amounted to £2,927 14s. 9d. The matter was referred to the Baths Committee.

A Course of Lectures for Mining Engineers, colliery engineers, enginewrights, apprentice mechanics and others has been arranged by the Council of the North of England Institute of Mining and Mechanical Engineers, in collaboration with the Council of the Durham College of Science, to be delivered at the Durham College of Science, Newcastle-upon-Tyne. The course will extend over three winter sessions, the fee being 30s. for the series of four courses given during each session. Further information will be supplied on application to Mr. F. H. Pruen, secretary, Durham College of Science, Newcastle-upon-Tyne.

Proposed New Dock at Goole.—The Highways Committee of the Goole Urban District Council have considered plans, presented by the Aire and Calder Navigation, for their new dock at Goole. The plans involve the alteration and removal of many of the Council's gas and water mains, and also provide for the provision of a new gateway from the railway dock. The Aire and Calder Company propose to erect a swing bridge to carry the highway over the gutway, which will be done by raising the level of the street on each side of the proposed bridge. It is intended that the present high-level railway, which crosses Bridge Street to the existing coal tips, be abolished.

New Water-Supply for Douglas, I.M.—The Water Committee of the Douglas Town Council have recently been engaged in considering the matter of the large new reservoir which is to be constructed near Injebreck in the West Baldwin Valley, for the purpose of providing an additional water-supply for Douglas. The Corporation, after some delay and difficulty, have now obtained possession of the necessary land for carrying out the work, and have called for tenders. The original estimate of Mr. Hill, the water engineer who is advising the Corporation, was between £49,000 and £51,000 for the whole of the scheme. Since then the prices of material and the cost of labour have risen. Mr. Hill made an estimate in relation to the construction of the reservoir and the laying of the mains—exclusive, however, of the cost of iron pipes. Tenders were applied for in connection with this estimate, and it transpires that the only tender received is very largely in excess of Mr. Hill's amended estimate. In view of the serious difference (amounting, it is said, to about £20,000) between the engineer's estimate and the price asked by the contractor, Mr. Hill has advised the Town Council to carry out the works themselves under the direction of the Water Committee.

New Bridge for New York.—New York is to have a double-deck bridge over the Hudson River, connecting the States of New York and New Jersey. It will have six tracks for steam railroads on the main level, and four trolley tracks, a roadway, and pedestrian and cycle paths on the upper deck, and will be a combination of the suspension and cantilever principles. The river span will be 2,730ft. from shore to shore. The height above mean high-water will be 160ft., and the extreme width of the structure will be 80ft. The foundations will be 170ft. below high-water, and the piers 62ft. in diameter. Private enterprise has projected the scheme, which is to be commenced forthwith.

Canadian Bridge-builders.—Work has been commenced on what it is stated will be the largest cantilever bridge in the world. It is being constructed by the Phœnix Bridge Company for the Canadian Government, and will span the St. Lawrence River at Quebec. The main span will be 1,800ft. long and the two end spans 600ft. each, the width of the bridge being 70ft. There are to be four lines of railway, a carriageway and two footways, which will be carried across at an elevation of 170ft. above water level. The Pittsburgh and Lake Erie Railroad Company are preparing to build a steel bridge of four spans across the back channel of the Ohio that lies between its lines and Neville Island, about six miles below Pittsburgh.

At the Theatre Royal, Manchester, new warming and ventilating apparatus has just been installed by the Sutcliffe Ventilating and Drying Company, consulting engineers, of Fennel Street, Manchester. A sectional steam boiler, with fire grate 33in. by 24in., is fixed in the basement behind the pit bar, and there are two main steam pipes (one under the floor at the back of the pit, the other taken down the centre of the pit to the orchestra); from these branches are taken to radiators under the pit floor and in all the entrances. There are no radiators, pipes or valves in the theatre proper, with the exception of two small pipes in the orchestra. A 36in. Sutcliffe fan driven by an electric motor forces fresh air over the radiators, the air being previously passed through a filter screen of coke. The fan will ordinarily change the whole of the air in the theatre in eighteen minutes; but at top speed this can be done in twelve minutes.

The Water-Supply of Southampton is not obtained in or near the borough, but from works situated between seven and eight miles away, the one belonging to the Corporation and the other to the South Hants Water Company. At both these works the water is obtained from wells and headings in the chalk, and, after being softened by Clark's process, is pumped into covered service reservoirs, by which pollution beyond the source of supply is avoided. The water from both sources is identical in character and maintains the highest standard of purity, as proved by the weekly analyses made by the borough analyst, and the slightest change in its constitution would be instantly detected. The water from the Corporation works has been reported upon in the most favourable terms by the late Sir Edward Frankland, Professor Dewar, Dr. Percy Frankland, and Professor Wanklyn. Professor Dewar and Dr. Frankland both say that precipitation after softening takes down any microbes which may be in the water, and there is consequently a safeguard in the case of both supplies beyond the proved purity of the water at its source. In 1888 the Corporation abandoned their old Mansbridge Works simply because the water then and there pumped from the River Itchen was *open to suspicion*, and it was feared might still deteriorate in quality. They have since spent large sums of money upon enclosing all reservoirs, duplicating and renewing mains, and generally keeping their water-supply in the most efficient condition. Messrs. J. Mansergh, G. H. Hill, G. F. Deacon, and G. J. Strachan, all engineers of eminence, have had occasion to visit and give evidence as to the character of the supply; nobody in possession of the facts could possibly see any necessity *to boil* Southampton water, as was stated a short time ago in a medical paper.

The Glasgow Electricity Supply.—The Town Council of Glasgow have just inaugurated two large additions to their works for the generation and supply of electricity for public and private lighting. The electricity stations in the city are now four in number. The pressure of supply in consumers' premises will be 250 volts by the use of a three-wire 500-volt continuous current system. This means a very large saving in the cost of mains, and the result when all is completed will be a more uniform light at a reduced cost. Electric lighting supply was commenced by the Corporation in 1893, the customers numbering 108, and the revenue amounting to £7,784. For the year ended May 31st last, the quantity generated was 5¼ million units, while the customers numbered 2,852, and the revenue amounted to £59,762.

The Charing Cross-Hampstead Underground Railway projected by Mr. Yerkes will run under Charing Cross Road to Oxford Street, where, at Tottenham Court Road, there will be a station with a connection with the Central London Railway; then through Tottenham Court Road to Euston Road (Drummond Street), where there will be a station, and stations will also be provided at Euston, giving a connection with the North-Western Railway, at Seymour Street, Camden Road, Chalk Farm, and Belsize Park, whence the line will proceed to its terminus, the exact position of which has not yet been decided on, at Hampstead. The length of the projected line, including the branch to Kentish Town, is about 6½ miles, and the total expenditure on the undertaking is estimated by Mr. Housman at between £3,000,000 and £4,000,000. The engineers are Sir Douglas Fox and Mr. W. R. Galbraith.

The Iron and Steel Institute opened its annual autumn meeting in Paris on September 18th, under the direction of the President, Sir William Roberts-Austen, who, in the course of his inaugural address, said that the metallurgist, by adding small amounts of matter to iron, had literally made it possible to change the aspect of the world. He had enabled such structural triumphs as the Eiffel Tower and the Forth Bridge to be constructed; he had created the Age of Steel, and of this age the palaces they had come to see on the banks of the Seine were the exponents, both as regards their construction and their contents. At the beginning of the century 6lb. of coal per hour were required to produce in a steam-engine one horse-power; now one-fourth of the above amount was sufficient—a result to which Regnault had in no small measure contributed. As regards one of the great processes of the century, the name of Sir Henry Bessemer suggested memories of close association with France. "We claim his process," said the President, "as one of the greatest achievements in the annals of British metallurgy, and we recall with pleasure how much Bessemer owed to the encouragement received from the Emperor Napoleon the Third. For my own part, being a metallurgist, I cannot expect that any importance will be attached to my individual opinion on an æsthetic question, but I would venture to observe that ideas of beauty are instinctive, and that pleasure in the contemplation of any work, whether of nature or art, depends on delicate and untraceable perceptions of fitness, propriety, and relation. This being admitted, I find myself unable to stand under the Eiffel Tower, and follow the course of the curved lines, which suggest the details of an immense but delicate coral, without being carried away by the impression that the structure is not only wonderful but beautiful." The meeting was resumed on September 19th, and on the next day excursions and visits were made.

Large Failure of Builders.—At the London Bankruptcy Court, last week, upon the petition of the debtors themselves, a receiving order against Messrs. W. Edwards and E. Medway, builders and contractors, of Ethelred Street, Kennington, was made. The liabilities are stated to be between £15,000 and £20,000. Debtors having several large School Board contracts on hand a special manager has been appointed to carry on the business up to the first meeting.

SHREWSBURY SKETCHES.

BY REGINALD M. COPNALL.

SHREWSBURY is one of the many places in England where both the artist and the architectural student can find plenty of subjects for brush and pencil. The whole county of Salop swarms with interesting old abbeys, castles and country houses of nearly every period; and for one who prefers the works of nature, pure and simple, for the subject of his sketch, there is plenty to hand in the woods and fields, among the Stretton Hills, or along the banks of the Severn.

Many of the old buildings in and about Shrewsbury are of historic interest, and quaint old gabled houses or fine mediæval buildings are to be seen at nearly every turn. The sketches accompanying these notes show a few of the old "bits" with which the town abounds.

The Church of the Holy Cross, commonly called "The Abbey Church," stands on the site of the old Monastery of St. Peter and St. Paul, but only scattered fragments remain now of the original building, for the street called Abbey Foregate has been cut through the cloisters, and a wooden shed, intended for a station of what proved a railway fiasco, together with a coal yard, now debase the site of the Refectory. For some years the nave, with its aisles, western tower and north porch (see illustration), constituted the parish church of the Holy Cross, but in 1887 a chancel was added and other alterations made from designs by the late Mr. J. Pearson, R.A. The chancel is in Early English style and is a very pleasing addition to the church. The large Perpendicular window in the west front of the massive square tower is filled in with armorial bearings in stained glass. Those who are interested in ancient monuments will find several very fine examples in the nave.

The Reader's Pulpit (illustrated) was originally part of the outer wall of the Refectory. It is octagonal on plan, with six trefoil-headed openings, the lower parts of which are filled in with sculptured panels representing saints, &c. The roof is vaulted. Familiarity evidently breeds contempt, for this splendid old relic is closely fenced in with iron railings, like a tomb,



READER'S PULPIT, SHREWSBURY.

and is surrounded by heaps of coal, bricks and drain pipes. It is surprising what a number of years the structure has been allowed to remain in such a state of neglect, and one wonders why the authorities do not open out the ground to the street, put down turf, and plant shrubs to hide the sordid surroundings, and so make a pleasing feature of what is now an eyesore.

The old Watch Tower, the only remaining part of the town walls, is another interesting building, and, although it leans well out of the perpendicular, it seems capable of weathering many more years to come.

Fish Street (see inset sheet), in the view of which we get the tower of St. Julian's Church and the spire of St. Alkmund's, has several half-timbered buildings, as have also the adjoining streets, Grope Lane and Butcher Row, the latter containing almost perfect examples of fifteenth-century shops. There is an interesting half-timbered building at the corner of the old Square and Princess Street. The windows and shops are modern; it is to be regretted that so many of these buildings have been mutilated to form shops. Hill's Lane is a narrow street leading out of Mardol. The double-gabled building shown has a half-timbered front, and is dated 1440. Adjoining the old houses illustrated is Rowley's mansion, built early in the seventeenth century by a Shrewsbury alderman of that name. Like the Reader's Pulpit, it has been left uncared for, and for some years has been used as a warehouse, after being stripped of all its embellishments. The archway (shown in sketch) adjoining this building leads to an inn-yard, where one gets an idea of what a grand old place it was in former years.



NORTH PORCH OF ABBEY CHURCH, SHREWSBURY. DRAWN BY REGINALD M. COPNALL.

Masters and Men.

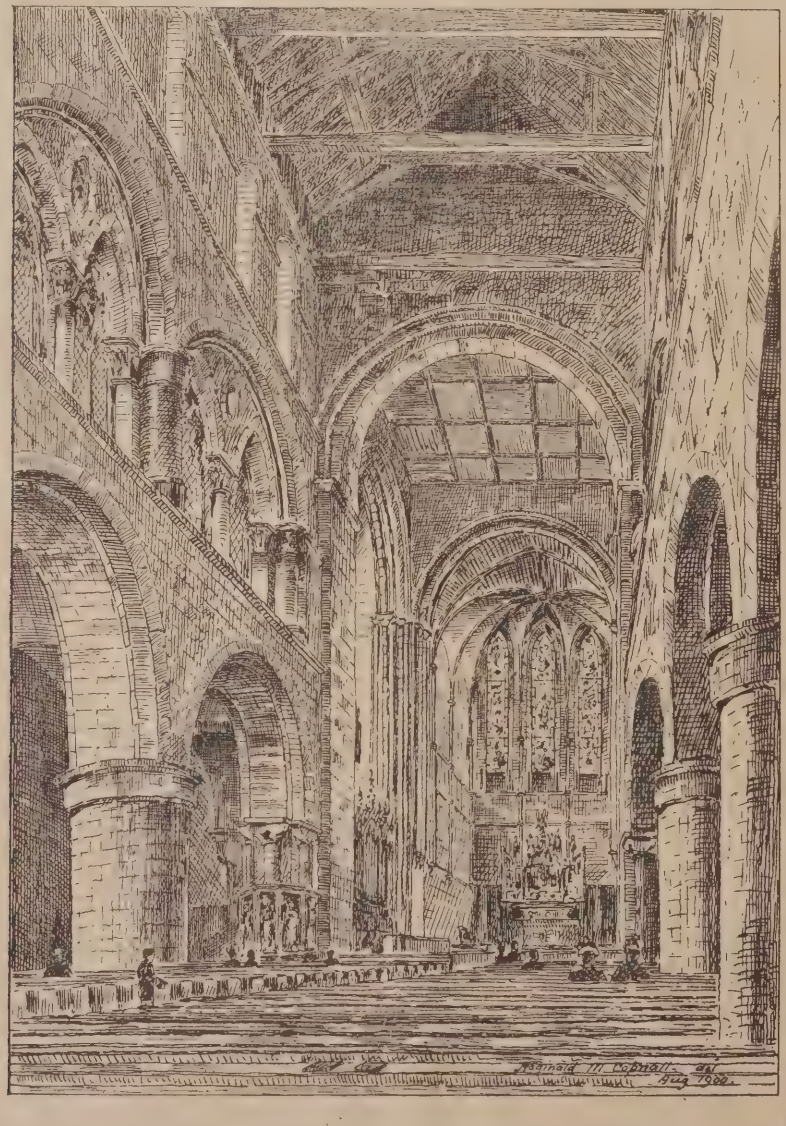
The Labour Market in August.—The Board of Trade report that employment in the engineering and metal trades has remained fairly good. The percentage of unemployed union members in this group of trades at the end of August was 2·8, compared with 2·7 in July and 2·6 per cent. in August, 1899. Employment in the building trades has remained good. The percentage of unemployed union members among carpenters and plumbers at the end of August was 1·8, the same percentage as in July. The percentage for August, 1899, was 1·2. In the furnishing trades employment has continued to fall off. The percentage of unemployed union members at the end of August was 3·0, compared with 2·6 in July. The percentage for August, 1899, was 1·9. Thirty-two fresh disputes occurred in August, involving 9,334 workpeople. Of these two occurred in the building trades, seven in the metal and engineering trades, and twelve in the mining and quarrying industries. Changes in the rates of wages of about 333,680 workpeople were reported averaging a net increase of about 2s. 9d. per head.

Labour in the Colonies.—The Emigrants' Information Office, 31 Broadway, Westminster, S.W., states in its monthly report, compiled from official and other reports, newspapers, &c., mostly dated July and August last, that at the Rossland mines in British Columbia, Canada, there is a good demand for blacksmiths, carpenters, timbermen, engineers and pump-men. In New South Wales work is being provided by the Government for men out of employment by starting necessary road-making and water conservation works, which will give employment to at least 2,000 men. At Melbourne, Victoria, there is a good demand for first-class plumbers and iron workers. There is a considerable number of unemployed persons at Melbourne, and it is proposed to provide work for them by carrying out railway extensions. In South Australia there is no demand for more labour. In Queensland there is a good demand for general labourers and for men in the building trades. In Western Australia, at Coolgardie and Freemantle, the supply of men in the building and other trades is greater than the demand; at Northam there is a demand for all kinds of labour except miners; at Perth the building and other trades have improved, but the demand is about equalled by the supply. There has been no lack of work in New Zealand, though, as this is the winter season, it has become somewhat less brisk in some outdoor trades. At Auckland and Napier the building trades have been busy. At Wellington and Nelson the building and engineering trades have been very busy. At Christchurch the building trades have been particularly busy, bricklayers having been in special demand; men in the engineering trades have also been fully employed. At Dunedin, carpenters, bricklayers and stonemasons have been fully employed, but painters and plasterers have been slack. At Invercargill the building trades—in which competent carpenters have been specially wanted—and the engineering trades have all been very busy. All persons are warned against going to South Africa in search of work. Cape Town and other towns are full of unemployed, and as the railways are now being used for military purposes only no persons can travel to the Transvaal till the war is over.

Professional Practice.

Aberdeen.—New premises have been erected for the Scottish Temperance Life Assurance Company, Limited, at 154 Union Street. The new offices consist of a large and commodious block with a frontage to Union Street of about 35ft., and extending back from Union Street to Diamond Lane for a depth of about 92ft. The buildings consist of practically two blocks, with connecting corridors between, the front block facing Union Street being six storeys in height, and the back block five storeys. Below the level of the street is a basement extending the whole length and breadth of the two blocks. On the street level there are two shops and saloons, also extending the whole size of the building, with entrances from both Union Street and Diamond Lane. Access is obtained to the first floor by a doorway and staircase leading from Union Street. On the first floor there are three suites of offices of from two to five rooms, with a strong room in each suite. On the second floor there are four suites of two to three rooms each, and also strong rooms. The third and fourth floors are occupied by a large dwelling-house, with three public rooms, six bedrooms, laundry and the usual accommodation. The front elevation to Union Street is built entirely of axe-dressed Kemnay granite, with the exception of two polished columns and two polished pilasters on the ground floor, which are of red granite. The main doorway is arched, with moulded consoles, panelled architraves and moulded pediments, and the ground floor windows have a deep granite architrave and moulded cornice. The first and second floors have semi-elliptical oriel windows, finished with cornices and moulded balustrade, and the upper floors have arched windows and columns with Ionic capitals, architrave, frieze, and moulded cornice, the dormer windows being surmounted by moulded pediments and shell ornamental and moulded finials. The back elevation to Diamond Lane is of a plainer description, but provision has been made for lighting the back suites of rooms. Light is obtained in the middle of the building by two large wells built with white-enamelled brickwork. The whole of the constructional work is of steel girders and stanchions. Electric light has been laid on throughout the whole buildings, and the corridors, lavatories, &c., have tiles on floors and walls. The contractors were:—Mason work, Mr. William Farquharson; carpenter work, Messrs. Watson and Robb; slater work, Mr. George Davidson, jun.; plumber work, Mr. David Ogilvie; iron work, Mr. George Bissett; plaster and tile works, Messrs. James Scott and Son; painting, &c., Messrs. George Donald and Sons; inside painting, paperhanging, &c., Messrs. J. and S. Fyfe; and electric lighting, Messrs. Pratt and Keith. The architects are Messrs. Jenkins and Marr, 16 Bridge Street, Aberdeen.

Chorley.—The Winstanley wing of the Chorley Cottage Hospital was opened last week. Mr. H. Dinsley, of High Street, Chorley, is the architect of the new wing. The building has a principal frontage to Lennon Street, and is faced externally with Accrington bricks, relieved with stone dressings. It consists of a receiving room, two wards, board room, operating theatre, four bedrooms, stores, cellaring, kitchen, and accompanying offices. The ward for men is on the ground floor, a corresponding ward being provided for women on the upper floor, which is reached from the central hall by a staircase of polished Derbyshire stone. The new operating theatre is also on the upper floor; the floor of this apartment is in mosaic, the walls being faced with tiles to the ceiling line. The room is fitted with the latest sanitary appliances, and is lighted by means of a roof lantern. Most of the floors are of fireproof construction; the flooring in the main corridor is in mosaic, elsewhere wood blocks or tiles being used. The dados of the wards, receiving room, corridors and hall are formed of coloured tiles, and glazed bricks have been used for the facings of the internal walls of the kitchen, offices and cellar. Two lifts have been provided—a stretcher-lift for patients and a lift by which food may be conveyed to the upper floor. On the north side of the institution, facing West Street, a plot of land has been laid out, boundary walls erected, and a carriage drive made from West Street. The cost of the Winstanley wing is estimated at about £4,000. Messrs. James Brindle and Sons, of Chorley, have been the principal contractors. The following are the sub-contractors:—Mr. Catterall, masons' work; Messrs. Gartside and Sons, plumbing and painting; Messrs. Samuels and Co., heating; and Messrs. Pilkington and Co., tiling.



INTERIOR OF THE ABBEY CHURCH, SHREWSBURY. DRAWN BY REGINALD M. COPNALL.

Colchester.—The Wesleyan Church in Culver Street, Colchester, has been re-opened after improvement and extension. The improvements consist of a new front to the church of semi-Classic design, carried out in white stone, and the addition of a suite of rooms, to be used for church and social work. A new organ has been erected by Messrs. Speechley and Sons, London, together with a new orchestra and a rostrum of pitch pine and walnut. The electric light has been installed, and the whole building will be lighted by electricity. Near the gates of the church a cottage for the caretaker has been built, and is designed to harmonise with the façade of the edifice. The whole scheme has cost about £3,000. The architects are Messrs. Goodey and Cressall, Colchester, and the builders Messrs. Dobson, of Colchester.

Harrogate.—The new Primitive Methodist church and schools, illustrated on page 155, were opened last week. The church stands at the corner of Bower Road and Dragon Avenue, and is built in the Decorated Gothic style of architecture, with a tower and spire at the corner rising to a height of 100ft. The church consists of nave and transepts, with an organ recess at one end, and provides accommodation for about 550, inclusive of an end gallery. The roof is an open one of pitch pine. The windows, which are traceried, are fitted with tinted leaded lights. The pews and other woodwork are of pitch pine. Adjoining the church is a schoolroom, 47ft. by 29ft., with an end gallery; a lecture room, 20ft. by 20ft.; and seven classrooms and vestries. A caretaker's house is also attached to the buildings. The architect is Mr. W. J. Morley, F.R.I.B.A., of Harrogate and Bradford. The contractors for the various works are Mr. H. Abbott, of Harrogate, masons' work; Mr. J. Lindley, of Leeds, plumbers' work; Mr. T. Laycock, Harrogate, for the plasterers' work; Mr. J. Rudd, Harrogate, joiners' work; Mr. J. Shepherd, of Harrogate, slaters' work; and Messrs. Varley and Roebuck, of Thornton, painters' work. The stained glass has been executed by Mr. W. Lazenby, of Bradford, and the heating apparatus was supplied by Messrs. England, Robinson and Co., of Harrogate.

London, W.C.—The building illustrated on page 157, and known as Nos. 25 and 26 High Holborn, has been erected for Messrs. James Buchanan and Co., the celebrated Scotch whisky distillers, on the site of the old "Black Swan" distillery in Holborn, the freehold site of this historical building having been acquired by Messrs. Buchanan a short time ago. The old "Black Swan" was destroyed by the Gordon rioters and rebuilt by the Government. Readers of Dickens will remember his stirring description in "Barnaby Rudge" of the destruction of these very premises. The old premises have been partly adapted for the present firm and partly rebuilt. Spacious stores have been erected in the rear, fitted with all necessary modern machinery for blending, bottling, &c. The upper part of the elevation is carried out

in Monk's Park Bath stone, the lower storey being in brown Portland. The architects are Messrs. Treadwell and Martin, of 2 Waterloo Place, S.W., and the builders Messrs. Patman and Fotheringham. The carving is by Messrs. Daymond and Son.

Pudsey.—Foundation and memorial stones were laid recently of the extension of the Pudsey Mechanics' Institute. Designs were invited some time ago, and those submitted by Mr. Herbert Hodgson, A.R.I.B.A., of Pudsey and Bradford, were selected. The extension, which will cost some £3,500, adjoins the existing hall, having frontages to Waver Green and Manor House Street. It will be four storeys high, and in external design will harmonise with the existing building, the principal external feature being a turretted gable facing Waver Green. A new entrance-hall to the whole building will be provided. On the basement floor there will be two new classrooms, and the existing tea room will be enlarged so as to be available, if desired, for use as two classrooms. On the ground floor, besides the entrance hall, will be two classrooms for instruction in commercial subjects, and on the first storey two similar classrooms, which, in conjunction with a master's room, the present lecture-room and a clay-modelling room on the second storey, will be devoted to art subjects. The second storey will provide three classrooms, which, with a room in the present building, will form the Science Department. Additional accommodation is thus provided for about 600 students.

Redland, Bristol.—A new Presbyterian Church is to be erected on a site adjoining Cranbrook Road, Redland. Messrs. P. Munro and Son, of St. Stephen's Chambers, Bristol, have been appointed architects, and have prepared the plans for the new church, which is designed in the Perpendicular style of architecture, and will be built with red Pennant stone and Bath stone dressings. It will contain nave, transepts, aisles, chancel, minister's vestry, choir vestry, church parlour, lecture hall, classrooms and caretaker's residence. The corridors, passages, lavatories, and part of the chancel, will be laid with encaustic tile pavement, and the chancel steps will be of red Wilderness Forest of Dean stone. The floor of the church and the whole of the subsidiary buildings will be laid with pitch-pine blocks. The roofs will be covered with red Broseley tiles. The pews will be of selected pitch pine and open, and the doors of English oak. The roofs will be open timbered in pitch pine, the nave having hammer beam principals, all the main timbers being moulded. The roof of the chancel will be waggon-shaped, with moulded ribs, and the whole of the roof timbers will be wrought to a fine smooth surface and left in their natural colour. The glazing throughout will be in tinted cathedral glass in lead squares and quarries. The heating arrangements for the church and subsidiary buildings will be by means of the hot-water low-pressure system, with pipes and radiators. The ventilation is to be by fresh air admitted into the ventilating radiators, thus being warmed before being admitted into the church, while the vitiated air will be carried off by means of Messrs. Boyle and Son's air pumps fixed in the roofs. The church will be lighted with the electric light, and will be seated to accommodate between 600 and 700 worshippers.

West Hartlepool.—St. Paul's parish buildings have recently been opened. The principal entrances are in Murray Street, on the east side, while Milton Road is on the south, and Alma Street on the north. They comprise Sunday-school, parish hall, and church institute. The accommodation for Sunday-school purposes is for about 1,200 children, while the large central hall, when seated for a general audience, will hold 600. The buildings are arranged on the ground floor, with large central hall 82ft. by 36ft., lighted by clerestory windows, with platform and retiring rooms at one end, and on either side are small class rooms, with a larger infants' class room, which can be used for the holding of sewing and smaller meetings. Under the platform is a service room, fitted up with large tea boilers and storage closets. At the Alma Street end, on the first floor, approached by a separate entrance in Murray Street, is the church institute, containing large billiard room with two tables, two games rooms, secretary's room, vestry, and organ chamber, on the ground floor, and a gallery on three sides of the church. The interior woodwork of pews, gallery and the waggon-headed roof is in varnished pitch pine. The total cost of the building is about £5,600. The architect is Mr. W. J. Morley, F.R.I.B.A., of Bradford, and the whole of the building works have been carried out by Mr. W. Gibson, of Exeter. The heating arrangements are by Messrs. John Weech & Sons, of Bristol, and the stained glass by Mr. W. Lazenby, of Bradford.

Worcester.—The Barnsley Hall Asylum Visiting Committee of the Worcestershire County Council have adopted a report made by Mr. G. T. Hine on the construction of the proposed new lunatic asylum, together with the two



PRIMITIVE METHODIST CHURCH AND SCHOOLS, DRAGON PARADE, HARROGATE. W. J. MORLEY, F.R.I.B.A., ARCHITECT.

lavatory, &c. The whole of the buildings are simply treated, with walls of red bricks and stone dressings. The interior of the hall is finished in brick of a deep red colour, with salt-glazed brick dados, and has open timbered roofs covered with Welsh slates. Mr. C. T. Watson, of the Central Estate, Hartlepool, is the contractor, Mr. R. Murray has acted as honorary clerk of works, and Mr. J. H. Morton, F.R.I.B.A., of South Shields, is the architect.

Weston-super-Mare. — A new Wesleyan church was opened on September 13th. Accommodation is provided on ground and gallery floors for about 900 persons. The style is Decorated Gothic, with tracery windows of Bath stone (filled with leaded lights). The front of the church faces Station Road and at the north-west corner is placed a tower with spire rising to a height of 120ft. The building consists of nave, transepts, chancel, minister's

designs referred to in it, and the plans have now been submitted to the Lunacy Commissioners for their formal approval. Mr. Hine had been instructed to proceed with the preparation of the drawings for the whole scheme of the asylum buildings. Mr. Hine's report says he has prepared a design for buildings accommodating 570 patients proposed to be erected in the first instance; and for the remaining blocks accommodating 280 patients. The present plan comprises all administrative buildings and offices necessary for an asylum for 850 patients, excepting only a chapel and a residence for the medical superintendent. The laundry buildings and workshops are of sufficient capacity for an asylum for 1,200 patients, and all that will be required when the committee extends the asylum will be to add to the machinery and plant in these buildings without making any structural additions or alterations. He

gathers from the Lunacy Commissioners' memorandum that they will allow the committee to postpone the erection of a chapel until the main asylum buildings are ready for occupation, and possibly they will allow them to postpone the erection of an isolation hospital for infectious diseases, but whether they will agree to the proposal of temporarily housing the medical superintendent in the assistant medical officer's quarters is more doubtful. He suggests, however, that the committee should try them, and he does not propose to submit designs of those three buildings in the first instance. With regard to the nurses' and attendants' quarters, every nurse and attendant must have a separate room, but whether those rooms are in the wards or in a separate building is an open question. In most modern asylums a certain proportion of the rooms are in the wards, the remainder being provided for in a separate block, but in some a detached nurses' residence is erected. In his design he has suggested a compromise in the shape of a block near the administrative centre, with day and mess rooms on the ground floor and sleeping rooms on the first and second floors, and as that will be a little less costly than a separate detached residence and has the advantage of easy accessibility, with convenience of service, and a large open court, which can be laid out and planted as a garden, to look upon, the Commissioners will possibly allow it to pass. As to cost, at this early stage, and with such small scale plans to work upon, Mr. Hine can only give an approximate estimate. This approximate estimate is: Main asylum £165,750, engineering works (boilers and heating) £11,000, electric-lighting installation £8,000, well and pumping plant £2,500, laundry machinery £3,000, kitchen and baking machinery £1,200, fencing to airing courts £800, roads on estate £2,500, architect and clerk of works £10,650; total £205,400. These figures show an average price on 570 beds of £360 per bed, the high rate being due to the fact that the asylum is planned with the administrative department sufficient for future extensions: Add for future wards £32,437, additional engineering works £6,500, architect and clerk of works £2,163, and the total is £246,500, showing an average price of about £290 a bed on 850 beds when the asylum is completed, bearing a favourable comparison with the cost of several of the latest buildings for which tenders have been obtained.

New Patents.

These patents are open to opposition until October 29th.

1899.—Glazing Bars.—17,284. A. S. DEACON, 8 St. Peter's Road, St. Leonards-on-Sea. The bar is of rolled steel or iron and in cross section is cross-shaped, the side arms being short and projecting upwards to form a trough at each side; and there is a specially drawn lead cap with side arms and trough linings. It is claimed that the roof is perfectly watertight.

Mosaic.—17,382. W. KIERSCH, 3 Blackhorse Yard, Gray's Inn Road, London, W.C. This invention relates to a method of glazing pieces of glass with putty on perforated zinc, iron, copper, or any perforated material like woven wire canvas. The mosaic is applicable to the inside and outside of buildings, pavements, and in a number of other places.

Purifying Water Gas.—19,270. A. J. BOULT, 111 Hatton Garden, London, E.C. (communicated by J. E. Goldschmid, Frankfort, Germany).—A permanganate salt in the form of a dry cartridge is placed in the supply pipe as near to the consumer as possible, so that the gas passing over it becomes purified.

Stone Sawing-Frames.—21,211. T. PAWSON, Ashburnham, Lidgett Lane, Moor Allerton, Leeds. The object is to obtain increased speed with less driving power, at the same time getting a more even stroke and avoiding jerking. This is accomplished by extending the rods by which the frame is suspended and attaching to their upper ends, about the pivots, suitable counterbalance weights.

Fireproof Floors.—21,353. P. HOBBS, 6 Geneva Road, Kingston-on-Thames. The floor has metal joists and skewbacks with flanges or rebates to support fireproof slabs. An uninterrupted airspace is thus obtained between the ceiling and floor above without the need for iron bars or hangers. No temporary centering is required, thus reducing the cost and hastening the work of construction.

Pencil Compasses.—21,920. A. H. WOODWARD, Legge Lane, Birmingham. At the end of one leg the compass carries a levering attachment like a tie-clip, by which the pencil is held in place.

1900.—Incandescent Gas Mantle Supports.—7,185. O. FEHSE, 97 Hauptstrasse, Weissenberg, Alsace, Germany. The chimney has a metal cap with a steel wire running across from one side to the other. Another wire depends from this and supports the mantle over the burner.

Prisms for Lighting.—8,871. M. F. EWEN, 144 High Holborn, London, W.C. Prismatically-ridged glass sheets are usually formed by rolling or pressing while plastic. In order to have perfectly sharp edges, according to this invention the sheet of glass is bedded on suitable cement in a frame and the ridges are ground out, being afterwards polished.

Bricks for Arches.—11,798. E. BÖTTGER, Berg-Gladbach, Rhineland, Prussia. Instead of being wedge-shaped the bricks are formed of crescent shape. It is claimed that the arch is more easily constructed with these bricks.

The following specifications were published on Saturday last, and are open to opposition until November 5th. A summary of the more important of them will be given next week. The names in italics within parentheses are those of communicators of inventions.

1899.—11,548, EDWARDS, pumps. 17,592, SPRINGALL AND JONES, window fastener. 18,010, BROWN, manufacture of built-up veneer. 18,958, HENNIG, process for freeing chalk, clay or similar material from flint, stones or grit. 19,561, AYKROYD AND AYKROYD, acetylene generators and holders. 20,522, TEE, gas lamps. 20,655, ALBION CLAY COMPANY, LIMITED, AND LAWTON, apparatus for use in forming joint ends on electrical conduits, drain pipes, &c. 20,901, OLDHAM, windows. 20,985, JOHNSTON, construction of tramway rails. 21,086, NOËL, incandescent gas burner. 21,296, ROBERTS, ventilating bricks or blocks. 21,366, BIRCH, ventilation. 21,877, VOSMAER, electric arc lighting. 22,732, LEIGH (*Sprague, Bowles and Hill*), water-tight doors, fire shutters, &c. 25,075, BÜHNE, manufacture of metal shavings for cleaning and polishing purposes. 25,259, HOLROYD AND BOND, building bricks.

1900.—7,030, BROWN, gas generating apparatus. 10,114, LONG, guards for circular saws. 10,180, SELLARS, building blocks and structures. 10,586, MILNER, camera, more particularly intended for use in connection with architectural photography, for measuring angles. 11,330, ATKINS, nail-making machines. 13,136. SCHLICKEYSEN, brick-pressing dies. 13,683, ARMSTRONG, pumping machinery. 13,739, DAVIS, stop for doors, gates, &c.

Change of Address.—Mr. F. Baldwin, architect and surveyor, has changed his address from 8 Lion Street, Brecon, to 13 Frogmore Street, Abergavenny.

The Central School of Arts and Crafts.—The London County Council's Central School of Arts and Crafts (opposite the Regent Street Polytechnic) reopened for the fifth session on Monday last. The classes, which are all held in the evening, at nominal fees, are intended for the benefit of workers in the artistic crafts, and comprise architecture, silversmiths' work chasing and engraving, enamelling, stained glass, bookbinding, illumination, embroidery, &c. New classes are being formed in cabinet work and inlay, also repairing of books and MSS. The school has gained the distinction of a Grand Prix at the Paris Exhibition. Prospectus and all information can be obtained of the curator, 316 Regent Street, W., or of the Secretary, Technical Education Board, 116 St. Martin's Lane, W.C.

Surveying and Sanitary Notes.

Douglas, I.M., New Drainage is shortly to be commenced. The Broadway section of the scheme and the new high-level sewer along the Promenade will be the first begun. The whole scheme is under the supervision of Messrs. Stevenson and Birstal, engineers, of London.

Condemnation of Insanitary Dwellings in Aberdeen.—The Public Health Committee of Aberdeen Town Council have recommended that the dwelling-houses Nos. 3, 4, 5, 6 and 8 Rennie's Wynd should not, after October 31st, be inhabited.

New Gardens for Bournemouth.—The town council of Bournemouth have approved a plan for laying out new public gardens in the Alum Chine. It has also been decided to apply for powers to borrow nearly £200,000 to carry out a tramway scheme throughout the borough.

For Turning Sewage into the Medlock the Droylsden Urban District Council have been fined £25. When an inspector visited the works on July 14 there were six tanks and nine filters; the sewage was going through one tank and into the river raw, the other tanks and filters being unused.

Hyde Park is the site of the manor which belonged to the Church of Westminster till it became the property of the Crown in the reign of Henry VIII. by exchange for other lands. In 1652 this park contained 620 acres. During the usurpation it was sold in different lots and produced £17,068 6s. 8d., including the timber and the deer.

"The Paris Sewers" forms the subject of an interesting article by Mr. Adams, of York, in this month's Paris Exhibition number of the *Engineering Times*. The author's photographs are used to illustrate the article; of these the great ball for sewer flushing and the views at Gennevilliers and Bondy are particularly striking—the statistic curves show the effect upon the death-rate of improved sanitary conditions.

Adams' Patents at the Paris Exhibition.—The French licensees of these sanitary patents have gained a Grand Prize for the following specialities:—Adams' Patent Automatic Sewage Lift, Sewage Flushing Syphons and Bacteria Bed Apparatus, supplied in this country by Adams' Patent Sewage Lift Company, hydraulic engineers, of York; and Adams' Patent Automatic Flushing Tanks and Cisterns, Automatic School Latrines, Titanic Sanitary Ware, and Urinal Ranges and Controlled Closets, here supplied by Adams and Company, sanitary engineers, of Leeds.

Building Speculations and Footpaths.—A proposal to close or divert certain footpaths at King's Norton was publicly enquired into last week by the Public Works Committee of the King's Norton District Council. The promoters of the scheme are the West Suburban Estates Company, who in order to develop their Church Hill Building Estate wish to divert slightly the footpath leading from Church Road and Wharf Road towards Baldwin's paper works and the King's Norton metal works. It was stated that it was proposed to construct four roads, which would partly take the place of the present footpaths, while other sections of the paths would be slightly diverted. The alteration would add not more than eighty yards to the distance to be traversed by those who now used the footpaths. Strong opposition was offered on behalf of working-men using the footpaths. It was also urged that as the diversion would increase the value of the land—one ratepayer suggested by £2,000 or £3,000—the promoters should make some concession. The promoters guaranteed that the strip of land to be cut off by one of the proposed roads near the river should not be built upon without the sanction of the District Council, and towards the close of the enquiry offered to give up the rear portion of this strip for some public purpose—a swimming bath or a recreation ground had been suggested.

Insanitary State of the Darenth Valley District.—The Local Government Board has just issued the report of Dr. Sweeting, its inspector, who found that in the Darenth Valley and other districts around Dartford many of the dwellings are of wood, with leaking roofs quite innocent of eave-spouting and rainwater pipes. In some cases the floors are of brick earth and mud. Others, worse still, are built right against damp hillsides. The River Darenth receives a plentiful supply of sewage, but is used for drinking purposes and the cultivation of watercress, while many even of the wells along the valley are found to draw their supply from the river. Opposite one place where drinking water is taken from the river he noticed dead animals and sewage floating, and on the Thames side, at such places as Greenhithe, the wells really tap the waters of the estuary, proved by the fact that their level fluctuates correspondingly with the tides, and that the water is unpotable, as he states, is very probable after the influences of Barking Creek higher up the river. Ashes and refuse are turned into ditches, and the other sanitary arrangements are in keeping, the simple method often being followed of burying in the garden, or of the nearest ditch being called into requisition. Dr. Sweeting has recommended steps for reform to be taken without delay, including the adoption of the Housing of the Working Classes Act.

A Road-paving Experiment in the City is now being made. Hitherto, in the case of asphalt, the paving has been laid in such a way as to necessitate an upheaval of a considerable section in the event of its becoming necessary to repair pipes, &c., below the surface. A new system is now being given a trial. The paving consists of flags that are 9in. square, and are composed of an inch and a half of hardened asphalt and an inch of cement. The flags are laid on mortar, the asphalt side uppermost, with a bed of cement. The principal advantage claimed for them is that they may be taken up and relaid with the utmost ease and the minimum of expense. If a pipe needs mending only about a dozen blocks will have to be removed. At first the flags are dark grey in colour, but it is stated that after a week's traffic they will become light grey.

Street Paving Experiments in Basle.—The United States Consul in Basle reports that during the last few years a series of experiments in various materials for street paving have been carried out in that town. In 1888 the first wood pavement was laid in one of the chief thoroughfares, the material used being the *Pinus abies*, or fir, which covers the Jura and the Black Forest. In a few years the pavement was worthless and had to be restored, the same material being used, but being subjected to improved treatment, special care being taken to secure uniformity in the blocks. Again the pavement required renewal in a few years; the lack of sunlight in the narrow streets where the blocks are laid promotes decay in the wood, while the concentration of the traffic on the parts not occupied by the tram lines and the sharp shoes of the horses hacked the blocks to pieces. Hence the use of fir blocks has been abandoned; American pitch pine also has been rejected, on the ground that it has so much waste (sap wood) that its inspection is difficult. Larch from Valais (*Pinus larix*), resembling American larch, was laid experimentally in 1894, and is now in such a condition that an existence of nine or ten years is anticipated for it, and it is reported that this material proved fairly satisfactory in Paris. Oak and pine are rejected as unsuitable and too costly. On the whole, it has been decided to follow the example of Dresden and Leipzig and use Australian Karri wood. A square metre of this (10·76 sq. ft.) would cost much more than American pitch pine or larch from Valais or the Grisons, and about twice as much as the fir from the Jura or the Bernese Oberland at present used, but it has been found that it will last 18 years, as against ten years for the pitch pine, nine for the larch, and five to seven years for the local fir. This wood will, therefore, be used, not only for all extensions of the wood pavements, but for the repair of those existing at present. The streets now paved with cobble stones from the Rhine, as well as the macadamized streets, will in future be paved with large hewn quarry stones. A quartz sandstone from Alsace was tried a few years ago, with excellent results, especially when the stones were laid closely and carefully together, when, it is said, the street is almost as noiseless as if paved with wood. It costs about 10s. per cubic metre (35·316 cubic feet), and lasts 30 years. Belgian porphyry will also be experimentally used; it is said to be very durable, and to need hardly any expenditure for repairs.



PREMISES FOR MESSRS. JAMES BUCHANAN AND COMPANY, HIGH HOLBORN, W.C. MESSRS. TREADWELL AND MARTIN, ARCHITECTS.

Enquiries Answered.

The services of a large staff of experts, including all those engaged on "Specification," are at the disposal of readers who require information on architectural, constructional, or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Filtering Rainwater.

HEREFORD. — H. writes:—"Which is the best way to filter rainwater collected from the roof of a house (in the country), taken into a tank underground, and pumped up into an iron tank in the roof? Could the water be filtered to render it fit for cooking purposes—not for drinking (there is a separate supply for this)—either by a filter attached to pipe or in the tank?"

Before entering the underground storage tank, the rainwater should pass through a small roughing filter, having a layer of screened gravel and sand about 2ft. thick, so as to remove any dirt or solids in suspension. The filtering material should rest on a perforated iron plate fixed a few inches above the floor of the filter chamber. The further purification of the water may be secured by means of a Pasteur-Chamberland service filter (obtainable from J. Defries and Sons, Limited, 147 Houndsditch, London, E.C.) attached to the supply pipe from the roof tank. Both filters should be so arranged that they are readily accessible, and great care taken that the tanks and their accessories are periodically cleansed. It may be interesting to mention the precautions which the writer took during a six years' residence abroad in a locality where rainwater from the house roof constituted the sole water-supply for drinking and cooking purposes. Every year—towards the end of September—the roof was thoroughly overhauled, eaves gutters cleared,

and the roughing filter emptied, cleaned and refilled with washed gravel and sand. The underground rainwater tank was thoroughly cleaned, and the sides, roof and floor limewhited. The limewhiting assisted in the prevention of any fouling or accumulation of fungoid growth on the sides of the tank. The water when pumped from the tank was afterwards filtered, while that portion intended for drinking was also boiled as an extra precaution. In addition to the annual cleansing of the tanks, &c., the filters were cleansed at frequent intervals, so as to ensure the purity of the domestic water-supply. T. E. C.

Calculating Size of Posts to Support Verandah.

BECKENHAM.—ENQUIRER writes: "Please tell me how to calculate the size of three oak posts required for a 40-ft. span to carry a verandah 10ft. high and 4ft. wide, roofed with zinc."

One method of calculating the size of the posts is as follows:—Using the formula $S = \frac{a \times d^4}{L^2}$, where S = safe weight in cwt., a = constant (say 15, which is very safe), d = width of size of a square strut in inches, L = height in feet, we note that each pillar carries an area of 2ft. (half the width) by 10ft. (we presume that the ends are carried by walls and that the distance between posts is 10ft.) = 20ft. super. Allowing a weight of, say, 1cwt. dead load per ft. super (querist does not say whether his roof is flat, but we presume that it is, and so allow for the possibility of persons walking on it), we get the value of S = 20 cwt.

Then $20 = \frac{15 \times d^4}{10 \times 10}$

$\therefore \quad \frac{3d^4}{20} = 20$

$\therefore \quad d^4 = 134$

$\therefore \quad d =$ something less than 4 (say 4in. square).

If the roof is a lean-to one, take about half the weight for S. A. G. B.

Examinations for Building Surveyors.

BATH.—ENQUIRER writes: "What are the duties of a building surveyor? Has one to pass an examination, and if so, where is it held?"

The examination for building surveyors under local authorities is held in London at the Royal Institute of British Architects, 9 Conduit Street, W., in the months of April and October. Full particulars will be found on the form to be obtained on application to the Secretary at the address given above; the particulars of all the examinations are to be found in the Kalendar of the R.I.B.A., to be published shortly, price 2s. 6d. A. G. B.

Books on Elementary Building Construction.

BATH.—ENQUIRER writes: "Kindly recommend a good book on elementary building construction."

There are a number of good text-books on elementary building construction; but perhaps the work which is most generally recognised as the standard work is "Rivington: Part I., Elementary; Part II., Advanced" (8s. each). Another book which contains a great deal of useful information in a smaller compass is C. F. Mitchell's "Building Construction," in two volumes (Elementary 2s. 6d., Advanced 4s. 6d.). Any of these books can be obtained from Mr. B. T. Batsford, 94 High Holborn.

A. G. B.

Taking Colours out of Old Maps.

LLANILOES.—W. M. S. writes: "I have a quantity of old coloured maps, and I want to take out the colours on them, which are red, yellow, green, and blue. So far I have only found out what will take out the red colour: how can I take out the others?"

We know of nothing that will take out or remove the colours mentioned from the maps if they are printed in colours or dyes. Chloride of lime water will remove certain wash colours, but it discolours the paper, &c. It will not remove a blue tint. The best thing we can recommend for this is to wash out as much as possible with clean water.

GEORGE PHILIP & SON.

R.I.B.A. Special Final Examination.

REDDITCH.—REX writes: "I understand that architects in practice, when twenty-five years of age, may sit for the Special Final Examination R.I.B.A. *only* when they can give sufficient reason for not having taken the progressive examinations. Is this correct?"

"Rex" should apply to the Secretary R.I.B.A., 9 Conduit Street, for particulars of the Special Final. The Kalendar (to be published shortly, price 2s. 6d.) will contain all the information required and the series of papers set at the Summer Examination. The examination is open to architects in practice who are more than twenty-five years of age, and to chief assistants more than thirty years of age, without the necessity for passing any other examinations. The usual "Testimonies of Study" required for the Final Examination are not required, but practical working drawings of a design by the candidate, a freehand shaded drawing and a perspective are needed.

A. G. B.

Openings for Architects' Assistants in Canada.

ASHTON-UNDER-LYNE. — BALBUS writes: "Could you give me any idea of the opportunities one would have in Canada as an architect's assistant? I have been thinking for some time of going to Montreal, but have been dissuaded in the meantime from doing so."

We have communicated with the office of the High Commissioner for Canada, but they would not advise our correspondent to go to Canada on the chance of procuring employment there as an architect's assistant. The demand for persons with his experience is fully met by the supply on the spot. They add: "Of course, if he has means and is independent of employment for a time, he might, as he became known, procure such a position, but we could hardly take the responsibility of recommending him to go out on chance."

Science and Art Examinations.

GLASGOW.—W. C. D. writes: "Having been in for Advanced Building Construction before, when I failed to obtain a first-class certificate, I am desirous of trying again by teaching myself. Could you kindly tell me through the medium of your paper how I could obtain a ticket for the Science and Art examination?"

For full particulars apply to the Science and Art Department, South Kensington, S.W.

Rendering Balcony Water-tight with Asphalt.

PENMAENMAWR.—J. H. J. writes: "I have just finished building a house, with a conservatory at the front, and instead of a sloping glass roof I have made it flat, and covered it with flooring boards so as to form a balcony. What kind of asphalt will make it water-tight, allowing 1½in. to 2in. thickness on the boards? The position is such that the sun strikes full on the porch."

I should recommend the flooring boards to be covered with 2in. of cement-concrete, on the top of which Val-de-Travers mastic asphalt should be laid in two separate coats, with a total thickness of ¾in. The asphalt, where it abuts against a wall, should be well tucked into a groove.

F. BAGSHAW, C.E.

Fixing Pencil and Charcoal Drawings.

SUNDERLAND.—T.W.F.K. writes: "Is there any cheap preparation to prevent pencil sketches from smudging and losing their sharpness of outline? Pencil is a so much more convenient medium than ink to work with out of doors that such information would be of great value to me."

There are several preparations for fixing charcoal drawings sold by the artists' colourmen which are equally applicable to fixing pencil sketches, and "T.W.F.K." can ascertain which are thought most satisfactory in Sunderland. The basis of the majority of them is spirits of wine and resin; they are sprayed on to the face or poured on to the back of the drawing. If the drawings are not likely to be exposed to very rough usage, a solution of gelatine, made with warm water, into which the drawings are to be dipped face downwards and set to dry the other way up, is generally effectual and is very inexpensive. A. W.

Treating Sewage from Dwelling-House.

YORK.—ASSISTANT writes: "In the rear of a house flows a natural stream, into which the overflow sewage from the dwelling has to be taken. The question is, how to do this without polluting the stream. You will get an idea of the size of the house from the sketch (not reproduced). The drains are taken to an inspection chamber within the stable yard. The level of the drains at this point—i.e. at the chamber—is 10ft. above the mean level of the stream. The water-supply for the house is obtained from a well. How would you deal with the sewage, commencing from the inspection chamber; and what would be the approximate cost of your scheme?"

An efficient system of sewage purification by means of bacterial filter beds should be adopted. The contact beds or filters might be conveniently constructed in the adjacent field, and any slight attention required could be undertaken by the gardener or groom. The average daily amount of sewage to be treated, and other local conditions governing the size and cost of the disposal scheme, are not given. In this instance, the most satisfactory results would probably be obtained from the "Scott-Moncrieff" (W. D. Scott-Moncrieff, 14 Victoria Street, Westminster, London, S.W.) or the "Septic tank" (Septic Tank Syndicate, 7 and 8 Bedford Circus, Exeter) systems of sewage purification. Further information may be obtained from the patentees of these systems, together with an estimate of cost, if the detailed particulars necessary to determine the size of the installation are given.

T. E. C.

Companion Volume to Parker's "Glossary."

H. M. K. writes: "Being interested in ecclesiastical architecture I should like to know whether it is possible to obtain Parker's companion volume to his "Glossary," third or fifth edition, *separately*, not exceeding 10s. in price. Batsford does not advertise the book in his catalogue, and Parker does not sell the "Companion" apart from the other two volumes of the "Glossary." As Bloxam's "Companion" volume can be obtained separately I thought the same thing might apply to Parker's."

It is a pity our correspondent did not write to Mr. Batsford direct about obtaining a second-hand copy of the companion volume to Parker's "Glossary" as he has a copy (third edition 8vo. cloth, 1841) which he can offer for 9s. 6d. post-free. All editions of the book have been out of print for the last thirty years. Mr. Batsford's address is 94 High Holborn, W.C.

Legal Registration of Architects.

WESTCLIFF-ON-SEA. — PHATMES writes:—"Is it correct that an Act of Parliament is about to be carried through requiring all architects and surveyors to pass a special examination?"

Our correspondent presumably refers to the Architects' Registration Bill, which, though several times brought before the House of Commons, has not yet been passed.

Cement for Wall of Racquet Court.

MANCHESTER.—RACQUET writes: "I have a racquet court to build 45ft. long and 22ft. wide. The game being played with a hard ball of small size the force of impact on the cement face of wall is very great. A smooth even surface is, of course, necessary. I have specified Portland cement, finished with Keen's, but am now told the latter is liable to peel off under the great strain. I should be glad if you could tell me which is the best method to adopt."

Keen's cement is not so hard as Portland, and would be damaged by hard balls; it would probably also flake and part from the Portland cement. The better plan would be to render and float the wall in one coat with Portland cement and clean sharp sand—1 of the former to 2 of the latter—and finish with neat cement, or half cement and half sand, ⅜in. or ½in. thick, trowelled to a smooth surface. The cement should be stale and finely ground, the second or finishing coat followed on the first before the latter becomes dry, and the work done in sections to provide against the slight expansion to which cement is liable, in the same way that monolithic paving is made. T. P.

Surveying and Other Books.

CAMBRIDGE.—E. W. B. writes:—"What are the names of some good books on the following subjects:—(1) Land surveying and levelling and elements of trigonometry. (2) Bookkeeping. (3) Practical measuring (oral exam.). (4) Bills of quantities. (5) Mensuration. (6) Law of fixtures. (7) Law of dilapidations. (8) Law of easements, light and air. (9) Constructive and working drawings."

We recommend the following:—(1) "Surveying and Surveying Instruments," by G. A. T. Middleton, A.R.I.B.A., 3s. 9d. "Elementary Trigonometry," by Rev. J. B. Lock (Macmillan and Co.), 4s. 6d. (2) "Builders' Book-keeping: a Perfected System," by Mr. Saker (published at 95-97 Finsbury Pavement, E.C.). (3 and 5) "Mensuration and Measuring," by T. Baker, 1s. 6d. (4) "Quantity Surveying," by John Leaning, 12s., "Quantities and Quantity Taking," by W. E. Davis, price 3s. 6d., or "Quantities," by the late Professor Banister Fletcher, F.R.I.B.A., 6s., and "Estimating," by George Stephenson, 5s. 6d. (6) "Fixtures: a Digest of the Law and Practice," by Sidney Wright, 5s. nett. (7) "Dilapidations," by E. Uttermare Bullen, 5s. 6d. (8) "The Law of Light and Air," by A. A. Hudson and Arnold Inman (Sweet and Maxwell), or "Light and Air" (Batsford), 5s. 6d. (9) "Architectural Examples in Brick, Stone, Wood and Iron," by William Fullerton, 15s., Spon. These books can be obtained from Mr. B. T. Batsford, 94 High Holborn, W.C.

Manufacture of Portland Cement.

HULL.—CONTRACTOR writes:—"I wish to know the latest method of manufacturing Portland cement. I believe there is an American method which is very economical in general cost. Is Roman cement used in conjunction with Portland cement for exterior plastering?"

I am not aware of any American patented method for manufacturing Portland cement, but new patents for kilns for burning the slurry and for machinery for grinding the clinker after it comes from the kilns are very numerous. Roman cement and Portland cement should not be used mixed together for external plastering; the former is quick setting and the latter slow setting. In a general way, Portland is very much better, and is invariably used for the purpose now. T. P.

Trade and Craft.

Fireproof and Soundproof Walls.

Particulars will be found on another page of the Fireproof and Soundproof Wall Construction Company, Limited, which has been formed with a share capital of £57,000 to acquire the business of the Fireproof Construction Company, Limited, patentees of the well-known Reiss system of wall and partition construction. Blocks or slabs of very light fireproof material, pierced by a series of tubes to make them sound-resisting, are used, and though only 3in. thick when plastered on both sides they take the place of a 4½in. or 9in. brick wall. This, of course, means a saving of weight and space, besides which the cost is 15 per cent. less than 4½in. brickwork of equal finish. The system has been specified and adopted by Her Majesty's Office of Works, the London County Council, the London School Board and numerous municipalities, and among the many large buildings where the walls and partitions have been constructed in this manner are the Guildhall School of Music, Drury Lane Theatre, Hôtel Windsor, Guy's Hospital, Kensington Palace, Poplar Hospital, Royal Academy, Earlswood Asylum, Model Lodging Houses, Birmingham, St. John's College, Cambridge, and the York Training College. Leading architects like the late Sir Arthur Blomfield, Mr. T. G. Jackson, and Mr. Roland Plumbe have specified or used the system, which is also excellent testimony to its value. The lists will probably be opened this week, and will close early next week.

A new Parish Room and Church of England Infants' School is being erected at Whiston, and will cost about £1,700.

Keystones.

To Commemorate the Deeds of General Buller in South Africa a town clock tower and church tablet are to be erected at Crediton.

A new Volunteer Drill Hall at Huddersfield is being erected by Messrs. Graham and Jessop, contractors, from the plans of Mr. W. Cooper, architect.

An Architect's Suicide.—In Leeds, last week, Lancelot Clarke, 29 years of age, described as an architect, lodging in Eighteenth Avenue, New Wortley, being engaged in connection with some railway engine sheds in course of construction in Oldfield Lane, committed suicide by poisoning himself. He came from Egremont.

The Alexander Theatre, Widnes, was burnt down last week. One of the gas jets at the rear of the building ignited the curtain, and flames quickly spread to the roof. An attempt was made to haul down the iron curtain, but it failed, and the whole of the scenery as well as the roof became on fire. The damage is estimated at several thousand pounds.

Proposed Public Hall for St. Andrew's, Cardiff.—A meeting of the St. Andrew's Parish Council was held at Dinas Powis last week to consider the advisability of providing a public hall for the parish, and it was intimated that General Lee, J.P., the chairman of the council, would give either money or its equivalent if the council decided to erect such a building.

Southmolton Parish Church, North Devon, is being renovated at a cost of about £2,000. The alterations to the edifice include taking down the north gallery, the removal and replacing of a stained-glass window, the relaying of the centre and sanctuary with Belgian black and Sicilian white marble diagonally, and white Sicilian marble steps and a dwarf screen of Caen stone at the entrance to the chancel.

A new Reredos at Winch (East) Church has been placed in the chancel. The work was entrusted to Mr. M. Maitland, of Bushey, Herts, designer and wood-carver. The reredos consists of panelling occupying the whole space of the lower part of the east wall. Each end is terminated by a loftier compartment, which is surmounted by a canopy and finial, connected by a deeply-carved moulding.

Somercotes Church is to undergo considerable alterations. Plans have been prepared by Mr. Percy H. Currey, of Derby, one of the Diocesan architects. It is proposed to rebuild the nave of the church, which is a temporary erection. It is not proposed to alter the chancel, but a nave and aisles will be added, the chancel will be repaired and clergy and choir vestries built. These alterations will increase the present seating capacity of 300 to 450. The cost is estimated at between £3,500 and £4,000.

Cardiff Town Hall.—The following resolution has been adopted by the Cardiff branch of the National Association of Operative Plasterers:—"We earnestly urge the Town Hall and Law Courts Building Committee to proceed without delay with the building of the Town Hall and Law Courts in the interests of the operatives in the building trade and ratepayers generally. If the work is not carried out a large number of workmen will be forced to leave the town in search of employment, thus increasing the number of empty houses, which will mean a large reduction of the income from the rates."

Proposed New Technical Institute at Newport, Mon.—A Local Government Board enquiry was held recently with regard to the proposals of the Corporation to purchase a site in Clarence Place whereon to erect a technical institute and to dedicate the Marshes estate, or rather 21 acres of it, to the public for ever for recreation purposes, and for sanction to borrow £600 to erect thereon a public shelter, caretaker's cottage, &c. The total cost of the site for the institute will be £4,300, and the Corporation has asked for sanction to borrow £4,500. In connection with the site the Corporation has undertaken to widen Rodney Road, and to contribute half the cost of a new road which is to run from Rodney Road to Corporation Road.

A new Abbey Church has been erected at Rushden.

The Harlyn Excavations at the ancient cemetery are still in progress.

The Victoria Higher Grade Technical School at Ulverston was opened last week.

An Exhibition of Arts and Crafts is to be held in Leeds from November 19th to December 1st.

A Monument to the Memory of Queen Louisa, the great-grandmother of the German Emperor, has been unveiled at Tilsit.

The Ecclesiastical Art Exhibition at Newcastle-on-Tyne was opened by the Bishop of Newcastle last Saturday.

The Greencoat School, Camberwell Green, S.E., commenced its winter session of technical and art classes on Monday last.

The Offices of the Queen Anne's Bounty Board at 3 Dean's Yard, Westminster, have been rebuilt. In that portion which faces Great Smith Street the castellated style has been adopted, and in the outside wall there has been inserted a sculptured representation of Queen Anne distributing doles.

New Barracks at Colchester.—Building operations are now in progress at Colchester, consequent upon the increase of the garrison. The old Crimean hut barracks are giving place to a collection of brick buildings. These comprise the new Sobraon infantry barracks, the Gujerat infantry quarters, and accommodation for the Militia Medical Staff Corps.

University College Hospital.—The first wing and the central block of the new building which Sir J. Blundell Maple, M.P., has undertaken to erect, at a cost of over £120,000, are now ready for occupation and will be informally opened on September 1st. The plan in its entirety will be in the form of a diagonal cross. Special attention has been given to the requirements of modern medicine and surgery, and each ward will be completely isolated, except for its connection with the rest of the structure by bridges.

Classes at the Battersea Polytechnic.—Particulars of a large number of classes of interest to building trade students are given in the prospectus of the Battersea Polytechnic for the session commencing last Monday. In addition to the theory classes in all stages the Polytechnic also offers practical instruction in carpentry, brickwork, masons' work, plastering, plumbing and painters' work in the workshops, which are well fitted with necessary tools and apparatus. Other classes of interest to the building trades are those in municipal and civil engineering, drawing and design, land surveying and road-making, builders' quantities and sanitary science. A list of classes will be sent gratis on application to the secretary.

Mr. Robert Carfrae, F.S.A. Scot., died last week at the age of 81, at Murrayfield, Edinburgh. A partner of the firm of Moxon and Carfrae, decorators, George Street, Edinburgh, Mr. Carfrae had been for many years recognised as an authority on art matters. He was one of the oldest members of the Scottish Antiquarian Society, and acted for some years as honorary curator of the Antiquarian Museum. He was particularly interested in numismatic research, and of the early Greek silver coinage and the Roman first brass he had acquired several unique specimens. He was rarely an absentee from sales of pictures or antiquarian relics in the city.

St. Martin's School of Art held its annual exhibition of students' work last week at the School, Castle Street, Endell Street, W.C. The School is in connection with the Board of Education and the London County Council Technical Education Board. The Exhibition consisted of work done by the students during the year, and comprised specimens of all subjects connected with art designing, as applied to the different branches of trade which are practically taught, and the results have been very successful. The students have done well in the examinations held by the Board of Education, having gained one excellent, 24 first and 32 second-class certificates.

The Liverpool Autumn Art Exhibition was opened last week at the Walker Art Gallery.

New Church at Dundee.—The foundation stone of the new church of St. Mary Magdalene, halls and rectory, in course of erection in Well Road, Hawkhill, Dundee, was laid last week.

The Restoration of Tredington Church is approaching completion. The work has been proceeding for about three years, and the church is expected to be reopened on October 12th.

The Restoration of Westbury-on-Tyne Church, Bristol, is proposed to be completed by the addition of side screens. Designs have been asked for and will be submitted at the next meeting of the vestry.

The Building Trade in Kirkcaldy.—A considerable number of men in connection with the building trade are at present idle in Kirkcaldy district. There are prospects of a start being made shortly with the extension of some of the public works, while several burgh contracts are about to be settled.

Art Workers' Guild's Excursion.—A party of between thirty and forty painters, architects, and craftsmen, and their wives, sisters and daughters have left with the Art Workers' Guild expedition to Italy. The large majority of those composing the party are members of the guild. The party will return home on October 7th, after visiting Padua, Verona, Milan and spending a week in Venice.

Law Cases.

Leaving Material on the Road without Lights.—At the Sheffield Police Court last week two building contractors were charged with leaving building materials on the roads from sundown to sunrise without having lights attached to them. In the first case P.C. Morton stated that James Sivil, builder, of Hughenden Road, had been building in Windermere Road, and had left some flags in the roadway on the night of September 1st, without lamps fixed to them. Sivil explained that all the other materials were removed, but his man, who had been working until nine o'clock, and had left the flags close to a gas lamp, thought there was sufficient light from the lamp to show where the flags were, and that another lamp was not necessary. A fine of 7s. 6d. was imposed. Morton also stated that after dark on the same day he found in Grasmere Road some timber, a barrel and trestles, which had been left by Mr. J. S. Teanby, builder, of 11 Alcester Road. Mr. Teanby's manager stated that there was only some asphalt left in the road, and that did not belong to Mr. Teanby. A fine of 10s. was imposed.

Plumbers and their Charges.—At the Salford County Court, on Wednesday last, a case was heard in which the plaintiffs were Messrs. G. H. Openshaw and Co., plumbers, glaziers, and general contractors, of Old Trafford, Manchester, who sued Mr. Superintendent Bent for the sum of £2 15s. 11d. for work done at his residence at Croft's Bank, Urmston. The work consisted of the decoration of a room and the repairing of a pipe-burst. Mr. Chapman, who represented defendant, submitted that the charges in the invoice were exorbitant. The room was only 22ft. by 16ft, and for papering and colouring it and cleaning the cornice a charge of £1 12s. was made, and for repairing a pipe-burst to the bathroom £1 1s. 11d. was charged. The latter work, Mr. Chapman pointed out, took the man and boy fifteen hours. The sum of 4s. 6d. was put down for size and paste, and it was only a small room. His Honour: I should say there was enough for a whole street. Continuing, Mr. Chapman said that there were also the railway fares to Urmston for two persons. His Honour: Of course, a plumber never goes anywhere without a boy. A paper-hanger in the employ of plaintiff said it took him four hours to dust the cornice. His Honour gave judgment for defendant, with costs. The £1 15s. paid into court would be handed to plaintiff after the costs had been taxed.

TWO ARCHITECTS OF BATH.

MR. W. EMERSON, president of the Royal Institute of British Architects, unveiled two mural tablets in Gay Street and Queen Square, Bath, last Thursday. The tablets were erected by the Corporation on the houses in which the celebrated architects, John Wood, senior, and John Wood, junior, resided. These architects were responsible for many of the fine streets and squares for which Bath is famous, and Mr. Emerson spoke of the foresight exercised by them in laying out the city, and for want of which many cities, the Metropolis particularly, had been absolutely spoilt. He thought it was wonderful that those architects of 200 years ago, without the advantage of research and travel and without the books on architecture which were available to-day, were able to conceive such a scheme as the laying out of the city of Bath and to build such beautiful buildings as there were in the city.

Among the buildings with which the Woods enriched the city during the last century may be mentioned the Royal Crescent, immortalised by Dickens in "Pickwick Papers" as the scene of Mr. Winkle's midnight escapade with Mrs. Dowler; Queen Square, Gay Street, the famous Assembly Rooms, and the historic mansion of Prior Park, on the outskirts of the city, which, during the lifetime of Ralph Allen, its founder, was the resort of the most famous men of letters and distinction of the day. The names of Pope, Mason, Hartley, Richardson, the painters Hoare and Gainsborough, Bishops Hurd, Sherlock and Warburton, Lord Chatham and the younger Pitt represent but a few of those who, during the latter half of the last century, were intimately associated with this classic spot, while Fielding was a regular guest when he lived near, and it is easy to recognise in Ralph Allen, the genial host, the Squire Allworthy in "Tom Jones." The mansion of Prior Park, with its grand Corinthian portico, was built by Ralph Allen in order to demonstrate the qualities of the famous Bath stone, at that time but little worked. Now its reputation is almost world-wide, and the Prior Park mansion affords excellent proof of the adaptability of the stone to all the requirements of modern building.

New Companies.

Dudley and Son, Limited.

This company was registered on September 17th with a capital of £3,000 in £1 shares to acquire the business now carried on at Norbriggs Works, Staveley, Derby, as Dudley and Son, to adopt an agreement with J. R. Dudley, and to carry on the business of spade, shovel, pick, tool and cutlery manufacturers and merchants, metal workers, &c. The first directors (to number not less than two nor more than five) are to be appointed by the subscribers.

Port Soderick Freehold Land Company, Limited.

This company was registered on September 13th with a capital of £10,000 in £1 shares to carry on the business of builders, contractors, mechanical and electrical engineers, timber, slate and coal merchants, carriers, joiners, plumbers, gas and water fitters, house and estate agents, &c. The first directors (to number not less than two nor more than seven) are to be appointed by the subscribers.

Pear Tree Estates, Limited.

This company was registered on September 14th with a capital of £25,000 in £1 shares to adopt an agreement with J. Cruickshank, C. C. Cruickshank, Susan M. Viant, E. I. Jackson and J. C. Cruickshank, for the acquisition of certain lands and hereditaments at Pear Tree Green, Southampton, and to carry on the business of builders, contractors, engineers, timber merchants, &c. The first directors (to number not less than three nor more than six) are J. Cruickshank, J. C. Cruickshank, C. C. Cruickshank, Mrs. E. I. Jackson and Mrs. S. M. Viant.

London and County Syndicate, Limited.

This company was registered on September 17th with a capital of £500 in £1 shares to construct, equip and work public and private works, including railways, tramways, docks, wharves, water, gas, electric light, telegraphic, electrophonic and power supply, &c.

Tinsley Brick and Tile Company, Limited.

This company was registered on September 6th with a capital of £2,000 in £1 shares to carry on the business of brick, tile and earthenware manufacturers, miners, &c. The first directors (to number not less than three nor more than five) are G. R. Johnson, W. Johnson and W. A. Johnson.

CURRENT PRICES.

		£ s. d.	£ s. d.
FORAGE.			
Hay, best	per load	4 0 0	4 7 6
Sainfoin mixture	do.	3 10 0	4 10 0
Clover, best	do.	4 5 0	5 0 0
Beans	per qr.	1 8 6	1 10 0
Straw	per load	1 8 0	1 18 0
OILS AND PAINTS.			
Castor Oil, French	per cwt.	1 11 6	1 12 8
Colza Oil, English	do.	1 11 3	—
Copperas	per ton	2 0 0	—
Lard Oil	per cwt.	1 18 0	—
Lead, white, ground, carbonate	do.	1 3 10	—
Do. red	do.	1 0 4½	—
Linseed Oil	do.	1 13 9	1 13 10½
Petroleum, American	per gal.	0 0 6½	0 0 6⅝
Do. Russian	do.	0 0 6	0 0 6⅛
Pitch	per barrel	0 7 6	—
Shellac, orange	per cwt.	2 15 0	3 0 0
Soda crystals	per ton	3 0 0	3 2 6
Tallow, Town	per cwt.	1 4 0	1 8 3
Tar, Stockholm	per barrel	1 8 6	—
Turpentine	per cwt.	1 9 3	1 9 6
METALS.			
Copper, sheet, strong	per ton	86 0 0	—
Iron, Staffs., bar	do.	9 15 0	11 10 0
Do Galvanised Corrugated sheet	do.	12 10 0	13 0 0
Lead, pig, Spanish	do.	17 12 6	17 16 3
Do. do. English common brands	do.	18 2 6	—
Do. sheet, English, 3lb. per sq. ft. and upwards	do.	21 0 0	22 0 0
Do. pipe	do.	23 0 0	—
Nails, cut clasp, 3in. to 6in.	do.	12 0 0	13 0 0
Do. floor brads	do.	11 15 0	12 15
Steel, Staffs., Girders and Angles	do.	8 5 0	9 0 0
Do. Mild Bars	do.	9 2 6	9 10 0
Tin, Foreign	do.	126 0 0	126 10 0
Do. English ingots	do.	131 0 0	—
Zinc, sheets, Silesian	do.	23 10 0	—
Do. do. Vieille Montaigne	do.	24 5 0	—
Do. Spelter	do.	19 2 6	19 12 6
TIMBER.			
HARD WOODS			
Ash, Quebec	per load	3 17 6	4 10 0
Birch, Quebec	do.	3 12 6	3 17 6
Box, Turkey	per ton	7 0 0	15 0 0
Cedar, 1in., Cuba	per ft. sup.	0 0 3	0 0 3½
Do. Honduras	do.	0 0 3½	—
Do. Tobasco	do.	0 0 3½	—
Elm, Quebec	per load	0 12 6	5 10 0
Mahogany, Average Price for Cargo, Honduras	per ft. sup.	0 0 4½	—
Do. African	do.	0 0 3½	—
Do. St. Domingo	do.	0 0 6½	—
Do. Tobasco	do.	0 0 4⅜	—
Do. Cuba	do.	0 0 4½	—
Oak, Dantzic and Memel	per load	3 15 0	5 7 6
Do. Quebec	do.	4 12 6	5 0 0
Teak, Rangoon, planks	do.	9 0 0	21 0 0
Wainscot, Riga (Baulk)	do.	3 15 0	5 15 0
Do. Odessa Crown	do.	3 15 0	5 15 0
Walnut, American	per cub. ft.	0 1 8	0 3 4
SOFT WOODS.			
Fir, Dantzic and Memel	per load	3 0 0	4 0 0
Pine, Quebec Yellow	do.	4 7 6	6 0 0
Do. Pitch	do.	3 8 0	—
Laths, log, Dantzic	per fath.	4 10 0	5 10 0
Do. Petersburg	per bundle	0 1 1½	—
Deals, Archangel 2nd & 1st	per P. Std.	12 15 0	18 0 0
Do. do. 4th & 3rd	do.	13 5 0	15 10 0
Do. do. unsorted	do.	11 0 0	12 10 0
Do. Riga	do.	6 15 0	8 10 0
Do. Petersburg 1st Yellow	do.	18 0 0	—
Do. do. 2nd „	do.	10 15 0	13 15 0
Do. do. Unsorted „	do.	8 15 0	13 0 0
Do. do. White	do.	8 5 0	11 15 0
Do. Swedish	do.	10 10 0	22 10 0
Do. White Sea	do.	12 0 0	18 0 0
Do. Quebec Pine, 1st	do.	13 15 0	23 15 0
Do. do. 2nd	do.	18 15 0	—
Do. do. 3rd &c.	do.	9 0 0	9 15 0
Do. Canadian Spruce, 1st	do.	10 10 0	11 15 0
Do. do. 3rd & 2nd	do.	8 10 0	10 0 0
Do. New Brunswick	do.	7 5 0	8 0 0
Battens, all kinds	do.	8 5 0	9 5 0
Flooring Boards, 1in. prepared, 1st	per square	0 12 9	—
Do. 2nd	do.	0 9 9	—
Do. 3rd &c.	do.	0 7 0	—

COMPLETE LIST OF CONTRACTS OPEN.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
	BUILDING.		
Sept. 28	Annan, Scotland—School Works	School Board	H. E. Clifford, 178 St. Vincent Street, Glasgow.
„ 28	Oxspring, Yorks—Alteration	School Board	Senior and Clegg, 15 Regent Street, Barnsley.
„ 28	Pudsey—Villas		Farrar and Woodhouse, 38 The Grove, Ilkley.
„ 28	Sheffield—Chapel Buildings	Trusts. Darnall Wesleyan Reform Chapel	W. T. Campsall, 19 Figtree Lane, Sheffield.
„ 29	Redruth—Alteration	School Board	S. Hill, Architect, Green Lane, Redruth.
„ 29	Shifnal—Infirmary	Guardians	Clerk, Guardians' Office, Market Place, Shifnal, Salop.
„ 29	Thakeham, Sussex—Police Station	County Council	W. B. Purser, 31 Bedford Road, Horsham.
„ 29	Wales, near Sheffield—Vicarage		Rev. C. Ellis, Vicarage, Wales, Sheffield.
„ 29	Falcarragh, co. Donegal—Wing	Miss M. M'Ginley	D. Conroy, 2 Bishop Street, Londonderry.
„ 29	Pontypridd—Cottages	Great Western Colliery Company, Limited	A. O. Evans, Architect, Pontypridd.
„ 29	Walsall—Pavilion	Corporation	H. E. Lavender, Ye Olde Queen's Chambers, Bridge Street, Walsall.
„ 30	Alcester—Stores	Co-operative Industrial Society, Limited	J. W. Adams, Hay Mills, Birmingham.
Oct. 1	Pleasley Hill, near Mansfield—School	Mansfield School Board	Vallance and Westwick, White Hart Chambers, Mansfield.
„ 1	Bury, Lancs.—Abattoirs	Health Committee	A. Neill, 18 Cookridge Street, Leeds.
„ 1	Erith, Kent—Cottages	Urban District Council	Clerk, Council Offices, High Street, Erith.
„ 1	Chingford—Houses		W. J. Chambers, Architect, Savoy House, W.C.
„ 1	Liversedge, Yorks—Additions	Mr. C. W. Clarkson	Marriott, Son and Shaw, West Park Street, Dewsbury.
„ 1	Workington—Alterations	Mr. J. L. Yeowart	W. G. Scott and Co., Victoria Buildings, Workington.
„ 2	London, N.—School	Edmonton School Board	H. W. Dobb, 54 London Wall, E.C.
„ 2	Bradford—Warehouse	Lancashire and Yorkshire Railway Co.	Engineer's Office, Hunt's Bank, Manchester.
„ 2	Blaenavon—Station Buildings	G.W.R. Company	Engineer G.W.R. Station, Newport.
„ 2	Petworth—Repairs	Union	A. F. Mant, Clerk, Petworth.
„ 2	Walker, Northumberland—Stores	Co-operative Society, Limited	Co-operative Society, Limited, Lamb Street, Walker.
„ 3	Willesden—Infirmary	Guardians	A. S. Snell, 22 Southampton Buildings, W.C.
„ 3	Battisford, near Needham Market—Classroom	School Board	H. G. Bishop, Architect, Cheapside, Stowmarket.
„ 3	Pentre, Glamorgan—Improving School	Ystradyfodwg School Board	J. Rees, Hillside Cottage, Pentre.
„ 4	Limerick—Generating Station	Town Council	J. J. Peacocke, Town Hall, Limerick.
„ 4	St. Albans—Alterations and Erection of Schools		F. W. K. Tarte, 12 St. Peter Street, St. Albans.
„ 4	Bradford—Shops		T. C. Hope & Son, 23 Bank Street, Bradford.
„ 5	Manchester—Wall	Corporation	City Surveyor, Town Hall, Manchester.
„ 5	Nantymoel, Wales—Institute		J. Rees, Hillside Cottage, Pentre.
„ 8	Gallow's Plain, near Hertford—Porter's Lodge	Hertford and Ware Joint Hospital Board	G. H. Gisby, Town Hall, Ware, Herts.
„ 8	Gravesend—Additions	Town Council	E. J. Bennett, 13 Gray's Inn Square, W.C.
„ 8	Newhaven, Sussex—Wall	Guardians	W. Gates, 86 High Street, Lewes.
„ 8	Middlesbrough—County Court	Commissioners of H.M. Works, &c.	H. Gritten & Son, 8 Prince's Street, S.W.
„ 8	Poyntington—Viaduct	Dorset County Council	County Surveyor, Sherborne.
„ 9	Pembroke—Schools	School Board	G. Morgan and Son, 24 King Street, Carmarthen.
„ 9	Pwllheli—Town and Market Hall	Town Council	E. R. Davies, 6 Church Place, Pwllheli.
„ 9	Clonmel, Ireland—Post Office		Post Office, Clonmel.
„ 10	Worcester—Maternity Wards and Nurses' Building	Union Guardians	H. Rowe & Son, Worcester Chambers, Pierpoint Street, Worcester.
„ 11	Middleton, Lancs.—Buildings		Stones and Stones, 10 Richmond Terrace, Blackburn.
„ 11	Horsham—Electricity Supply Works	Urban District Council	Gordon & Gunton, Architects, Finsbury House, E.C.
„ 13	Lichfield—School	Governors of Grammar School	H. H. Brown, Clerk to Governors, Lichfield.
Nov. 30	Port of Recife—Works	Federal Government	Commercial Department, Foreign Office, S.W.
	ENGINEERING.		
Sept. 28	Glasgow—Piping	Corporation	J. Young, 88 Renfield Street, Glasgow.
„ 29	Aberdeen—Generating Plant	Electric Lighting Committee	J. A. Bell, Cotton Street, Aberdeen.
„ 29	Manchester—Culverts	Rivers Committee	Secretary, Rivers Committee, Town Hall, Manchester.
„ 30	Wellington, New Zealand—Engines	Corporation	J. Duthie and Co., Limited, 23 Lime Street, London, E.C.
Oct. 1	Llandebie, Wales—Widening Bridge	Carmarthenshire County Council	T. Jones, Council Offices, Llandovery.
„ 1	Belfast—Bridges	Harbour Commissioners	G. F. L. Giles, Harbour Engineer, Belfast.
„ 1	Long Eaton—Electrical Communication	Urban District Council	F. Worrall, Council Offices, Long Eaton.
„ 2	Barcelona, Spain—Elevators	Harbour Commissioners	Commercial Department, Foreign Office, S.W.
„ 2	Madrid—Steam Tramway	Spanish Government	Commercial Department, Foreign Office, S.W.
„ 2	Acton—Works for Public Baths	Urban District Council	D. J. Ebbetts, Surveyor, High Street, Acton.
„ 2	Salford—Destructors	Cleansing Committee	W. H. Hamblett, Wilburn Street Depot, Salford.
„ 2	Radcliffe, Lancs.—Gasholder	Gas Company	Secretary, Gas Offices, Radcliffe.
„ 3	Dublin—Pumping Engines	Corporation	Engineer, City Hall, Dublin.
„ 3	Neath—Laying Cast-iron Pipes, &c.	Rural District Council	W. E. C. Thomas, Council Offices, Orchard Street, Neath.
„ 3	London, N.E.—Mains	Hackney Vestry	R. Hammond, 64 Victoria Street, S.W.
„ 3	Littlehampton—Overflow Pipe	Urban District Council	H. Howard, Town Offices, Littlehampton.
„ 4	Dublin—Electricity Supply Mains	Electric Lighting Committee	S. Harty, City Hall, Dublin.
„ 4	Eastbourne—Electric Lighting Plant	Corporation	H. W. Fovargue, Town Hall, Eastbourne.
„ 5	London—Hurdles	County Council	Parks Department, 11 Regent Street, S.W.
„ 5	Melton, Suffolk—Wiring	Visiting Committee	A. J. Wood, 22 Surrey Street, London, W.C.
„ 6	Sheffield—Alternators	Corporation	S. E. Fedden, Commercial Street, Sheffield.
„ 8	Edinburgh—Carbonising Plant	Gas Commissioners	W. R. Herring, New Street, Edinburgh.
„ 9	London, S.W.—River Wall	County Council	Engineer, County Hall, Spring Gardens, S.W.
„ 9	Dover—Strengthening Pierhead	Promenade Pier and Pavilion Company	M. N. Ridley, 11 Dartmouth Street, London, S.W.
„ 9	London, E.—Penstocks	County Council	Engineer, County Hall, Spring Gardens, S.W.
„ 13	Whitehaven—Switchboard	Water and Lighting Committee	E. W. Dunton, Electrical Engineer, Whitehaven.
„ 13	Leicester—Pumping Engine	Water Committee	F. Griffiths, Waterworks Office, Bowling Green Street, Leicester.
„ 17	Gainsborough—Pumping Machinery	Urban District Council	P. Griffith, 54 Parliament Street, London, S.W.
Nov. 14	Lahore, India—Tramway Materials	Municipal Committee	Secretary Municipal Committee, Lahore.
	IRON AND STEEL.		
Sept. 28	Glasgow—Piping	Corporation	J. Young, 88 Renfield Street, Glasgow.
Oct. 1	Brighton—Tramrails	Town Council	T. B. Holliday, Town Hall, Brighton.
„ 1	Nelson, Lancs.—Pipes	Water Committee	J. Hartley, Town Hall, Nelson, Lancs.
„ 2	London, W.—Girder Work	G.W.R. Company	Engineer, Paddington Station, W.
„ 2	Sheffield—Ironmongery	School Board	J. F. Moss, School Board Offices, Sheffield.
„ 3	London, N.E.—Ironwork	Hackney Vestry	R. Hammond, 64 Victoria Street, London, S.W.
„ 6	Hexham—Mains	Urban District Council	R. T. Surtees, Town Surveyor, Hexham.
„ 8	Ilford—Fencing	Urban District Council	J. W. Benton, Clerk, Council Offices, Ilford.
„ 10	Woolwich—Fencing	Union	J. C. Cook, Eleanor Road, Woolwich.
	PAINTING AND PLUMBING.		
Sept. 29	Londonderry—Plumbing	Messrs. Chas. Bayer and Co.	D. Conroy, 2 Bishop Street, Londonderry.
Oct. 2	Brighton—Painting	Guardians	H. S. Reed, Parochial Offices, Prince's Street, Brighton.
	ROADS.		
Sept. 29	Walmer, Kent.—Quartzite	Urban District Council	R. A. Wilson, Council's Surveyor, Walmer, Kent.
Oct. 2	Aldershot—Granite	Urban District Council	N. F. Dennis, Surveyor, Aldershot.
„ 2	Bishop's Stortford—Footpaths	Urban District Council	E. S. Scott, North Street, Bishop's Stortford.
„ 2	Dover—Street Improvements	Town Council	H. E. Stilgoe, Town Hall, Dover.
„ 2	Windsor—Materials	Town Council	E. A. Stickland, Alma Road, Windsor.
„ 2	Brockley—Road Making	Lewisham Board of Works	Surveyor, Town Hall, Catford, S.E.
„ 4	Chippenham—Scarifying	Rural District Council	A. H. Lapham, Surveyor, Corsham.
„ 4	Enfield—Roadways	Owner of the Chaseside Building Estate	Walton and Lee, 10 Mount Street, Grosvenor Square, London, W.
	SANITARY.		
Sept. 28	Dewsbury—Repairing Privies		B. Marsden and Sons, Estate Agents, Savile Town.
„ 28	Tunbridge Wells—Sewers	Corporation	W. H. Maxwell, Borough Engineer, Tunbridge Wells.
„ 29	Shaw, Lancs.—Sewers	Crompton Urban District Council	Surveyor, Town Hall, Shaw, Lancs.
„ 29	Uckfield, Sussex—Extension of Sewer	Urban District Council	Clerk, Council Office, Uckfield, Sussex.
Oct. 1	Normanton-by-Derby—Sewers	Shardlow Rural District Council	T. A. Fuller, The College, All Saints, Derby.
„ 1	Aughton, Lancs.—Sewers	West Lancs. Rural District Council	C. Law Green, 50 Hampton Road, Southport.
„ 1	Southwick, Sussex—Removal of Refuse	Urban District Council	G. W. Warr, Council Offices, Albion Street, Southwick.
„ 4	Rottingdean—Sewer	Newhaven Rural District Council	T. W. Franks, Seveirg Buildings, Lewes.
„ 9	Lymington, Hants—Sewers	Town Council	I. Pym-Jones, 14 High Street, Lymington.
„ 9	Canterbury—Sewer	Corporation	A. C. Turley, Tudor Chambers, High Street, Canterbury.
„ 9	London, E.—Sewer Works	County Council	Engineer, County Hall, Spring Gardens, S.W.
	TIMBER.		
Sept. 28	Uganda—Sleepers	Railway Committee	Crown Agents for the Colonies, Downing Street, S.W.
Oct. 4	Uxbridge—35 Fathoms Deal and Batten Ends	Union Guardians	C. Woodbridge, 33 High Street, Uxbridge.

COMPETITIONS OPEN.

DATE OF DELIVERY.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	BY WHOM ADVERTISED.
Oct. 20	Sevenoaks—Hospital	£10 10s.	Surveyor, Council Offices, Sevenoaks.
„ 30	Devizes—Hospital	£20, £10	O. Sheppard, Clerk to Joint Committee, Devizes.
„ 30	Musselburgh—Town Hall	£26 5s. and £15 15s.	Town Clerk, Council Offices, Musselburgh.
„ 30	South Shields—Municipal Buildings	£200, £100, £50	J. M. Hayton, Town Clerk, Court Buildings, South Shields.
Nov. 30	Swansea—Harbour Offices	£100, £50	T. Strick, Harbour Offices, Swansea.
Dec. 1	Bridlington—Parade Extension	£36 5s., £15 15s.	A. E. Matthewman, Town Hall, Bridlington.
March 25	Basford—Sewerage Scheme		C. J. Spencer, Clerk, Public Offices, Basford.

COMING EVENTS.

Wednesday, September 26.

CHURCH CONGRESS.—Meeting at Newcastle (second day). Mr. G. F. Watts, R.A., the Bishop of Chichester, Mr. W. Hole, Mr. Stirling Lee, Mr. E. S. Prior and Mr. Selwyn Image on "The Relation of Art to Religion."

SANITARY INSTITUTE.—Lectures and Demonstrations for Sanitary Officers: Part I. Mr. John Castell-Evans on "Meteorology," at 8 p.m. Inspection and Demonstration in the Parish of St. George's, Hanover Square, at 2 p.m., conducted by Mr. Albert Taylor.

BUILDERS' FOREMEN AND CLERKS OF WORKS INSTITUTION.—Quarterly Meeting of the Directors, 8 p.m.

Thursday, September 27.

CHURCH CONGRESS.—Meeting at Newcastle (third day).

Friday, September 28.

CHURCH CONGRESS.—Meeting at Newcastle (fourth and last day). The Rev. J. W. Horsley, Dr. Bowmaker, Professor Steggall, Sir T. Wrightson, M.P., and Councillor Thompson on "The Housing of the People."

SANITARY INSTITUTE.—Lectures and Demonstrations for Sanitary Officers: Part I. Mr. J. Priestley on "Sanitary Law," at 8 p.m.

Saturday, September 29.

SANITARY INSTITUTE.—Lectures and Demonstrations for Sanitary Officers: Part I. Inspection and Demonstration at Wimbledon Sewage Works, at 3 p.m., conducted by Mr. C. H. Cooper, M.I.C.E.

Monday, October 1.

SOCIETY OF ENGINEERS.—Mr. Robert Henderson on "Paper-making Machinery," 7.30 p.m.

Tuesday, October 2.

ROYAL SOCIETY OF ANTIQUARIES OF IRELAND.—Quarterly Meeting and Excursions at Kilkenny.

Wednesday, October 3.

SANITARY INSTITUTE.—Lectures and Demonstrations for Sanitary Officers: Part I. Mr. J. Priestley on "Sanitary Law," at 8 p.m. Inspection and Demonstration of Disinfecting Apparatus and Model Steam Laundry at St. John's Wharf, Fulham, at 3.30 p.m., conducted by Mr. W. G. Lacy.

Thursday, October 4.

WORSHIPFUL COMPANY OF CARPENTERS, CARPENTERS' HALL.—Lectures on Sanitary Building Construction: Mr. Keith Downes Young, F.R.I.B.A., on "Building in its Relation to Health," 7.30 p.m.

SANITARY INSTITUTE.—Lectures and Demonstrations for Sanitary Officers: Part I. Mr. J. Priestley on "Sanitary Law," at 8 p.m.

CIVIL AND MECHANICAL ENGINEERS' SOCIETY.—Presidential Address on "Training to Keep Ahead in the World's Competition," by Prof. R. H. Smith, 8 p.m.

Friday, October 5.

ARCHITECTURAL ASSOCIATION.—Annual General Meeting. Presidential Address by Mr. W. H. Seth-Smith, F.R.I.B.A., and distribution of prizes, 7.30 p.m.

SANITARY INSTITUTE.—Lectures and Demonstrations for Sanitary Officers: Part I. Mr. J. Priestley on "The Duties of a Sanitary Inspector—Outdoor," 8 p.m.

Saturday, October 6.

SANITARY INSTITUTE.—Lectures and Demonstrations for Sanitary Officers: Part I. Inspection and Demonstration at Morden Hall Dairy Farm, Surrey, at 3 p.m.

NORTHERN ARCHITECTURAL ASSOCIATION.—Visit to Co-operative Societies' Building, Blandford Street, Newcastle.

BRITISH INSTITUTE OF CERTIFIED CARPENTERS.—Meeting at Carpenters' Hall at 6 p.m.

SANITARY INSPECTORS' ASSOCIATION. — Annual General Meeting at Carpenters' Hall.

Monday, October 8.

SANITARY INSTITUTE.—Lectures and Demonstrations for Sanitary Officers: Part I. Mr. J. Priestley on "The Duties of a Sanitary Inspector—Indoor," 8 p.m.

Wednesday, October 10.

INSTITUTE OF SANITARY ENGINEERS.—Meetings of Examination and Literary Committee at 2.30 p.m.; General Purposes and Finance Committee at 3.30 p.m.; Election Committee at 5 p.m.; and Members' Sessional Meeting at 7 p.m.

SANITARY INSTITUTE.—Lectures and Demonstrations for Sanitary Officers; Part I. Mr. J. Priestley on "The Duties of a Sanitary Inspector: Offensive Trades and Trade Nuisances," 8 p.m. Inspection and Demonstration at John Knight and Sons' Soap Works, Silvertown, at 3 p.m.

Thursday, October 11.

THE WORSHIPFUL COMPANY OF CARPENTERS, CARPENTERS' HALL.—Lectures on Sanitary Building Construction. Mr. A. Wynter Blyth on "Sanitary Appliances," at 7.30 p.m.

SANITARY INSTITUTE.—Lectures and Demonstrations for Sanitary Officers: Part I. Demonstration of Bookkeeping as carried out in a Sanitary Inspector's Office, at 8 p.m., by Mr. Albert Taylor.

RUSKIN SOCIETY OF BIRMINGHAM. — Presidential Address by the Very Rev. Francis Paget, D.D.

Friday, October 12.

ARCHITECTURAL ASSOCIATION (Discussion Section).—Mr. Geoffrey Lucas on "Logical Building and its Influence on Design," 7 p.m.

SANITARY INSTITUTE.—Lectures and Demonstrations for a Sanitary Officer: Part I. Mr. Henry R. Kenwood on "Infectious Diseases," 8 p.m.

An Episcopal Mission Church at Guardbridg is to be erected. The site is at the north end of the village. The dimensions of the church are to be 31ft. by 19ft. It will have a vestry and porch, and an open timber roof. The accommodation will consist of about 60 seats. The contractors for the work are—Mason, Mr. William Ness, St. Andrews; joiner, Mr. Andrew Thom, Strathkinness; plumber, Mr. J. M. Morris, St. Andrews; plasterer, Mr. A. R. M'Pherson, St. Andrews; and slater, Mr. William Greig, St. Andrews. The architect is Mr. C. F. Anderson, St. Andrews.

Military Extensions at Pembroke Dock.—Tenders have been sent in for the erection of the new permanent barracks at a cost of about £125,000. Messrs. Humphreys, of London, have secured the contract for £11,000 to build eight hospitals, each to hold 50 inmates from South Africa, on the upper side of the huts at Pembroke. The work has to be done at once, the contractors being required to complete their work in 10 weeks' time.

Mr. Dick Dix, the senior partner of the firm of Dix, Green and Co., builders, contractors and cement manufacturers, of Saffron Walden, died recently at the age of 62. Mr. Dix was born at Steeple Bumpstead, and crossed the Atlantic in one of the old sailing boats. He started with others in business as a builder at Chicago, and was doing well when the Civil War broke out and he was obliged to return to England. He went to Saffron Walden in 1870, and two years later started in business in the London Road and had a builder's yard in the West Road. Here he started his cement business. The kilns, however, became disagreeable to the inhabitants, and they were then removed to the present cement works in the Thaxted Road. The business developed, Mr. Dix was joined in partnership by Mr. Crafton Green and Mr. Ernest Green, and the works have since employed 40 men, and are turning out 5,000 tons of cement a year. Mr. Dix laid out Mount Pleasant Road, now the principal residential road in the town, and built several of the residences there. Artisans' dwellings were built by him for the working men of the town, and altogether he erected just over 100 houses there

TENDERS.

Information from accredited sources should be sent to "The Editor." Results of tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the Work.

CARDIFF.—For the erection of town hall and law courts. Messrs. Lanchester Stewart & Rickards, architects, 1 Vernon Place, Bloomsbury Square, W.C. Quantities by Messrs. Young & Brown, 7 Southampton Street, W.C.:—

	Law Courts. £ s. d.	Town Hall. £ s. d.	Both Buildings. £ s. d.
Shillitoe & Son	142,386 0 0	191,854 0 0	333,000 0 0
Willcocks & Co.	130,088 9 8	176,449 5 1	306,487 14 4
Pattinson & Sons	120,740 0 0	160,068 0 0	280,808 0 0
H. Lovat			269,397 0 0
C. Wall	111,845 0 0	149,629 0 0	260,974 0 0
Patman & Fother ingham	107,400 0 0	143,720 0 0	251,000 0 0
Thomas & Co.	104,475 6 2	138,965 2 10	242,000 0 0
James Allen	101,817 0 0	139,556 0 0	240,373 0 0
S. Warburton	100,700 0 0	136,720 0 0	237,420 0 0
Turner & Sons, Cardiff	96,683 7 9	129,705 8 9	226,388 16

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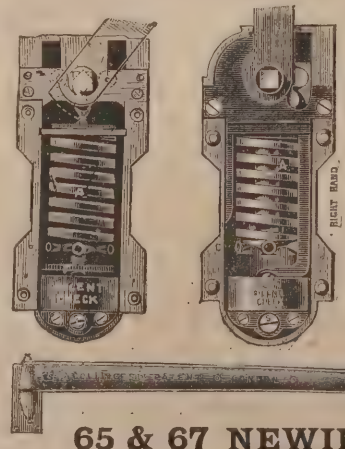
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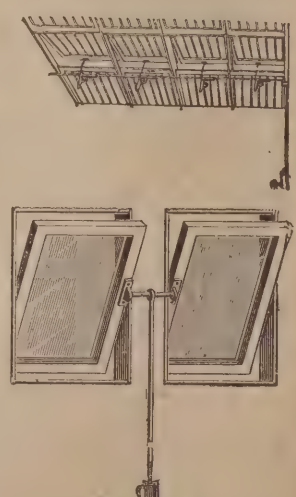
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CHISWICK.—For alterations and additions to Tower House. Mr. J. H. Eastwood, architect and surveyor, 42 Cheniston Gardens, Kensington, W.:—

T. Nicols £1,183	J. Bryant £1,128

TAUNTON.—For the construction of a storage reservoir, &c., Luxhay, Pitminster, for the Town Council. Mr. F. W. Roberts, engineer, Taunton. Quantities by the Engineer:—

S. Saunders ... £107,817 0 0	E. Powell £26,550 0 0
R. Neal 72,794 0 0	Bond & Hitchcock 25,115 0 0
J. Fisher 37,896 12 3	J. H. Dickson ... 24,554 0 0
P. Kerley 35,744 0 0	W. C. Shaddock, Plymouth* ... 22,653 7 4
Cooke & Co. ... 35,462 0 0	
W. Gibson 29,878 3 5	

* Accepted.

KING'S LYNN.—For the erection of Baptist Chapel, Wisbech Road:—

Bardell Bros. £1,739 0	Barnes & Co. £1,495 0
W. H. Brown 1,690 0	W. F. Smith, King's Lynn* 1,470 0
R. Shanks 1,686 15	
Renaut Bros. 1,590 0	

* Accepted.

MARLBOROUGH.—For the erection of the new town hall, for the Town Council. Mr. C. E. Ponting, architect:—

Jacob Long & Son, Bath £10,054	W. Cowling & Son, Bristol £9,108
Stephens & Bastow, Bristol 9,183	Benjamin Hillier, Marlborough* 7,270

* Accepted.

LEWES.—For demolishing buildings and clearing the site for the electric generating station. Mr. W. C. F. Gillam, M.S.A., architect, Brighton:—

H. Knight, Lewes £355	S. H. Diplock, Hove* ... £943

* Accepted.

BRIGHTON.—For alterations and additional storey at 80 York Road for Mr. James Hillman. Mr. W. C. F. Gillam, M.S.A., architect, Brighton:—

Hackman, Ltd. £415	W. Brown & Son £395
S. H. Diplock, Hove 405	G. R. Lockyer* 369

* Accepted. [Rest of Brighton.]

SOUTHWICK, Sussex.—For erecting and completing a residence for Mrs. Banger. Mr. W. C. F. Gillam, M.S.A., architect, Brighton:—

W. Brown & Son, Brighton £896 0 0	J. Rooke, Southwick £825 0 0
J. Murcombe, Brighton 832 8 0	S. Payne, Southwick* 805 0 0

* Accepted.

SWINEHAM, Sussex.—For erecting and completing a residence for Mr. F. Reitlinger. Mr. W. C. F. Gillam, M.S.A., architect, Brighton:—

C. F. Hollands, Hurstpierpoint £1,295	Hackman, Ltd., Brighton £1,225
W. Brown & Son, Brighton 1,260	J. Rooke, Southwick ... 1,173
	J. E. Blanchard, Woodmancote 1,134

[None accepted at present.]

BRIGHTON.—For erecting and completing a pair of semi-detached residences in Victoria Road for Messrs. Jenner & Banfield. Mr. W. C. F. Gillam, M.S.A., architect, Brighton. Quantities supplied:—

Hibberd Bros., London £3,860	Patching & Son £3,317
Hackman, Ltd. 3,500	G. R. Lockyer 3,290
H. Penfold 3,397	W. Brown & Son* 3,156

* Accepted. [Rest of Brighton.]

REIGATE.—For the execution of various works for the Nutfield Sewage Works, for the Reigate Rural District Council. Mr. Nimrod Walker, Surveyor to the Council:—

Supplying and fixing pumping machinery

Horne £1,180 0 0	
Waller & Co., Stroud 845 0 0	
Haywood-Tyler & Co., London 688 0 0	
Weeks & Sons, Maidstone 646 10 0	
H. T. Stewart & Co., Glasgow 606 0 0	
Owen, Blackfriars* 580 0 0	

Ninety yards of C.I. socket pipe.

A. T. Stephens, Mon. £747 0 0	
United States Foundry, London ... 707 0 0	
Stanton Iron Works, Nottingham ... 679 0 0	
Laidlaw 676 0 0	
Cockrane & Co., Dudley 651 0 0	
Stewart & Co. 617 0 0	
Merton & Co., London* 615 0 0	

Building Engine House, Bacteria Tanks, &c.

S. Saunders, London £3,400 0 0	
W. L. Meredith & Co., Gloucester ... 2,476 0 0	
Johnson, Hereford 2,462 0 0	
Kavanagh, Surbiton 2,379 0 0	
W. Manders, Leyton 2,056 0 0	
Streeter & Co., Godalming* 2,008 0 0	
A. T. Catley, London 2,000 0 0	
Jackson, Forest Gate 1,988 19 4	
Clysfred, Harlesden 1,988 0 0	

* Accepted.

CONTRACTS OPEN.

ERITH URBAN DISTRICT COUNCIL.
MUNICIPAL COTTAGES.
TO BUILDERS AND CONTRACTORS.

The Council invite TENDERS for the ERECTION of 48 COTTAGES in Brook Street, Belvedere, and for SUPERINTENDENT'S LODGE at the Erith Recreation Ground, The Avenue, Erith.

Plans and specifications may be seen, and forms of Tender and further particulars obtained, at the Office of the Surveyor of the Council, High Street, Erith, upon payment of £1, which will be returned upon receipt of a bonâ-fide Tender.

Tenders, endorsed "Tender for Cottages," must be sent to my Office not later than FOUR p.m. on MONDAY, the 1st OCTOBER, 1900.

The Council do not bind themselves to accept the lowest or any Tender.

The contractor will be required to enter into a contract and bond, with two sureties, for the due performance of the contract, and the contract will contain a provision that the contractor shall not sublet any portion of the works, under a penalty of £25.

CHAS. H. FRY,
Clerk of the Council.

District Council Offices,
High Street, Erith, Kent.

ST. ALBANS.

The Vicar and Churchwardens of St. Peter's, St. Albans, are prepared to receive TENDERS for ALTERATIONS to the PARISH HALL and the ERECTION of NEW SUNDAY SCHOOLS, &c., in Hatfield Road.

Plans, specification and form of contract can be seen and form of Tender obtained at the Office of the Architect, Mr. F. W. KINNEIR TARTE, 12 St. Peter Street, St. Albans.

Tenders, marked "Tender for Additions to Hall, &c.," and addressed to the Vicar of St. Peter's, St. Albans, to be sent in, in sealed envelopes, on or before the 4th OCTOBER next.

The lowest or any Tender will not necessarily be accepted.

September 1900.

TO BUILDERS.

The Guardians of the Parish of Willesden desire to receive TENDERS for the ERECTION of the NEW INFIRMARY, Acton Lane, Willesden.

Persons willing to Tender may obtain bills of quantities and a form of Tender, and inspect the specification and drawings any day between the hours of TEN a.m. and FOUR p.m. (Saturday till ONE p.m.), upon application to the Guardians' Architect, Mr. A. SAXON SNELL, F.R.I.B.A., of 22 Southampton Buildings, Chancery Lane, London, W.C., and depositing with him a £20 Bank of England note, which will be returned to persons sending bonâ-fide Tenders in the manner and at the time stipulated.

Quantities by Messrs. NORTHCROFT, SON and NEIGHBOUR.

Tenders must be signed, sealed, endorsed "Tender for Infirmary," addressed and delivered to me at my Offices not later than TWELVE o'clock noon on WEDNESDAY, OCTOBER 3rd, 1900.

The Guardians do not bind themselves to accept the lowest or any Tender.

By order.
J. HUTTON HAYLOR,
Clerk to the Guardians.

Guardians' Offices,
No. 329 High Road, Kilburn, S.W.,
September 1900.

HORSHAM URBAN DISTRICT COUNCIL.
ELECTRICITY SUPPLY WORKS.
TO BUILDERS AND CONTRACTORS.

The Council invite TENDERS for the ERECTION and CONSTRUCTION of BUILDINGS for the proposed Electricity Supply Works.

Plans and specifications may be seen at the Offices of the Architects, Messrs. GORDON & GUNTON, Finsbury House, E.C.; or of Mr. W. C. C. HAWTAYNE, M.I.E.E., 9 Queen Street Place, E.C.; and also at the Office of the Clerk to the Council, Mr. S. MITCHELL, London Road, Horsham.

Bill of quantities, with terms and conditions, form of Tender and form of Contract, may be obtained from the Architects on payment of £2, which sum will be refunded on the return of the quantities filled up with a bonâ-fide Tender.

Sealed Tenders, endorsed "Tender for Buildings," must be delivered to me, at my Office aforesaid, not later than TWELVE o'clock at noon on THURSDAY, the 11th of OCTOBER, 1900.

The Council do not bind themselves to accept the lowest or any Tender.

By order,
S. MITCHELL,
Clerk to the Council.

Horsham,
September 1900.



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TO BUILDERS and CONTRACTORS.

The Town Council of Gravesend invite TENDERS for the ERECTION of ADDITIONS and ALTERATIONS in extension of the Municipal Technical School, in accordance with plans and specifications prepared by Mr. EDMD. J. BENNETT, A.R.I.B.A., of 13 Gray's Inn Square, W.C., and 189 Parrock Street, Gravesend, from whom bills of quantities and form of Tender can be obtained by any applicant on payment of One Guinea, returnable on receipt of a bonâ-fide Tender from the applicant.

Plans, specification, and form of contract, conditions, and bond can be seen at the Municipal Technical School.

Tenders, endorsed "Technical Tender," must be delivered at my Office, Court House, Gravesend, before NOON on MONDAY, 8th OCTOBER, 1900.

The Council do not bind themselves to accept the lowest or any Tender.

CHAS. E. HATTEN,
Town Clerk.

DOVER PROMENADE PIER.

The Dover Promenade Pier and Pavilion Company, Limited, invite TENDERS from Contractors for STRENGTHENING PIER HEAD and the ERECTION of a PAVILION,

in accordance with plans, specification, and bills of quantities prepared by their Engineers, Mr. M. NOEL RIDLEY, Assoc.M.Inst.C.E., 11 Dartmouth Street, Queen Anne's Gate, and Mr. ROBERT J. BEALE, A.R.I.B.A., Broadway House, Westminster.

The plans and specification may be seen at the Engineer's Offices, No. 11 Dartmouth Street, Westminster, between the hours of TEN and FIVE, and bills of quantities obtained on payment of £2 2s., which sum will be returned on receipt of a bonâ-fide Tender.

Sealed Tenders, on the form supplied, to be delivered to the undersigned on or before the 9th day of OCTOBER, 1900, endorsed

"Tender for Pavilion, &c."

The Company do not bind themselves to accept the lowest or any Tender.

ERNEST ARDLIE MARSH,
Secretary.

Pier Company's Office,
Marine Parade, Dover.

RURAL DISTRICT COUNCIL OF NEWHAVEN UNION.

ROTTINGDEAN DRAINAGE.

The Rural District Council of Newhaven Union invite TENDERS for the LAYING of about 2,490 feet run of 12-inch and 9-inch STONEWARE PIPE SEWERS, with Manholes, Lampholes, and other contingent works, at Rottingdean.

Plans, sections, detail drawings, and specification may be inspected and forms of Tender and bills of quantities and further information obtained at the office of the Engineer, Mr. THOMAS WM. FRANKS, A.M.I.C.E., Seveirg Buildings, Lewes, between the hours of NINE and TWELVE o'clock a.m. upon payment of a deposit of Three Guineas, which sum will be retained by the Council and deemed to be forfeited if a bonâ-fide Tender is not made in the proper form by the depositor. If a Tender is made which is not accepted the deposit will be returned, and if a Tender is accepted such sum will be retained by the Council until the contract has been executed by the depositor and will be forfeited if the contract be not executed within seven days after notice has been given to that effect.

Sealed Tenders (which must be on the form supplied) to be sent to the undersigned Clerk to the Council on or before THURSDAY, the 4th day of OCTOBER next, endorsed "Rottingdean Drainage."

The Council do not bind themselves to accept the lowest or any Tender.

Security will be required for the due performance of the contract.

By Order,
WILLIAM GATES,
Clerk to the Council.

No. 86 High Street, Lewes,
September 1900.

TO IRON FENCE MANUFACTURERS and OTHERS.

The London County Council is prepared to receive TENDERS for WROUGHT-IRON HURDLES, to be delivered at the various Parks and Open Spaces.

Persons desiring to submit Tenders may inspect the drawings, and obtain the specifications, form of Tender, and other particulars, at the Parks Department, 11 Regent Street, S.W.

Tenders must be upon the official forms, and the printed instructions contained therein must be strictly complied with.

The contractors will be bound by the contract to pay to all workmen (except a reasonable number of legally-bound apprentices) employed by them wages at rates not less, and to observe hours of labour not greater, than the rates and hours set out in the Council's list, and such rates of wages and hours of labour will be inserted in, and form part of, the contract by way of schedule.

Tenders are to be delivered at the County Hall in a sealed cover, addressed to the Clerk of the London County Council, and marked "Tender for Iron Hurdles."

No Tender will be received after TEN a.m. on FRIDAY, the 5th day of OCTOBER, 1900.

Any Tender which does not comply with the printed instructions for Tender may be rejected.

The Council does not bind itself to accept the lowest or any Tender, and it will not accept the Tender of any person or firm who shall on any previous occasion have withdrawn a Tender after the same has been opened, unless the reasons for the withdrawal were satisfactory to the Council.

C. J. STEWART,
Clerk of the Council.

Spring Gardens, S.W.,
September 1900.

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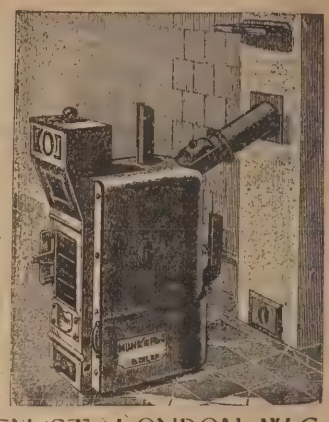
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THE BUILDERS' JOURNAL & ARCHITECTURAL RECORD

October 3, 1900. No. CCXCV.

Effingham House, Arundel Street, Strand, W.C.

An Architectural Causerie.

Windows: Sash or Casement.

One of the reactions of our day, so fond of change yet often looking back, is that which has substituted casements for sash windows in so many designs of private houses. The sash window was introduced into England in the seventeenth century from Holland, and immediately became popular, its convenience in enabling people to open "a crack" at the upper or lower part for the ventilation of a room being unmistakeable. This was before the days of plate glass, though diamond panes were being disused. A window from without presented the appearance of a number of squares: these, as glass-making improved, were made larger, until in our own time plate glass was introduced and many large windows were fitted with it, the frames at the same time being changed to mahogany. But many London drawing-rooms remained fitted with casements opening to a balcony, a very pleasant arrangement which in summer practically increased the size of the room. It is rare, however, in England to find architectural effect, in a matter of this kind, studied as it is abroad; consequently the casement presents the appearance of a single line of some light colour against the glass. On the Continent the effect is that of a long cross, which is better, and suggests the idea of support and continuation—in fact, of a mullion and transom. Sometimes a compromise is made by using the sash for small windows and the casement for large ones. In the designs of the last few years the casement figures largely, for the mullioned window has been revived and its "lights" are too small for a comfortable use of the sash system. In the suburbs the new villas are rarely provided with as good a "French window"—a misnomer, by the by, for the sash is essentially Dutch—opening upon the lawn as such houses universally possessed forty years ago. The lawn itself has shrunk to something little better than a backyard or disappeared altogether, and this, too, in roads of high-rented houses. Land is dearer, hence the restricted garden; time is spent at the theatre or away on a bicycle, and less at home, and the suburban garden is thought less important. In blocks of flats there is little opportunity for this, the most pleasant feature of suburban life, and in the newest of these "Mansions" the sash is usually retained. On the whole, a compromise is the best solution of the window question; a garden or a genuine balcony—a balcony for use—is best approached by a large French window, but the sash will probably hold its own for bedrooms and offices. Its disadvantage, regarded from without, is that it introduces too many hard horizontal lines into the picture as we look at the house. J. C. P.

Evening Studies for the Coming Winter.

The winter evenings are fast approaching, and it will therefore be well to make a few remarks about arranging a scheme of study for them. It is not, as it was a comparatively few years ago, a matter of adopting an indifferent scheme because it was the only one brought before the student's notice, but of selection between many, each of which is excellently devised, and even of developing a scheme of one's own. To insist strenuously upon the necessity for supplementing the ordinary daily office experience with evening study of some sort is no longer so essential as is guidance of that study upon proper lines, the necessity of which is universally acknowledged. Nor is this an altogether easy task. Owing to the multiplicity of opportunities, the tendency is to undertake too much, with the natural result that many students who are full of energy in October are fagged out and brain-weary before the following April. Two hours each evening for four evenings in the week is as much in the way of direct study as the majority of young men can stand for a protracted period, taken in addition to the ordinary work of an office, it being well that the remainder of any spare time should be given up to athletic, and preferably outdoor, exercise of a moderate character. Within this limit the brain can be trusted to do its full work, and to do it continuously, without ill effect to the worker, accomplishing much more in the course of an entire winter than if over-driven. So, too, with the selection of the subjects to be studied; and in this respect it should not be forgotten that the elements present as great difficulties to the beginner as do the most abstruse problems to the accomplished student. Thus both are to a great extent in the same position. Neither should scatter his energies over too wide a field, or he will feel he is making, and in fact will make, but little progress; while on the other hand neither should concentrate his energies entirely upon one field, or he will run the risk of becoming "stale." Two subjects at least should be taken up, which, while correlated, should on the whole make drafts upon a different set of brain cells; one, for instance, such as design, calling upon the imagination, and the other, the science of construction, with its closely reasoned arguments. To many it is possible to concurrently follow a third connected subject with success, but it is given to few to do more than this. Youthful students in particular are inclined to scatter where they ought to concentrate, and as it pays the teacher best, in schools which depend upon Government grants, for elementary students to obtain many moderate successes, there is a tendency to discourage proper concentration amongst many of them. Older men, of more settled character, can almost invariably concentrate more, and can even, for a considerable time, devote themselves to one branch of study only without material damage, but presently the brain will feel the overstrain. With them, success and distinction may seem to be great prizes, but they may be very dearly bought. Thus one may say that the younger student as a rule lacks concentration—the older, decentralisation; while each should aim at reasonable variation combined with persistence.

G. A. T. M.



ALL SAINTS' CHURCH, PAVEMENT, YORK. DRAWN BY C. G. HARPER.

Two Notable Churches.

That the fine church of St. Dunstan's-in-the-West, the chief ornament of Fleet Street, is being defaced by the present building of insurance offices over the westward one of its two forecourts is a scandal and a disaster; and none the less may we deplore the fact from the church itself being modern, and a copy at that. It was a piece of indefensibly bad policy that led the Consistory Court to sanction the sale of this strip of paved court to a commercial body for building upon, thus sacrificing the balance of architectural composition of which Shaw, the architect of the church, was the author, about seventy years ago. St. Dunstan's-in-the-West, so-called to distinguish it from that other St. Dunstan—St. Dunstan's-in-the-East, off Lower Thames Street—was built towards the close of William IV.'s reign, and replaced a curious building that projected beyond the normal building line of Fleet Street and had for the chief ornament of its somewhat debased exterior a bracketed clock furnished with the figures of two giants in an alcove,

which struck the hours and the quarters with clubs upon a bell. That clock and the "Giants of St. Dunstan," as they were called, were purchased by the Marquis of Hertford and erected at his villa of St. Dunstan's in Regent's Park, now the residence of Lord Aldenham, where they still remain. The present church, which replaced the vanished edifice, is remarkably good in general effect and in detail for the period in which it was built. This is owing, doubtless, to the direct inspiration which Shaw took from the ancient church of All Saints', Pavement, in the city of York, of whose beautiful open octagonal lantern tower that of St. Dunstan's is a copy. How close



ST. DUNSTAN'S-IN-THE-WEST, FLEET ST., E.C.

the copy will be noted by those familiar with the London church on glancing at the illustrations herewith. Its situation renders the copy even more effective than the York original, whose lofty pinnacles lose something from the crowded part of York in which the Pavement lies. Built away back in the Perpendicular period, the lantern-tower of this original was raised for a purpose other than that of ornament, being indeed designed to carry a lighted beacon that should guide strayed travellers across the wild uncharted country into York in times when dense woodlands—the ancient Forest of Galtres—stretched northwards for fully fifteen miles.

St. Dunstan's has never lacked admirers. Many years ago the tower was chosen by Clarkson Stanfield as a central object in one of his well-known illustrations to Dickens's Christmas story "The Chimes." The interior of the church is disappointing after the promise of the exterior. The more than life-sized statue of Queen Elizabeth that stands in an alcove in the eastern courtyard came from the long-vanished Lud Gate.

C. G. H.

On Reflection.

Electric Trams in Ruskin Country. SEVERAL references have already been made in our columns to the system of electrical tramways which the British Electrical Traction Company proposes to introduce into the Lake District. Much local opposition has been encountered, and the scheme was strongly condemned by the National Trust for Places of Historic Interest or Natural Beauty: eventually it was withdrawn, but the managing director of the company now comes forward and explains why it was withdrawn, at the same time stating his side of the question. The withdrawal, he says, was necessary because the local authorities required alterations which could not be carried out by any modification of the order applied for, making a new order essential. He appreciates the fact that the residents desire to maintain their seclusion in a beautiful piece of country, but, according to his view, this is no reason why "the much larger number of people who are unable to afford to pay the heavy fares charged by the coaches in the district should be excluded from it." He is of course quite correct when he maintains that the Lake District is not the exclusive property of the few who reside in it; but many will differ from him when he asserts that the argument that electrical tramways would spoil the district for everyone is quite inconsistent with the other argument, that the tramways will bring a large number of persons into the district. This is all very well, but past experience of the introduction of railways into spots of great natural beauty is sufficient to desire the discontinuance of such a practice. There are towns enough spread over the district in question, which are already connected with the railway, thus making them excellent centres from which to make excursions. One can understand and appreciate a scheme by which some country or object of interest is brought, by means of a railway, into touch with the population who would wish to visit it; but why, in a case like the one under notice, run lines all over the district, for this would probably be the final outcome of the present scheme? Railways, though they are now indispensable, always spoil, more or less, whatever beautiful country they pass over, and they are therefore only defensible on the grounds of utility and facility of intercommunication. If, in the interests of the commerce of to-day, a railway becomes an essential, then there is nothing to do but to construct one; but it appears to us that in the Lake District conditions are different, and there is no necessity for the proposed tramways. If these would not deface the country no objection would be made to their introduction; but the fact being otherwise, they should be opposed. If, as is stated, the coach fares are too heavy, then let new coaches be introduced, with charges reduced to whatever is considered reasonable. A coach is a movable object, and, because of its horses, is generally a beautiful one; lines of rails and cast-iron standards with arms are fixtures, and become part of the landscape, with displeasing results.

Tintern Abbey. THE statement was circulated at the beginning of last week that the famous Cistercian Abbey at Tintern had been purchased by the Government, and had so become the property of the nation: later, the Central News announced that all this was premature, the contract not having been settled, much less signed; but the purchase, by the Commissioners of Woods and Forests, has since been confirmed. The grand old abbey was on sale for a long time, for it formed part of the Duke of Beaufort's Monmouthshire Estate, which was placed on auction more than two years ago. When it became known that Tintern Abbey ran a risk of becoming the property of someone who might treat it largely as an income-producing investment, the Monmouthshire County Council appointed a committee to enquire into the matter, with a view to purchase, but we believe nothing came of this. The National Trust for Places of Historic Interest or Natural Beauty was also looked to for help, and the rumour went round that an American proposed to acquire the abbey, take it down stone by stone, and re-erect it in his own country: such, however, was an old wives' tale. As to the revenue derived from the admission fees, it may be mentioned that Tintern produces between £700 and £800 a year, while Raglan Castle, also part of the Beaufort property, brings in £500. Tintern Abbey has already been the subject of much description, study, and eulogy, and there is therefore no need to discourse here on its beauties. It is sufficient to say that it belongs to that Geometrical Gothic within the limits of which, as Mr. Prior says, "are to be grouped our most perfect buildings, as well as our most consummate sculpture." With such a building as Tintern Abbey for our heritage, it behoves us to be blameless in our care of it. Let us hope that in the hands of the Government it will be well looked after: there should be no chance for such spoliation as at St. Alban's, or such adaptation to commercial ends as that so deplorably carried out at the Fall of Foyers: still there is the new guard-house at the Tower to remind us of the fact that even Governmental authorities can commit gross vandalism.

London Bridge. THE problem of accommodating the immense streams of traffic that now pass through London's streets is becoming yearly more difficult. Widenings have been made at certain parts which have afforded some slight relief—such, for instance, as that at the Oxford Street end of Tottenham Court Road—but much more comprehensive schemes are needed, schemes like the one which has effected such a splendid widening of the Strand between the two churches. The streets being thus crowded it necessarily follows that those bridges which form part of the main thoroughfares also become choked with traffic, and nowhere is this so apparent as on London Bridge. This is no new discovery. The matter has been under anxious notice for many years past, and it was with the object of relieving the congestion on Rennie's excellent bridge that the Tower Bridge was built. But, unfortunately, this latter bridge has not proved of much use on account of the unsatisfactory state of its approaches on both sides of the river; and until these are widened and is a direct means of communication afforded from St. George's Church in the Borough, so as to enable the dock traffic to be diverted at this point, there will be no improvement. The bridge to the west of London Bridge—Southwark Bridge—is likewise of little use, though it cost £800,000. The reason for this is again largely on account of the unsuitability of its approaches, besides which the gradient on the Cannon Street side is considerable, causing great strain on horses pulling heavy vans. As to London Bridge itself, there is no lack of proposals. As far back as 1876 Parliamentary plans were deposited for a widening scheme, this one proposing to erect at each side a light suspension bridge for pedestrians, thus leaving the whole of the bridge free for vehicular traffic. Schemes of this kind would be disastrous to the appearance of the bridge, and should be condemned. London Bridge (which cost £1,458,311) and Waterloo Bridge are the most beautiful that now span the Thames, and if any widening schemes are carried out on them they will be spoilt. Widened approaches or new bridges are what is wanted.

Warlingham Church, Surrey.

BY J. RUSSELL LARKBY.

A smiling well-wooded plain, a secluded church nestling under the great churchyard yews, swift-flying swallows and the reiterated note of the cuckoo, and one has a mind-picture of Warlingham Church on a perfect spring day. What a valuable lesson these village churches are ready to teach us if we only approach them in the right way! The highest and best thoughts of man are centred on one Sacrament—one Sacrament ever new and fresh, yet naming its age by centuries, and the source of all that is good and beautiful in man's conception of the Temple of God. We have right cause to be thankful that there are left to us these sweet and lasting memorials of earnest hearts and loving hands.

Architecturally, the church is by no means imposing, either externally or internally, and the absence of a chancel arch detracts greatly from its appearance. Some holes in the north and south walls of the chancel would seem to suggest a screen, and one can well imagine the restful effect of such a feature; such as the screen at Kemsing, in Kent, for instance. The tracery of the Decorated east window has been restored, but it retains its original interior hood mould and side shafts (see Fig. 1). There are no base mouldings, and the slender shaft is attached to the chamfer in the manner common to the style.

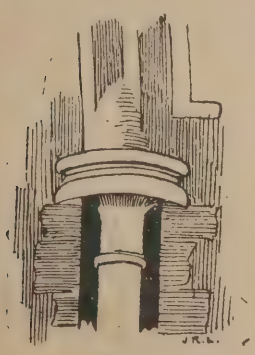


FIG. 1.

In the north and south walls respectively are two elongated Early English lancets and a two-light Perpendicular window, that on the south side having been recently restored. The rere arches of the lancets are slightly moulded, as shown in Fig. 2. The south wall has also a priest's door, the outer surface of which has been restored. West of this, and almost touching it, is a fine specimen of those peculiar openings known as low side windows. Sketches of both internal and external details are given in Figs. 3 and 4. The outer face of the opening has been restored, but presumably according to the original form, as I believe the work was placed in the hands of Mr. Johnston. Mr. Johnston is a great champion of the "confessional" theory of these mysterious openings, and he stoutly maintains that this *is* without doubt a confessional window. How far he is correct has, of course, yet to be proved, but this example does not seem to be particularly well adapted for the purpose claimed. From the bottom of the window to the present ground line (and something must be allowed for earth accumulation) the distance is 5ft. 3in. The proper and only position for a penitent is obviously to kneel to the priest, and how impossible this would be in the Warlingham example is obvious to all, although Mr. Johnston gets over the difficulty by placing the penitent on a stool.

Fig. 4 gives the interior detail and shows a peculiar semi-circular recess, which "confessional" champions claim to be where the priest stood to absolve the penitent. One is very much tempted to ask these gentlemen why the penitent should not be allowed to make his confession inside the church, and if he *must* confess through the wall, why it should be necessary to construct the opening 5ft. from the ground, which, without the aforesaid stool, is an impossible height for any person to kneel and confess to a priest inside.

The "confessional" theory, except in some quarters, and be it said competent quarters, is wellnigh *in extremis*, and it is to be hoped that in a short time it will entirely disappear, like the absurd "leper" explanation. Without, of course, expressing any decided opinion in so

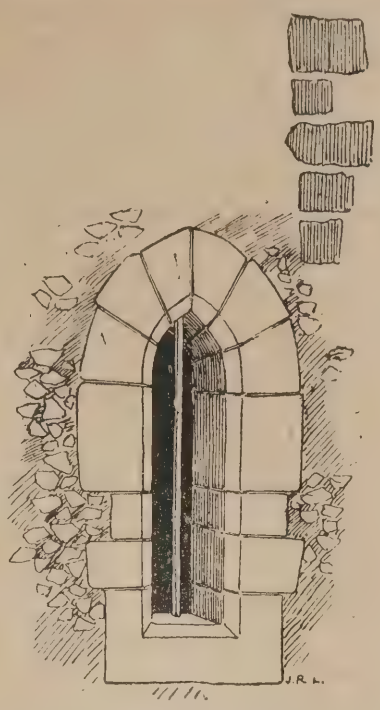


FIG. 3.—OUTSIDE OF LOW SIDE WINDOW, WARLINGHAM.

doubtful a matter, most antiquaries are inclined to give more than ordinary attention to the theory started by Mr. Pointing, and ably defended by Mr. St. John Hope, that these openings were for the ringing of the Sanctus bell during mass. Much has been said on both sides of the question, but it is a noteworthy fact that at Warlingham, as at Goodmanham and Holme (Yorks), and many other places, the windows open out towards the village. Sometimes, as at Holme, the village is on both sides of the church, consequently there are two low side windows. Now it is not likely that in any ordinary village church there would be so many penitents as to require the use of *two* confessional holes.

Ancient drawings of the confessional are by no means uncommon. Dr. Legg has published one in his "Churchman's Almanack," where the penitent is shown kneeling to the priest, who is seated in a kind of recess—certainly in the interior of the church. Another important example may be cited. On one of the seven panels of the sacrament font at Farningham it is interesting to note that, in the confessional group, the penitent again kneels to the priest, who is seated as in the drawing published by Dr. Legg. If these windows were in at all general use for the confessional (and they are found of nearly all styles), it is, I imagine, only to be expected that some mention would be made of them by religious writers, and if only a contemporary representation of their use for confession could be discovered, then indeed the hearts of the champions would have right cause to be glad; but, if my memory serves me correctly, I have neither record of any such picture, nor indeed any literary support that they were ever used for the Sacrament of Confession.

Eastwards from this low side window is to be seen a perpendicular line of ashlar, also seen in the sketch of the exterior of the chancel at Fig. 5. From this it seems that the chancel was lengthened about 20ft. at some time not long after the erection of the church, as nearly all the features of the chancel are Early English, with a little Decorated work in the east wall, which would perhaps tend to show that some further structural alterations were carried out in early Decorated times. More direct evidence of this is, however, to be seen in the south wall of the chancel, which has two separate sets of sedilia, with a piscina attached in both cases. In both instances the sedile is round headed, and the piscina pointed and trefoiled. It may be suggested that when the conjectured alterations were made it was thought better to leave the old and westernmost sedile and piscina and to construct similar ones near the new position of the altar.

On the north side of the nave is a large wall painting, roughly executed, of St. Christopher carrying the infant Christ across the stream; the painting, however, is now much faded. The font, near the west door, is octagonal and Perpendicular in style, each face bearing a representative, roughly cut, quatrefoil. On the eastern face the points of the cusp meet in a grotesque head. The whole shows some traces of colour—and scraping.

I entered Warlingham church as quite a stranger, but I left it with a contented mind, glad that to the antiquary there is often something in the quietness of the village church which one does not get in the vastness of the cathedral. Everything here is on such a small scale that all the details can be grasped in an hour or two, and at a second visit the place is like an old friend, and another church to be visited periodically with both profit and pleasure.

The only Statue of a Nun on a public monument in North America is the bronze portrait statue of Jeanne Mance, the first Sister of Charity who landed in North America. The statue is of colossal size, and is in the Place d'Armes, Montreal. She is represented dressing the wounds of an Indian.



FIG. 4.—INTERIOR OF LOW SIDE WINDOW, WARLINGHAM.

DECORATION AND FURNISHING.

III.

By FRANK MURRAY.

(*Concluded from page* 126, No. CCXCIII.)

IT is a little puzzling to know from what point of view one should regard furniture as a motive for a paper within the scope of this journal. To the general reader one would say, there is nothing easier than to buy it, except to buy bad. Every need of shape, size, and special use has been designed and re-designed in time-honoured and often monstrous forms. The subject lends itself so well to picturesque illustration that a book on furniture has come to be one of the reserve battalions of the art publisher. The catalogues of the large furnishing and decorating firms—which, by the way, can be taken quite seriously as books, many of them being exceedingly fine examples of printing and illustration—enable anyone to be cheaply or extravagantly vulgar in an armchair at home, secure from the seductive commonplaces of "art" furniture salesmen. But advice to the professional reader is a weightier matter.

Since the era that we flatter ourselves by naming that of the revival of the arts, the design of furniture has engaged the labours of many well-intentioned and capable men. Their efforts, however painstaking and earnest, suggest little beside painful reflections. Up to the end of the eighteenth century, style in the design of articles of domestic use shared the fortunes of the other handmaid arts of daily life. It would not flavour of exaggeration to affirm that it is hard to find many really bad examples of design in the whole of the ages preceding the close of that period. When, however, we come to look at the time of the so-called revival of the arts, to consider critically the efforts of men who attempted to piece together the broken strands of artistic tradition, one feels that silence is the best and only possible criticism to offer. Their aims and enthusiasms command our respect; beyond this there is nothing to be said.

The subject of original design in furniture will engage attention later on; at present it will be best to confine ourselves to the consideration of the examples of already designed work of typical styles.

Great secular alterations in the habits of life among the centres of population, especially in the wealthier classes, have demanded a corresponding adjustment of the forms of articles in daily domestic use through all ages, but it is only within the last two centuries that such a radical alteration has taken place as to necessitate a complete readjustment of form and use to the altered conditions obtaining.

It must be noted here, in these brief hints, that we are not taking into account the furniture of Oriental nations, whose habits of life, widely differing from our own, have remained practically unchanged for many centuries.

Though we may borrow many useful hints from earlier times, the great storehouse of style, form, and artistic fitness in design will be found in the examples of the sixteenth, seventeenth and eighteenth centuries. The work left us by these, the golden ages of design, is beyond praise, and the most helpful advice I can tender is to exhort readers to make use of the poor remainder of these that time has left us. A few hours spent in the Furniture Section of the South Kensington Museum galleries would do more to establishing a sound understanding and appreciation of the principles of design in the furniture arts than volumes of the most artistically printed denunciation and exhortation.

Let me now direct the attention of my readers to certain

Main Considerations

which affect the question of style and design in general. To put the matter as pithily as possible in the beginning, I would say: Do not in any case be a slave to formalism in style. One might parody the well-known proverb, and say "Style is a good servant, but a bad master." It does not resemble a crystallised inorganic thing, but a vital living creature. The very essence of style is character, and that is in itself simply a departure from the normal standard. It is to be hoped we have seen the last of those mechanical formalisms—houses built, decorated, and furnished throughout in one particular style. The house, its decorations and its furniture, should show symptoms of growth and development; a ready adjustment of convention to the increasing needs of daily life; a respect for old artistic traditions; a warm welcome to any new vital development in art. All these things are poles asunder from the inert formalism which results from a pedantic adherence to rigid style.

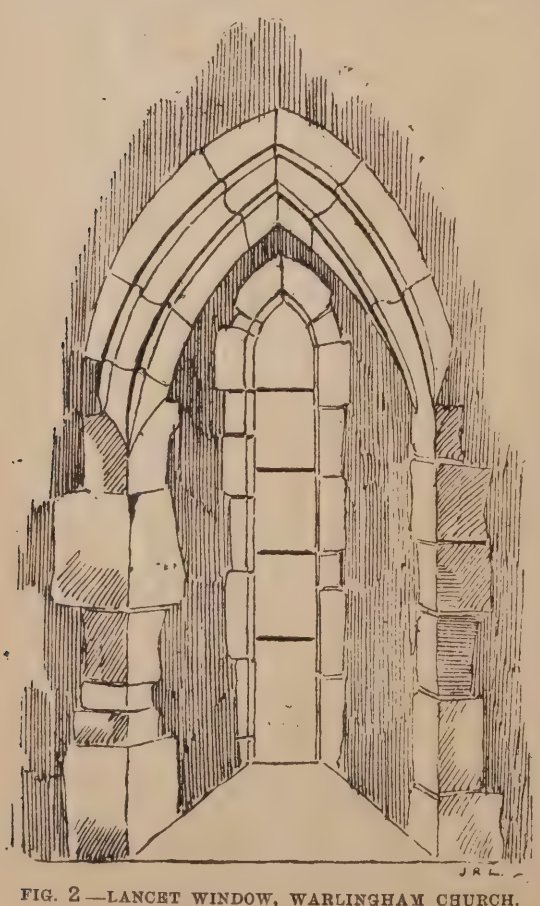


FIG. 2.—LANCET WINDOW, WARLINGHAM CHURCH.

In the selecting and placing of furniture more regard should be had to function than to style. The types afforded by two centuries of design may be very fittingly found in the same apartment. The beginning and the end of a century agree to peacefully and artistically differ; but to have pianos or umbrella stands masquerading in Græco-Roman or mediæval costume is an unforgiveable offence. It must be remembered that nearly all articles of modern use are inseparably connected with defined styles of the later periods. These marked accents must never be forgotten. The folding-top escritoire, the china cabinet, the settee, the banner screen, the card table, all suggest, more or less vividly, the gracious, quaint, and kindly period of the eighteenth century, and these delightful images should not be sacrificed on the altar of a mechanical precision in style. One very

Great Defect

of to-day is over-furnishing. It is certainly true that ninety-five houses out of a hundred are made vulgar, ugly and uncomfortable by over-furnishing: for this there is simply no remedy at all; "you cannot make a silk purse out of a sow's ear," but you can at least take great care that in advising, selecting or planning you err on the side of simplicity and reticence. We must be prepared often to find our most cherished efforts spoiled after they have left the designer's hands; no one can guarantee against misuse, and the meretricious instinct of



FIG. 5.—CHANCEL, WARLINGHAM CHURCH.

the tribes that inhabit and artistically defile their houses is too strong for the artist to control. We may, however, satisfy our conscience by leaving the chambers swept clean and garnished for the seven women who will probably enter in with antimacassars, cheap pottery, and painted tambourines.

One of the most quaintly interesting cases of the diseased tendency to over-furnish is that of the familiar drawing-room cabinet. What social law or convenience has declared statutorily for a cabinet in the drawing-room is unknown; no one ever seems to reflect whether there are any objects that want "cabineting," which are commonly bought afterwards to fit the cabinet, but all considerations of space and comfort would count for nothing if they involved the sacrifice of the cabinet fetish.

There is one section of furniture that presents special difficulties. Sofas, easy chairs, and heavily stuffed furniture are, and always will be, a main source of trouble. It is not that there are no types of perfectly good artistic form fitting for all the reasonable needs of all reasonable people, but fashion has introduced a host of forms which, christened with vulgar and inappropriate names, should only go to increase the bulk of the art furnisher's catalogue.

There is one rule as to form in regard to all heavily stuffed or padded furniture by adhering to which there is no reason why these objects should present any rampant artistic improprieties. Let the form be simple, the curves flat, avoid elaborate and lumpy trimming—striped materials are very good for the purpose of covering; they accentuate the formal lines, and, with well stuffed furniture, give exceedingly graceful flat curves. In this matter of upholstery (an unhappy word, but a well understood one), we may regard from about 1660 to 1760 as the best age for the upholsterer, and the discriminating way in which heavy padding and stuffing was modelled into quaint and almost beautiful shapes will provoke an artist's unbounded admiration. It will be well to notice here that in dealing with styles anterior to the year 1600, going back even so far as Græco-Roman times, stuffed work was very rarely fixed to a frame; the cushions or padding were made separately in the form of squabs and placed loosely in position or secured by straps and bands.

Hangings.

Stuffed furniture leads one naturally to the consideration of draperies, and, at the risk of being a little out of place, I will give a word or two here on the subject. There is not much to say, but it ought to be said very strongly. It is not needful to particularise; I would only ask all and singular to make a clean sweep of the upholsterers' works and renounce them. The one line to take in respect of the arrangement and shapings of window hangings and draperies is simplicity, and simplicity, and again simplicity; and this without regard to the richness or elaborateness of the decoration you are dealing with. Let your materials be as costly or as inexpensive as you like, it matters nothing whatever; keep the forms severe, the fringes restrained, the lines of draping vertical, or nearly so, no heavy loopings, a plain or very slightly shaped head band, no elaborateness of curtain poles; if a cornice be a necessity return the cornice of the room to form the required headpiece for the window hangings. Good style in hangings is not a feature after the middle of the eighteenth century; the draperies

later than that epoch were very conventional and affected in treatment; like many other things, the hangings came to be mere decorations and lost all semblance of use. The true beauty of draping was confused in an affected jumble of forms. The modern window curtain, not intended to draw, but simply a supposed ornamentation, represents the final degradation in style which began about the year 1760.

In considering the furnishing of public rooms and halls, one cannot afford to treat the continuity of style with the same freedom as in the case of a private residence. At the same time, even in these cases, a certain insipidity is the accompaniment of too great pedantry and precision in style.

Passing now to the consideration of independent or original design in furniture, the remarks contained in these columns are given as advice or guide to those to whom the subject of furniture has not appealed directly in the way of professional work, and I would say, very strongly, that original design in furniture should not be attempted by an amateur or beginner. Edged tools are proverbially dangerous playthings, and rules for the design of furniture are more than likely to result in the greatest misery to the greatest number; that is to say, those who use the articles after they have been made. There is one perfectly safe piece of advice that can be given, with a strong probability that it will rarely be followed, and that is: In designing, think first of convenience and comfort in use; sacrifice everything to these primal necessities. It is a little humorous to find that many of the most interesting, artistic and delightful pieces of furniture have been designed without any apparent regard to the above advice; nevertheless, I feel bound to urge it, even if it only come to be regarded as a piece of copy-book morality.

The Besetting Sin

of those who attempt design without a long course of drill in the mechanical elements of constructive fitness and proportion is a contempt for all previous essays in design; nothing less than a new style will satisfy, and what that means in unpractised hands, the tame, tasteless abortions we are being taught to call the new style are a satisfying evidence of.

There is plenty of room for individuality and scope for freshness of treatment in the natural development of the historic styles. The great designers of the past wasted no thought on the invention of fresh tongues in which to express their ideal, and I think there is little fault to be found with the greater part of the work they have left us.

If I add anything to these general lines of advice it would be to say, avoid any form of affectation; be simple and straightforward; a piece of furniture should serve its ends unobtrusively and be as lovely as its uses will permit. In the greater number of cases need will only allow of a quaintness of form or harmony in proportion; beauty of texture or colour can be had to make amends for these limitations, and in the interest of grain or lustre of colour and sheen of surface, the simplest piece of furniture may worthily find its place among the masterpieces of the greater arts.

It will be well to bear in mind also that the greater the richness and elaboration in furniture, the more risk of inappropriate, and therefore bad, design. In the nature of things an object intended for everyday use and handling is unfitted for the display of rich and elaborate detail. There is always a certain sense of unfitness even in pieces with an especial decorative purpose, where some latitude might be supposed, and the experience is universal that what might be called show pieces are fatiguing and unsatisfactory to the sense.

Great reticence must be observed in ornament, whether carved, painted or inlaid. On the other hand, there is wide scope for the most enchanting effects by the use of varied textures, woods and other materials, such as tortoise-shell, bone, pearl, &c.

The most fruitful field for the expression of character and development of style will be found in the use and design of mouldings and moulded surfaces. The simplest and most ordinary of things will attain by means of fine mouldings a stamp of individuality and family, if one may use the word, a breeding. In a crowd of indifferent examples one such will preserve its rank and irresistibly attract.

The foregoing remarks apply more directly to what is understood as "furniture" in common speech, but with certain deductions the same may be held to apply to the whole of the fittings of a house. The word "furniture" may very reasonably be used as a distinctive for all fittings for domestic use; this would bring the apparatus for lighting, heating, &c., into the category, but in my remarks hitherto I have been more particularly referring to the three great classes into which what is commonly understood as "furniture" can be divided. These may be very briefly classified as—things to sit at, things to sit upon, and things to put other things in or upon; in brief, the table, the cupboard or sideboard, and the chair or settee. But outside of these limits there are very many articles of daily use which quite reasonably and legitimately can be held to come within the limits of "furniture" properly so-called. In many of these the art of design is in a sounder state than the criticism on the principal classes implied. This is undoubtedly the case with metal work, and to a great extent with wall materials, such as paper and stuffs. Carpets, except in the case of Oriental design, are not a great deal better off than chairs and tables; but still there are some examples which seem to show that the art of design has never fallen quite so low as these, and has had a fairer chance of healthy growth.

It may not be amiss to suggest that a great field for interesting and truly artistic work remains in the treatment of combinations of woods. The practical difficulties in the use of many woods of exceedingly fine colour and texture, except in very small pieces, limits one's field of action to a certain few well-seasoned veterans, at least for the principal constructive parts; but even of these the field is widening year by year, and with the incoming of new and improved methods of seasoning, a great many fine colonial woods may be added to our stock of reliable constructive ones.

I have already overpassed the limits of my space, and there still remain to treat many interesting side issues in the great artistic question of furniture, notably metal work, hinges, lock-plates, fastenings of all kinds, both for purely decorative purposes and decoration combined with use. I can only indicate those fields of design, and may possibly return to the subject at a future date. It remains to plead to my readers for a favourable construction of the suggestions which I have ventured to put forward.

A Memorial Screen and stained-glass window has been erected in St. John's Church, Newcastle.

A Stained-glass Window in Seamer Parish Church is to be erected as a memorial to the late Earl of Londesborough from the Seamer tenantry. The order for the window has already been placed in the hands of Messrs. Burlison and Gryll, of Sheffield.

Arley Chapel Clock, Bristol, has been reconstructed by Messrs. W. W. Kemp and Co., of Stoke's Croft. The old freestone dials of this ancient landmark have been taken out and replaced with cast-iron skeleton ones (five feet in diameter) glazed with white opals, which at night are brilliantly illuminated. The works of the clock have been entirely reconstructed, all the old worn-out wheels and bearings having been replaced with new ones of gun metal. The removing of the massive freestone dials has necessitated considerable labour, and new mechanism to the four sets of works which carry the hands. Messrs. Kemp have also made and fitted to the clock an automatic arrangement for turning on the light at dusk and turning it off at 11 o'clock. The weather vane on the top of the tower, which has been stationary for a very long time, has been taken down, redecorated, and the obsolete fittings replaced by new.

GREAT FIRES.

FIRE has always been one of the great destructors of man's handiwork, but the immensity of the damage done can hardly be determined. The following figures, however, show what enormous catastrophes have occurred through fires.

London was nearly destroyed by fire in 798; again in 982, 1212, and 1666. The last fire is known in history as the "Great Fire"; it burned over a territory of 436 acres, including 400 streets; 13,200 buildings and property valued at about £10,000,000 were destroyed. Edinburgh was nearly destroyed by fire in 1700. Lisbon was burned in 1707. Venice was destroyed by fire in 1106 and again in 1577. Berlin was destroyed in 1405. Berne in 1634, and again in 1680. Hamburg was nearly destroyed by fire in 1842; 4,219 buildings were burned, and 100 persons lost their lives; £7,000,000 worth of property was destroyed. Copenhagen was burned in 1728; 1,650 houses destroyed; again in 1795, and 1,563 houses burned. Stockholm in 1751, with 1,000 houses destroyed. Moscow in 1752, visited by a large fire; 18,000 houses destroyed. Again in 1812; this time the fire started by Russians in order to prevent the French occupation of the city; 38,000 houses were destroyed, and more than £30,000,000 of value.

Constantinople has been the scene of numerous and costly fires. In 1729 a great fire destroyed 12,000 buildings and nearly 6,000 persons. In 1745 another great fire lasted five days; again in January, 1750, 10,000 buildings destroyed. In April, the same year, another fire, with £3,000,000 worth of property destroyed. Again, later in the year, a fire destroyed 10,000 houses; in 1756, 15,000 houses were destroyed and 100 lives lost. In 1782, 10,000 houses were burned; in 1791, between March and July, serious fires destroyed 32,000 houses, and nearly as many were destroyed again in 1798. In 1816, 12,000 houses and 3,000 shops were destroyed. In 1870 Pera, a suburb of Constantinople, was nearly destroyed, 7,000 buildings and property valued at £5,000,000 being consumed.

Smyrna had great fires in 1763, 1792, and 1841, destroying between 2,000 and 12,000 buildings at each fire. Great fires have occurred in India, China, and Japan; in many cases large cities were entirely destroyed. In Quebec, in 1845, 1,650 buildings were destroyed and the same number in May and June following; and in 1866, 2,500 buildings and seventeen churches were destroyed. At St. John, N.B., 1837, nearly all the business portion was destroyed. In 1877 the "great fire," more than 200 acres burned, and ten miles of street. St. John's, Newfoundland, was nearly destroyed in 1846, and £10,000,000 worth of property was burned; again a big fire in 1896. Montreal in 1850 had a great fire; 250 buildings destroyed; in 1852 about 1,200 buildings were destroyed. Various cities in South America and West Indies have been destroyed by fire. A large loss of life resulted also.

The United States has a record of destruction of property by fire not equalled by any other country. Charlestown, Mass., in 1796, £60,000; in 1838, 1,158 buildings. Savannah, Ga., in 1820, 463 buildings and £80,000 value. New York, in 1835, 530 buildings, 52 acres burned, and £3,000,000 worth of property destroyed; in 1845, 300 acres burned over, £1,500,000 value, 35 lives lost. St. Louis, in 1851, 2,500 buildings destroyed. Philadelphia, Pa., in 1850, 400 buildings. San Francisco, in 1851, 2,500 buildings, and a number of lives lost; property value, £2,000,000. Portland, Me., in 1866, more than one-half of the city; 200 acres burned over, and 1,743 buildings destroyed. Chicago in 1871, known as the "Great Fire"; 2,124 acres nearly covered by buildings entirely burned over, including 17,430 buildings; many lives were lost, and property valued at £20,000,000 was destroyed. Boston, Mass., in 1872; 65 acres of the mercantile section burned, including 776 buildings; nearly all of brick-and-stone construction; property valued at £25,000,000.

CONSTRUCTION OF BANK AND OFFICE FITTINGS.*

BY GEORGE ELLIS, A.B.I.C.C.

BANK fittings include specimens of the highest class of joinery. It is intended in this article to describe and illustrate by a typical example the most approved methods of construction employed in this class of work. Fig. 1 is a half elevation and Fig. 2 a vertical transverse section of a double-slope desk with fitted pedestals, Fig. 3 being a broken sectional plan, showing in the one half the arrangement of the pedestals and in the other half the arrangement of the desk. Fig. 4 is a longitudinal section of a drawer pedestal; Fig. 5 a sectional plan of same; the remaining illustrations are details that will be referred to as occasion arises.

Honduras mahogany is, perhaps, the best all-round material to use for these fittings, as once it has become thoroughly dry it changes but little afterwards on account of altered atmospheric conditions; it warps or twists but little (unless used very thin), it is fairly hard, and of good appearance. Its one drawback is a tendency to split suddenly in the direction of the grain. No satisfactory reason for this has yet been furnished, but it is obviously not due to shrinkage, for it frequently occurs in long-stacked planks, where both edges are quite free. This defect is met constructively, as far as possible, by tying the ends of wide pieces together with clamps, dovetails or corebolts. The interior parts may, for the sake of economy, be made of deal, pine, or basswood; for parts that can be held firmly, so as to prevent twisting, the last-named wood is suitable, as it is smooth, clean and easily worked; but it is not so hard as deal, and therefore does not wear so long. American oak makes the best drawer sides; next to it comes yellow pine. Oak should always be used for the blocking fillets of the drawers, as all the wear comes upon them.

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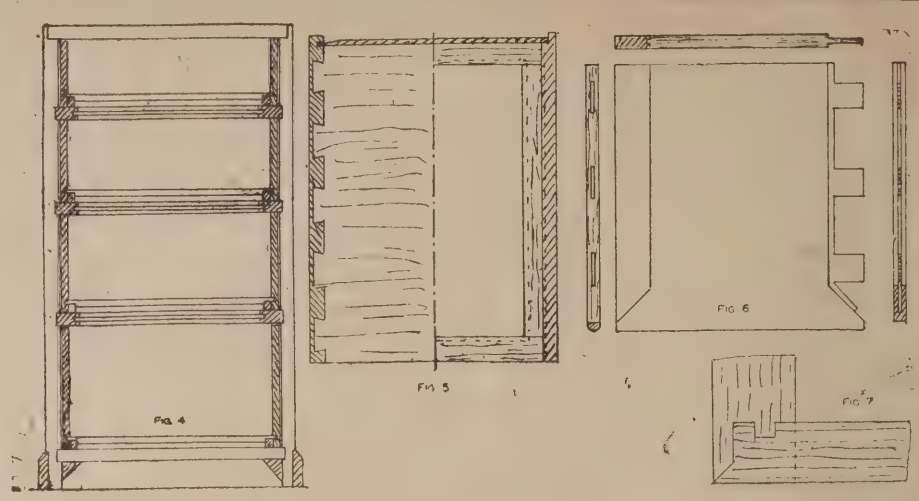


FIG. 4.—LONGITUDINAL SECTION OF PEDESTAL. FIG. 5.—SECTIONAL PLAN. FIG. 6.—PLAN AND SECTIONS OF FLAP. FIG. 7.—ANGLE JOINT OF DESK.

The general construction is as follows:—The desk is composed of two plain ends of 1in. mahogany, shaped to section, the usual angle of slope with the horizontal being 15 deg. The pieces are rebated at the lower edge to receive the bottom, and lap mitred and tongued at their ends, as shown in the detail Fig. 7. The two fronts are of $\frac{3}{4}$in. mahogany rebated at the bottom edge (see Fig. 8), and bevelled to the slope at the top. The openings for the drawers are "cut in the solid," and this necessitates the use of the particular form of joint shown in Fig. 4. The interior divisions, D, of 1in. deal, are kept flush with the rebate at the bottom and shaped similarly to the ends; they are dovetailed-grooved into the fronts and half-notched where the back crosses them (see Fig. 12); this arrangement, permitting both pieces to be continuous, considerably strengthens the desk. The back, also of 1in. deal, is housed and blocked at the ends. The framed bottom is of 1in. deal, flush panelled on the upper side, so that dust shall not accumulate in the interior, and rebated all round the under edges to receive the cockbead (Fig. 8), which, while giving an agreeable finish to the desk, effectually covers the joint at the bottom and strengthens the portion of the front below the drawer openings.

The desk top is formed of a central flat, H (Fig. 2), running the entire length and overhanging the carcase by a margin equal to its thickness ($\frac{3}{4}$in. full), and into this are framed the slopes, I, by mortise and bevel tenon, as shown in Figs. 3 and 4. Between these the lifting flaps, J, are hung. The flaps are mitre clamped at their ends (see Fig. 6), the grain of the flaps running parallel with the front, other-

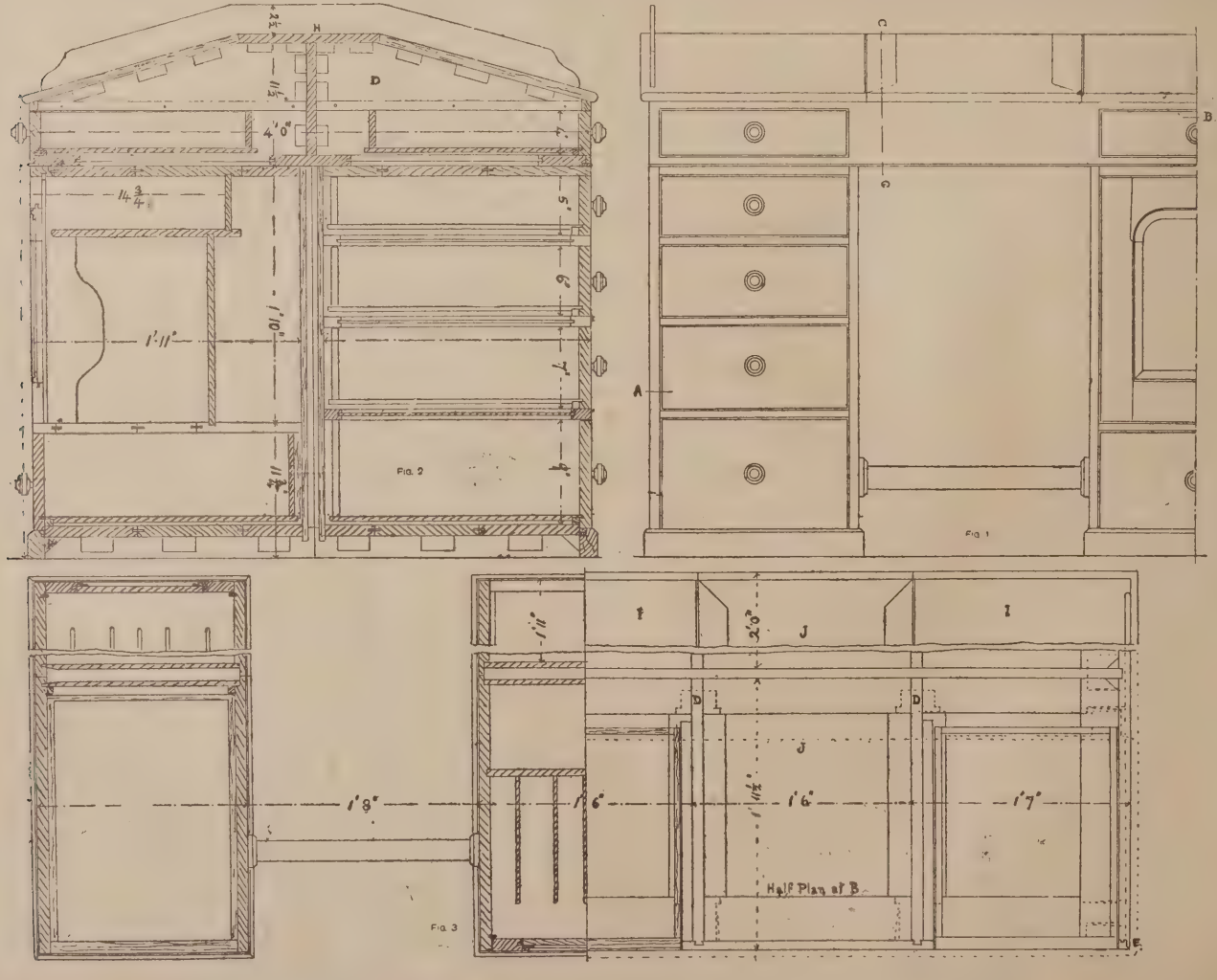


FIG. 1.—ELEVATION OF DESK. FIG. 2.—VERTICAL SECTION. FIG. 3.—GENERAL PLAN.

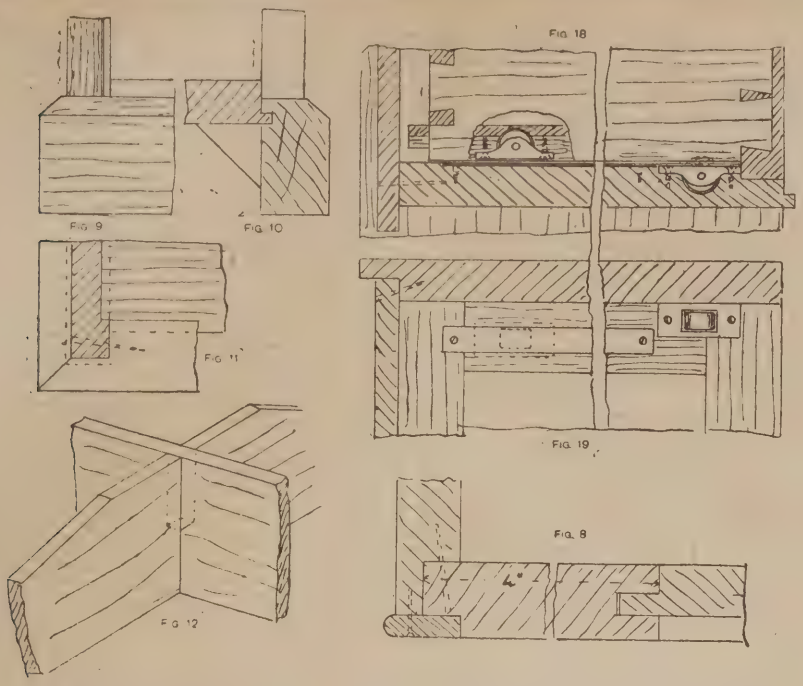


FIG. 8.—DETAIL AT E, FIG. 3. FIG. 9.—ELEVATION OF CORNER OF PLINTH. FIG. 10.—VERTICAL SECTION. FIG. 11.—HORIZONTAL SECTION. FIG. 12.—CENTRAL JOINT IN DIVISIONS. FIGS. 18 AND 19.—PARTS OF DRAWER, SHOWING METHOD OF FIXING FRICTION ROLLERS.

wise they would have to be hung to the clamps and the vibration would soon break the joint at the shoulder. It will be noticed that the clamps do not come quite to the front edge; this is to prevent the end grain showing when the edge is rounded.

The pedestals are composed of solid sides out of 1in. mahogany, with similar deal tops and bottoms (the former edged with mahogany), panelled divisions, the fronts of which are of mahogany and the remainder of deal, a plain $\frac{1}{2}$in. deal back and a $1\frac{1}{2}$in. solid mahogany plinth: these, although finally fixed in pairs connected by the cross skirting, are made separate for convenience of construction and handling. The top is dovetailed into the sides, with "cistern dovetails," the pins, however, being cut back to prevent the end grain showing (see Fig. 5). The panelled divisions are housed into the sides $\frac{3}{16}$in. deep. These divisions should be framed and glued up as a solid, and, so far as the "runners" or sides of the divisions are concerned, should be fitted hand tight and put in the carcase without glue, so that the sides may be able to swell or shrink without splitting. The front division rails are double-tenoned into the sides, to prevent the racking action of the drawers breaking the joints, as shown in Figs. 13 and 14. The back rails are skew-screwed as indicated. Fig. 13 is a section of Fig. 14 taken through the housing on one side, and on the other, just above the division rail (Fig. 15), is a vertical section through a runner.

The bottom is housed in, the sides solid and tongued and blocked to the front plinth; its grain should run in the same direction as the sides, and it can be further fixed by nailing through the skirting sinking, as shown in Fig. 11. The method of fixing the plinth is shown in Figs. 9, 10 and 11. The front piece is sunk and lap-mitred around the edge of the pedestal side, and the cross plinth, $\frac{5}{8}$in. thick, sunk in the sides and fixed by screws from the inside. These screws should be in slots in the side. The back is nailed in a rebate on one edge and fixed in a groove on the other to allow for shrinkage. The cupboard pedestals vary in construction only in the provision of a grooved-in bead to form a rebate for the door and in the internal arrangement of the cupboard portion. This is divided horizontally by a $\frac{3}{4}$in. deal shelf, which forms a top for five $\frac{5}{8}$in. partitions, variously spaced to meet requirements, and stopped by a $\frac{3}{4}$in. deal false back.

The drawers are made with 1in. fronts, $\frac{5}{8}$in. backs, and $\frac{1}{2}$in. sides and bottoms, grooved and dovetailed together in the usual manner, as shown in Figs. 16 and 17. The bottoms should be rebated for the blocking slips and slot screwed at the back, as shown. Drawers intended for cash or other heavy goods should be fitted with friction rollers and rails. The rollers are fitted as shown in Figs. 18 and 19, one pair sunk in the drawer bottom, the other pair in the runners. The front pair should be in the carcase and the rear pair in the drawer (see Fig. 16). By this arrangement the drawers are always in bearing. Laterally they should be arranged so that they will just clear each other, so that the drawer may be drawn completely out. This is shown in Fig. 19, where the brass strip is represented on which the rear roller runs, the position of this being indicated by the dotted lines. The joint beads round the openings in the pedestal, are shown worked on the solid. This method, although costing more for fitting up, is much superior to that of planting them round the edges of the drawers, in which the pieces across the ends are continually falling out, and also, when the front is of some width, preventing it shrinking.

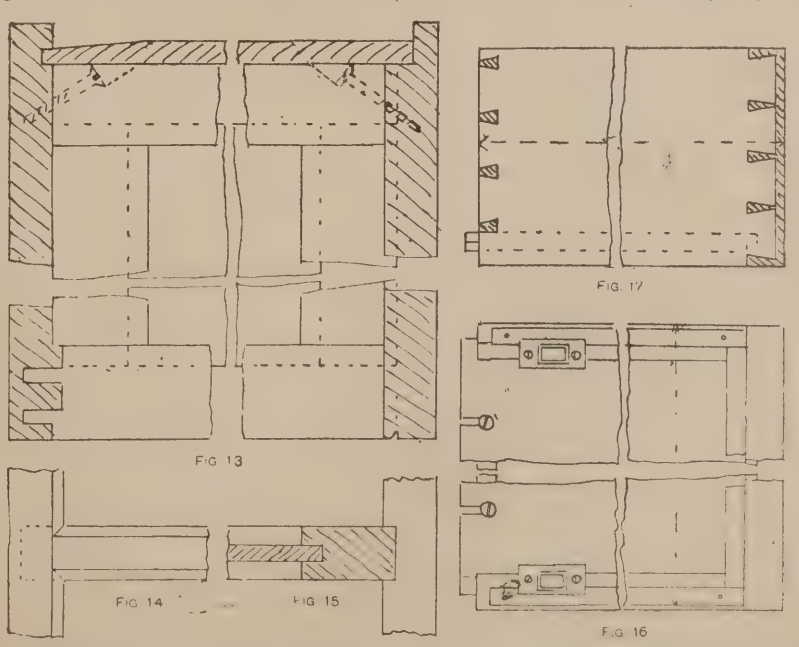


FIG. 13.—ENLARGED SECTION OF PEDESTAL. FIG. 14.—PART ELEVATION. FIG. 15.—PART VERTICAL SECTION. FIG. 16.—PLAN OF DRAWER BOTTOM. FIG. 17.—SIDE ELEVATION OF DRAWER.

THE CESSPOOL.

A COMPARISON OF PRIMITIVE AND MODE RN METHODS OF TREATING SEWAGE.*

BY LEONARD P. KINNICUTT, D.S.

BACTERIA are a low form of vegetable organism which multiply by a process of transverse division. Though commonly considered as dangerous enemies, they are in fact our greatest friends, for it is only a comparatively few species, those that exist on living matter, that cause disease. The great majority obtain their nutritive material from dead animal and vegetable matter, and resolve these substances into similar compounds, as carbon dioxide, water, ammonia, nitrates, which are the food supply of higher vegetable life. Were it not for the presence of these bacteria, disposing, as they do, of effete organic matter and changing it into plant food, human life on this earth would, seemingly, be impossible. These are the bacteria that are present by the hundreds in a cubic foot of air, and in a cubic centimetre of so-called pure water, and by the millions in a centimetre of polluted water or of sewage.

For the destruction of dead organic matter, both of the two groups of bacteria are necessary; the anærobic to disintegrate and liquefy the complex organic substances, the ærobic to change those simplified and liquefied compounds into harmless substances.

Taking the above as a brief outline of wha takes place in the decomposition of excreted and effete matter, we are in a position to consider the

Changes that take place in the Cesspool.

Into the cesspool enter all the waste products of human life, and with these waste products millions of bacteria, both anærobic and ærobic. But, the contents of the cesspool being practically shut off from air and light, it is a most suitable environment for the development of the anærobic bacteria. These bacteria immediately begin to act upon the solid compounds in the excreted and other household waste. The complex nitrogenous substances are broken up and liquefied, also compounds like cellulose in its various forms—like paper, starch, woody fibre—are disintegrated, and, finally, if the action continues a sufficient time, all that remains in a solid state is chiefly what we can call the ash or the mineral matter of the animal and vegetable substances that entered the cesspool. The action that takes place in the cesspool might be compared to the process of combustion. In the cesspool the bacteria have taken the place of heat.

* Summary of a paper read before the Massachusetts Association of Boards of Health on July 29th, 1900.

Liquid that passes through the cesspool as it leaches through the soil, or as carried away by a drain and allowed to run on land, comes in contact with air, and the conditions become favourable for the development of the ærobic bacteria, and the final process of purification begins. The liquefied compounds are most easily acted upon by the bacteria, and the compounds changed into harmless gases and mineral substances.

It thus appears that our forefathers, without any knowledge of bacteriology, devised one of the most efficient methods for the purification of household waste. The question as to the

Dangers Attaching to a Cesspool

I do not at this time care to consider at any length; but it seems to me that the danger arising from the use of cesspools has been over-estimated. Certainly, in the decomposition of the solid complex compounds of the anærobic bacteria, a large amount of gas is given off. This gas, however, is composed chiefly of carbon dioxide, marsh gas, hydrogen, and nitrogen, and resembles concentrated sewer gas, but does not contain, as far as we know, any amount of sulphuretted hydrogen or other poisonous gas.

If the liquid in the cesspool is on different levels at different times, so that the sides at times become dry, there may be danger of some



GALVESTON COUNTY COURTHOUSE, TEXAS, U.S.A.

pathogenic germs being in the gas that escapes from the cesspool, but the above condition cannot exist if the inlet pipe enters the cesspool at a lower level than the exit drain.

If the liquid in the cesspool percolates through the sides of the cesspool and the soil is hard clay, it may, while still containing a large amount of soluble polluting matter, enter a water-supply, as a well or a stream; but if the cesspool is in sandy soil there is very slight, if any, danger, as late experiments have shown that organic matter in the condition that it is in on leaving the cesspool is changed with the greatest rapidity into absolutely harmless compounds. If the liquid is carried by a pipe from the cesspool and discharged over land or near a well or stream, it seems that there could be no danger. As to the escape of any dangerous gas from the soil near a cesspool, I do not see how it is possible.

The Scott-Moncrieff and Cameron Systems.

Having thus tried to answer the question why cesspools do not quickly fill up with solid matter, and also to describe what changes take place in the cesspool, I wish to describe how this method has been made use of by sanitary engineers for treating sewage on a large scale.

Mr. Scott-Moncrieff, the well-known sanitary engineer, was, I believe, the first to recognise that the bacterial purification of sewage took place in two stages, and that the first stage should serve as a prelude to further treatment. He erected, in 1891, at Ashland, a tank, or cesspool, for the express purpose of liquefying the solids in sewage, in which the sewage was forced upward over a bed of stones.

The credit, however, of showing that a modified cesspool could be advantageously used for the treatment of sewage of cities and towns belongs to Mr. Cameron, of Exeter. The process was named by him the septic treatment, and it is by this name that it is now known. He built at Exeter an underground tank of cement-concrete, 65ft. long, 19ft. wide, and of an average depth of 7ft., and having a cubical capacity of 53,000gals. The tank was covered with a concrete arch, and a portion of the tank near the inlets was made about 3ft. deeper than the rest, and partially cut off by a low wall, forming a couple of pockets or grit chambers to retain sand, grit and road washings. The inlets were carried down to a depth of 5ft. below the surface, so that air could not make its way down with the sewage, and also so that gases could not escape from the tank back into the sewer. The effluent outlet was also below the level of the liquid, and, to avoid any current that would be liable to carry with it any of the floating matter from the surface, a cast-iron pipe was carried across the whole width of the tank 15in. below the surface, and on the lower side of this pipe there was a continuous opening about ½in. wide. An iron pipe, about 1½in. diameter, extended out of the top of the tank to allow the escape of gases which were formed, and the sewage in the tank could be inspected by opening a manhole constructed in the centre and having glass windows. There are also five beds filled with crushed clinker or coke-breeze, which are admirably adapted for the cultivation of ærobic bacteria, and the liquid as it comes from the tank, having undergone the first stage in the process of putrefaction, is now in just the right condition to be acted upon by the ærobic bacteria.

In August, 1896, the main sewer of St. Leonard's, where there is a population of 1,500 and an average daily flow of sewage of 57,000 gallons, was connected with the tank, and the above volume of sewage has been continuously passed through the tank since that time. The effluent from the tank falls over a wall about 1ft. high, which effects slight aeration, and then by means of the alternating gearing is caused to pass automatically on one or the other of the beds.

What are the changes that take place in this tank? They are exactly those that take place in the cesspool. The most marked change is the disappearance of solid matter, and it has been demonstrated that from one-half to two-thirds of the total solid matter has decomposed and liquefied.

That a large volume of gas is given off from the septic tank is seen not only at Exeter, but everywhere the septic tank is in use. The only determination as to the amount of gas that is given off is, so far as I can learn, one that was made by H. W. Clark, chemist for the Massachusetts State Board of Health, working with a very small experiment tank. His results indicate that from five to six tenths of a cubic foot of gas is formed from 100gals. of sewage.

Analyses of the gas have, however, been frequently made, and though, of course, it must vary greatly from time to time, the following analyses, made by Dr. S. Rideal, give an idea of its composition:—

	Per cent.
Carbon dioxide	0·3
Marsh gas	20·3
Hydrogen	18·2
Nitrogen	61·2

That the action which takes place in the open septic tank is very similar to that which takes place in the closed tank is shown by a series of experiments made by Mr. Fowler at Manchester. He made daily analyses for one month of the effluent from an open tank and of the effluent from a closed tank, both being supplied with the same sewage. The following table gives the average of these daily analyses. The results, as seen, are almost identical:—

Parts in 100,000.	Open tank.	Closed tank.
Free ammonia	3·20	3·10
Albuminoid ammonia ..	0·50	0·51
Oxygen consumed	8·46	8·43
Chlorine	16·40	16·10

The Value of the Septic Tank.

The real practical value of the septic tank, or we might say the cesspool, is that it destroys suspended matter without forming any great amount of sludge or precipitate, thus having a great advantage over any chemical precipitation process. Also by using a septic tank, allowing the effluent to come in contact with air and then passing it on to a bacteria bed, the two phases of purification are kept separate, and better work is naturally to be expected.

What we hold as true to-day we are told to-morrow is false, and so, in a year or so from now, I may come before you and say that the changes that take place in the cesspool are not due to bacteria, but are due to chemical action; and I say this now because there are certain facts that point in this direction. There is a class of chemical substances known as enzymes, or unorganised chemical ferments, which are the products of vegetable and animal life, and which, in minimum amounts, without being themselves used up, are able to break up and decompose large amounts of complicated and insoluble compounds. Many of the enzymes being the products of anærobic bacteria, they would naturally occur in the septic tank, and a large amount of the decomposition may thus be chemical, rather than bacterial.

Whatever is the cause of the changes that take place in the cesspool or septic tank, the changes are those that I have described, and I only hope that I have been able to point out to you that the most modern method of treating sewage is, in fact, the method of our forefathers.

Galveston County Courthouse.—This building, which is illustrated on this page, was almost totally destroyed by the recent tornado at Galveston. It was the last large building designed by Mr. Arthur A. Messer, architect, of London and Woking, before he left for this country, and cost about £60,000. Building operations commenced in 1897, and it was finished about a year later.

A Discovery in Newgate Street.—The excavations necessitated by the construction of the Post Office telephones have resulted in finding portions of the original New Gate. While digging the trenches in Newgate Street, the workmen came across a quantity of Kentish rag about 4ft. from the surface, and not many yards to the east of Old Bailey. Investigation shows that the spot at which the discovery was made is about the point where the "New Gate" spanned the roadway. One piece of the relics, at least, formed the portion of a gateway, and the conclusion drawn is justifiable. This particular portion consists of a piece of lead some 7ins. or 8ins. in length. It is corroded with the soil of ages, but evidently it formed a part of the gate support, or possibly a hinge.

New Patents.

These patents are open to opposition until November 5th.

1899.—Air-bricks.—21,296. H. W. ROBERTS, Kingston House, Newmarket. The brick is so constructed that the air first passes through a slightly converging opening, then through a kind of neck into a cavity beyond, this cavity being covered (on the inside wall of the apartment or other place to be ventilated) by a lipped metal box. The form of the brick greatly diminishes the force of the incoming current.

1900.—Hollow Bricks.—10,180. J. C. SELLARS, 69 Bridge Street, Birkenhead. The brick, or block, is made of artificial stone and is hollow. On the top side a ledge extends for the whole length, and there is a corresponding recess in the bottom side: this for interlocking. There is also a slot at each end of the brick, on the top side, to receive a T-iron, which connects one row with another; while a continuous tube runs through the whole and gives great strength and rigidity to the wall. The invention is also applicable to floors, stairs, &c.

Camera for Architectural Work.—10,586. E. MILNER, 250 Wandsworth Bridge Road, London, S.W. In front of the plate is arranged a transparent screen, having concentric lines accurately drawn in relation to the distance of the screen from the light inlet of the camera (a pin-hole being preferred to a lens). The result is that the resulting photograph is marked with lines, which may be divided into degrees, so as to clearly indicate the angles which any parts of the building make with the point of view. It is claimed that the invention is specially applicable for the purpose of producing permanent records of buildings, walls, &c., to be used in connection with disputes.

The following specifications were published on Saturday last, and are open to opposition until November 12th. A summary of the more important of them will be given next week. The names in italics within parentheses are those of communicators of inventions.

1899.—17,724, DUTTON AND DUTTON, oil, gas, and similar motors. 17,966, HADDIN (*Soc. Berthe & Cie.*), artificial granite and process for manufacturing it. 18,058, MEURER AND BORMANN-ZIX, manufacture of calcareous sandstone. 19,956, PEART, wrenches. 20,347, PRYOR (*Summers*), manufacture of artificial marble and stone. 21,300, KAY, window fittings. 21,439, MALE AND HODGSON, flushing apparatus for sanitary and other purposes. 21,990, OPPENHEIMER (*Actiengesellschaft Mix and Genest*), cord grips for electrical apparatus. 21,991, OPPENHEIMER (*Actiengesellschaft Mix and Genest*), porcelain interiors for electric incandescent lampholders. 22,154, VON RITTERSHAUSEN, filters. 22,248, PRESTON AND RALSTON, ventilation of tunnels, buildings and other places. 22,345, PEYRUSSON AND PEYRUSSON, production of vitrifiable colours, enamels, &c. 22,475, BELL AND BELL, door and other latches. 22,519, BAXTER, operating mechanism of stone-breaking and ore-crushing machines.

1900.—1,458, SCHRÖETER, composition for and method of fireproofing. 5,499, VANDERBORGHT, bath heater. 5,505, NEWTON, ash-pans for domestic and other fire-places. 8,731, HILL, can or receptacle for painters, French polishers, &c. 10,275, HORN, kilns. 11,987, CORDES, process for the manufacture of artificial stone. 12,336, SLOCUM, apparatus for the manufacture of gas. 12,648, ENDRES, means for securing flooring boards to joists and beams. 12,842, ZOBEL, machine for clearing and assarting roads, &c. 12,876, JOHNSTON, PALMER AND COENEN, trolley for overhead electric traction. 12,984, WESTPHALEN, filters. 13,269, HUGO WARSCHAUER AND WILHELM RITSCHEL, air-moistening apparatus. 13,280, ACKERMANN, arc lamps.

A Public Abattoir and Meat Market for Hull is proposed to be built by the Corporation.

Engineering Notes.

The Ventilation of Holborn Town Hall is being rearranged under the direction of Mr. Charles Herbert Shoppee, F.R.I.B.A., of John Street, Theobald's Road, and Mecklenburg Square, W.C.

Central London Railway.—The Bond Street Station was opened for traffic for the first time last week. The delay was occasioned through a mishap to the machinery for working the lifts.

Two of the New Tunnels under Crewe Railway Station, which are part of the great extensions which have been in progress for several years past, were opened last week for through traffic. These are part of the extensions on the Crewe to Liverpool line.

London Water Excellent.—In their report upon the composition and quality of the water supplied to London for the month ended August 31st, Sir William Crookes, F.R.S., and Professor Dewar, F.R.S., state that all the 208 samples examined by them were found to be clear, bright and well filtered.

Electric Tramway for Rhyl.—After holding a public enquiry, the Light Railway Commissioners have decided to sanction the construction of an electric tramway from Prestatyn to the Marine Lake, Rhyl, a length of about 7 miles. The route follows the sea coast. The capital of the concern is £7,500, and the Rhyl Council will supply the electricity. The scheme is to be completed by next season.

An Improved Electric Shade Tilter is a speciality recently put upon the market by the Improved Electric Glow Lamp Company, Limited, of 103 Queen Victoria Street, London, E.C. By means of this simple device any lamp shade can be tilted to any desired extent, thus avoiding the inconvenience common to most offices, where the light is pendent in one position. The price in polished brass is 6s. per dozen.

Society of Engineers.—The members and associates of this society recently visited the works of the Gas Light and Coke Company at Beckton. The carbonising plant consists of 8,404 retorts, contained in fourteen retort houses, and about one-half of these are operated by machinery, hydraulic power, compressed air and power transmitted by ropes being used. The daily production of gas, including oil gas, of which about 8½ million cubic feet are made, is about 58 million feet.

Proposed Iron Bridge over Ostend Harbour.—The Belgian Government is considering a project for building an elevated iron bridge over the Ostend Harbour at a level of 52 metres above the sea. There would be a hanging electric car for passengers and carriages such as is established at Rouen (see supplement to BUILDERS' JOURNAL for January 10th last). The fare would be only two centimes. On the east side of the port, which would thus be put in direct communication with the town, is to be built a "garden city," consisting of villas surrounded by streets and squares along the sea front.

A Reservoir as a Swimming Bath.—A disused reservoir on the Stourport Road, Kidderminster, has been turned into a swimming bath for the borough. The bath is one of the largest in the Midland counties. The reservoir was constructed early in the seventies as part of the first scheme carried out for supplying the town with water. At first it had a gravelly bottom. Then vegetable growths were discovered and the bottom was asphalted. In time it was found that the reservoir was inadequate for the requirements of the district. Indeed, its elevation was not sufficient to supply all the houses with water by gravitation, and the new covered reservoir was constructed. For a considerable time the old reservoir was continued to be used for supplying Stourport with water. The water for the new bath is pumped into it direct from the upper well, and when it is necessary to change the supply this can at once be done by opening a valve, and the disused water will flow into the river Stour.

Law Cases.

A Building Line Case.—At the Chorley Petty Sessions recently Robert Counsell, of Withnell, was summoned under the Public Health Act by the Withnell Urban District Council for building without the consent of the Council a wall beyond the front main wall of the adjoining buildings, and continuing after having received notice to remove it. Mr. J. W. Carter, clerk to the Council, quoted the section of the Act upon which he relied, which declared it unlawful to make any addition to a house or building beyond the front main wall of the house or building on either side. Some time ago the defendant built a number of houses in School Lane, for which he submitted plans. These showed the main building, the garden area and the garden wall, but without submitting any further plan he had built in front of one of the houses a brick wall about 12ft. long, 6ft. 5in. at the side, and about 2½ft. high. After some consultation, the Chairman said the bench had no hesitation in deciding that there had been a breach of the law, and defendant would be fined 1s. a day for the offence and must pay the costs. Defendant's solicitor gave notice of appeal against the decision.

Alterations to Premises: A Curious Counter-claim.—At the Brighton County Court the case of *Smale* v. *Gouraud* was recently heard before his Honour Judge Martineau. Mr. S. C. Smale, a Hove builder, sued Colonel Gouraud, of Gwydyr Mansions, Hove, for £36 18s. 6d., asserted to be due for work done and materials supplied in respect of premises which defendant had rented from the plaintiff for use as a laboratory. The defendant contested the claim on the ground of bad workmanship and excessive charges, and brought a counter-claim for £5,000 for damages sustained by the plaintiff's alleged breach of contract, of which he claimed there should have been specific performance. In giving his decision, the Judge said that during February the defendant required a laboratory for his inventions, and being recommended plaintiff's premises he arranged to take the whole of the first floor. Certain alterations were needed, and plaintiff was engaged to do the work. He gave an estimate for some of the rooms, and for others he was left to charge reasonable prices. The defendant complained that nearly all the work executed by the plaintiff had been badly done. His Honour said he had viewed the premises, and, in his opinion, the work was not only rough, but of an inferior character; and he should have been inclined, had the matter rested there, to make some reduction on the plaintiff's claim; but he had to consider one or two other matters, among which was the fact that a letter the Colonel had written was an indication to Mr. Smale to do the work cheaply. In consequence of this, the work was done cheaply, and as a sort of makeshift. Although away from home, Colonel Gouraud had left an engineer at the laboratory, and it would have been possible to make complaints. His Honour said he was not prepared, taking these matters into account, to make any deductions from Mr. Smale's bill, which he therefore allowed as claimed. Referring to the counter-claim, his Honour said: "It's a terrible counter-claim." The Colonel estimated his loss from inability to use the premises at £5,000. His Honour dismissed the counter-claim so far as specific performance of contract to let the whole of the premises was concerned, and also so far as respected the damages claimed on account of the loss the Colonel thought himself to have sustained through his not having the use of as much of the premises as he considered himself entitled to. His Honour said he had formed rather an unfavourable opinion of the refusal of plaintiff to give up the two rooms, and assessed the damages at £2; he also gave judgment for £2 against the plaintiff for excessive use of yard.

The Death of M. Jules Machard, a well-known French portrait painter, occurred last week at the age of 61. In 1865 he gained at the Paris School of Art the Prix de Rome, and on returning from the latter city he began exhibiting mythological and legendary subjects.



THE PORTE, LEYDEN. DRAWN BY H. F. WARING.



COTTAGES AT TANKERTON. W. I. CHAMBERS, Architect.



WORKMEN'S DWELLINGS, GREAT PASSAGE STREET, HULL. JOSEPH H. HIRST, City Architect, Hull.

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GABLE THE STRADHUIS, LEYDEN

THE CHURCH CONGRESS.

ART AND RELIGION.

THE evening meeting of the Church Congress in Lovaine Hall, Newcastle-on-Tyne, on Wednesday last, was devoted to the subject of "Art: its Relation to Religion."

The first paper was by Mr. W. Hole, who expressed the conviction that art inspired by the teaching of the Church might and ought to be restored to the position which it once held as a recognised means of conveying God's message to His people. While the Church had readily availed itself of the service of architecture, sculpture had in recent times received but timid recognition, and the claims of painting had been almost, if not altogether, ignored. The religious painting had to shift for itself as best it might, to jostle for a place among incongruous surroundings on the walls of exhibitions, or to be hawked about and exhibited under artificial light (a shilling a head for admission) in the back shop of a picture dealer. There was a time, in the earlier period of the Church, when colourless architecture was undreamed of, when all painting was decorative, and when the holiness and sanctity of what was beautiful was bound up in men's minds with the idea of the beauty of holiness. For nearly a thousand years after the establishment of Christianity as the religion of the Empire all art was religious in its inception and purpose. But the dawn of the Italian Renaissance marked the period whence we might date at once the increased vitality of each individual member of the body of art, and also that little rift between them which heralded their ultimate severance from and independence of each other. Worldly knowledge and manual skill were increased, and with them the pride of individual accomplishment, without the counterbalancing and restraining power of wisdom to maintain the ancient bond of union so valuable to all alike. Advocating

The Revival of Mural Decoration

in our churches, Mr. Hole said that it should be remembered that a mural painting was not an independent and isolated work of art, but part and parcel of an architectural scheme. It started from an architectural basis, and its merits or demerits as decoration must be judged entirely with reference to its environment. Whether, therefore, it took the form of a picture or one of simple pattern the decorative painting must be designed in conformity and in harmony with its surroundings, and with due consideration to essential features of the building or surface whose characteristics it was its duty to beautify and enhance. He would, therefore, welcome with thankfulness the formation of a guild or brotherhood of church artists, who would be brought into touch with one another for their mutual help and encouragement—a guild which should include in its membership architects, painters, sculptors, workers in wood, metal, glass and needlework—all, in fact, who were willing to devote as a free gift a tithe of their time, skill, and labour to the glory of God and the service of the Church.

Mr. Stirling Lee

followed, and, speaking of the present divorce between Art and the Church, said that Flaxman in his lecture on English sculpture had put the case very clearly:—"The reign of Henry the Eighth, and those immediately succeeding him, were employed in settling disputes of faith by public executions, as either of the contending religious parties prevailed; this mutual and undistinguishing spirit of persecution extended equally to the destruction of man and his ingenious labours. In the year 1538 Henry the Eighth issued an injunction that all images which had been worshipped, or to which idle pilgrimages had been made, should be taken down and removed from the churches; and in the reign of Edward the Sixth, in the year 1541, his uncle, the Duke of Somerset, the Protector, and Council, ordered all images, without distinction, to be thrown down and destroyed. This was understood and executed on pictures as well as sculpture, and there is good reason to believe that we are indebted to the immense number of these works, which tried the patience of their enemies before their destruction was completed, for what remains of them at this day." We could imagine if the Popes of that time had been actuated by the same iconoclastic fury against the Greek, Roman and Italian art, what the world would have lost in beauty, thought and historical record. Henry the Eighth himself was the first to want a sculptor, and had to import the Italian, Peter Tarreigano, and order him to make for himself the most magnificent sepulchral monument ever conceived. This was never executed.

The Commands for Destruction.

The commands for destroying sacred painting and sculpture effectually prevented the artist from suffering his mind to dwell on the contemplation or execution of any sublime effort, as he dreaded a prison or stake, and reduced him to the miserable mimicry of monstrous fashion or drudgery in the lowest mechanism of his profession. This unfortunate check to our national ability occurred at the time when art was making its greatest progress on the Continent; so, whenever England wanted a painter or a sculptor, he had to be imported; and this importation had continued until our own day, when at last we could say that our best sculptors were Englishmen and capable of doing great work, should they have the opportunity. Certainly no field could give greater possibilities and opportunities than the Church.

Papers by Mr. E. S. Prior and Mr. Selwyn Image followed.

Mr. G. F. Watts' Letter.

The following letter was read from Mr. G. F. Watts:—

"Little Holland House, Kensington, 1900.

"Dear Lord Bishop of Newcastle,—Your invitation to write a paper upon the relation of art to religion, I regret to say, I found myself unable to accept, limited, as I am, by the exactions of my own unfinished work and by want of strength.

"I could not, however, altogether reject the opportunity you so generously gave me of writing a few words to express my conviction that art, as we understand it, in its three presentations—architectural, pictorial and plastic—has exactly the same relation to religion as that which poetry and music have, and to assert for art the claim to a yet higher place than it is commonly understood to hold, convinced, as I am that it is a Divine voice, uttering through all time its message to mankind, the handmaid of religion, lifting the mind into an atmosphere of wonder and of worship. As music echoes the Divine voice heard in creation, art should clear the sight to the manifestation of the Divine power in the loveliness of creation. The creative faculty in man, working in the same direction to interpret the same purpose, shown in the apparently loving care and intention, evident in beauty of line and colour.

"In no spirit of irreverence this may be claimed: the splendour, the order, the fine perfection in the smallest detail of form and structure, of perfume and of colour, apparently not in the least necessary to existence, as these are all occasionally absent, reveal to us the high position that beauty takes in the service of the Creator. May we not, therefore, claim for man's creative work such high uses in the service of religion, stimulating thought to high and noble action?

"One who would suggest ideas by form and colour is like the child of an artist, whose delight in the beautiful things he sees emanating from his father's studio finds expression in endeavouring to do something of a similar character; consequently art, being unconscious worship, should find place wherever worship is the object.

"I would also express my conviction that art is inherently part of the great oneness of a creation, where the Creator has made His own house beautiful with all gracious and noble beauty of sky and of cloud, of mountain and of valley—a part of that creation in its vastness, its complexity, and its completeness, one in its law, and in its obedience to that law.

"No art or science, and, indeed, no possible acquirement, can really be desirable that does not do something to develop those qualities which distinguish humanity from the lower creation, the purely and consciously moral perceptions, and still more those qualities on the spiritually sensitive side.

"On this side, art should be unquestionably an important factor, for the highest, perhaps unutterable, thoughts can be presented to the mind by symbolic suggestions.

"To the eye that seeks this shall be made plain, the firmly-planted foot shall not be set down in vain, even though the law of conflict, not unkind, and necessary to avert stagnation, makes it hard.

"Failure is present in all highest endeavour. We have to know that nothing can be shaped by our hand, but in the soft and the hard, the dry and the moist, in darkness and in light, but with reason and with love, the most conflicting elements can be used and combined into the finest harmonies—a voice breathing through the soul, making itself rather felt than heard, and yet giving intimations of truths, enough for guidance, for hope, and new stimulus to higher attainment."

On Friday afternoon the subject for consideration was

The Housing Problem.

The Rev. J. W. Horsley (Woolwich), read the first paper. Sarcastic seemed the phrase, "the housing of the poor," when he thought of the 124,000 people in his civil parish living on less than a mile square; of nearly half a million in London whose home consisted of one room; of 4,575 one-roomed homes in Spitalfields, 1,400 being occupied by numbers rising from four to eleven persons; of a six-roomed tenement in a City slum inhabited by six families at 6s. a week each—that was £93 12s. per annum for a cottage in an alley; and of one sanitary inspector for 40,000 people. It was the stye that fouled the pig before the pig further fouled the stye, and therefore, bad landlords, whether of village hovels or city slums, were chiefly responsible for crime.

Dr. Steggall read the second paper, which reviewed the history of legislation on the subject and showed that the real root of the difficulty lay not so much in the legislature as in the apathy and negligence of the local authorities. He pointed out that about thirty years after Lord Shaftesbury's Act was passed in 1851 only one public body had put it in operation, and later Acts had scarcely been enforced more often.

Sir T. Wrightson contributed a paper in which he called attention to the valuable provisions of the Small Dwellings (Acquisition) Act, by means of which a man might be financially assisted to become the occupying owner of his house. There was nothing to prevent philanthropic agencies undertaking to build the house and lend the money to the purchaser up to within 10 or 15 per cent. of the whole value, charging such a rate as would pay a substantial interest.

Councillor Thompson, discussing the question from the standpoint of the duty of local authorities, said the authorities did not carry out their powers because they dared not. If they did, councillors would lose their seats and the officers would lose their salaries or situations. The clearance of insanitary areas, by restricting still more the inadequate accommodation, tended to increase overcrowding and to force up rents. Another fatal obstacle to improvement schemes was the enormous cost. Clearances had been effected by the London County Council at a cost of from £50 to £70 per head, or from £300 to £500 per family. They gave the money to the owners of the slum.

The Mayor of Newcastle thought private enterprise would always be able to provide houses for well-to-do artisans; corporations could never do it so well and effectively.

The Royal Victoria Hospital at Belfast, the foundation-stone of which is to be laid in the spring of next year by the Prince and Princess of Wales, is to be built from plans by Mr. William Henman. The commission was conferred after the Belfast committee had inspected the principal hospitals in Great Britain, and the work is now being vigorously pushed on by Mr. Henman and his partner, Mr. Thomas Cooper.

Enquiries Answered.

The services of a large staff of experts, including all those engaged on "Specification," are at the disposal of readers who require information on architectural, constructional, or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Temple of Theseus, Athens.

WOLVERHAMPTON.—PUZZLED writes: "I have been drawing out the Order from the above temple, as one of the R.I.B.A. intermediate 'Testimonies of Study.' Up to the present I have taken all particulars from Spiers's 'Orders,' but on referring to Gwilt's 'Encyclopædia' I find nearly all the dimensions to be rather less than those shown in Spiers's. The discrepancies appear to be about as follows (these are the several heights):—

	Spiers's.	Gwilt's.
Cornice	1ft. 4½in.	1ft. 0.75in.
Frieze	2ft. 11½in.	2ft. 8.55in.
Architrave ...	2ft. 8¼in.	2ft. 8 9in.
Columns	16ft. 9½in.	18ft. 8.8in.

By which authority would you recommend that I should be guided? Also, by what is the module regulated in this temple, since, according to Gwilt, the columns of the portico are of different diameters?"

The dimensions in "Gwilt" are the same as those given by Mr. Penrose, and may therefore be taken as correct. For the determination of the module, we only know the Vitruvian method, which probably dates from the first century B.C. It was contrived by the Roman architects to obviate what they regarded as defects in the Greek types. Briefly, they aimed at a more open arrangement of the peristyle; and this, of course, led to a reconstruction of the Greek standards for setting out the work. In view of the requirement just mentioned, it is natural that Vitruvius should lay stress on the elegant proportions of the Ionic and the Corinthian, while he speaks somewhat disparagingly of the Doric, which was not so adaptable. Beginning with the hexastyle Ionic of approved eustyle proportions, Vitruvius divides the front of the temple into eighteen parts, one of which served as the standard, and stood for the diameter of the columns—excepting those at the angles, which were a little thicker. The change wrought by this deviation from the Greek proportions is well shown by comparing the hexastyle Ionic temples at Priene and Teos, on the coast of Asia Minor. These two temples are nearly alike in size and plan, but that at Priene belongs to the time of Alexander and follows the Greek proportions, while that at Teos is Roman and shows the proportions of Vitruvius. In considering the Doric Order we find a similar liberty taken by the Roman architect with the proportions of the Greeks; indeed, Vitruvius frankly says that the rules he is about to give have been so amended from the Greek that anyone may now be able to design a sacred building in the Doric fashion without a single defect! From this point it is clear that our immediate purpose will not be served by following Vitruvius much further, so we merely add that according to his method the front of a hexastyle Doric temple of approved eustyle proportions should be divided into forty-four parts, one of which is called a module, and from the module so found the distribution of all the parts is regulated: the thickness of the columns is two modules, and any variation there may have been at the angles is not mentioned, but it probably followed the Ionic, as did the diminution and the eutaxis; anyway, it is not likely that the variation affected the standard of measurement obtained as above. J. A. M.

Examinations for Sanitary Inspectors.

LIVERPOOL.—S. S. writes: "In your issue for September 12th you give particulars of the examinations of the Sanitary Institute. I should be glad if you could tell me (1) what books would be the best to study to qualify as a sanitary inspector; (2) what the age limits are, and the conditions for entering. I have had a certain amount of practical experience, but am desirous of gaining in my spare time the theoretical knowledge.

(1) The following books may be studied with advantage:—Mitchell's "Building Construction"; Knight's "Annotated Model By-laws"; Willoughby's "Health Officers' Handbook" (Crosby Lockwood and Son); Coleman's "Sanitary House Drainage" (Spon); and Moore's "Sanitary Engineering" (Batsford). In addition to a sound general knowledge of building construction, drainage, and sanitation, the candidate must be thoroughly conversant with the various Acts and model by-laws relating to the duties of an inspector of nuisances. He must also be familiar with the method of inspecting dwellings, dairies, slaughter-houses, cow-sheds, &c.; the characteristics of good meat, fish, milk and vegetables; the regulations affecting persons suffering from infectious diseases; and the ordinary methods of disinfection. (2) A certificate is not granted to any candidate under twenty-one years of age. Satisfactory testimonials must be furnished as to age and personal character. The examination is partly written and partly *viva-voce*, the whole occupying a portion of two days. The fee is £3 3s., and formal application must be made fourteen days before the date of examination. A pamphlet is published (and may be obtained at the offices of the Sanitary Institute, price 6d.) containing detailed particulars, together with the copies of the papers set at previous examinations. T. E. C.

Building a Bungalow.

NOTTINGHAM.—BUNGALOW writes:—"I am about to build a country house for myself at a cost of about £1,000. To guide me in design I have procured Mr. Briggs's 'Bungalows and Country Residences.' Can you recommend any similar work which would be of use. Should hollow brick walls be made with the air-space nearer the inside or outside of the building? Is hot-water heating apparatus to be recommended for a residence, fireplaces, of course, being also provided?"

"Country Homes" (Batsford, 15s. nett), a series of illustrations of modern English domestic architecture, including examples by leading architects, may be of use in addition to the book mentioned by our correspondent. Opinions differ as to the method of building hollow walls. Our own opinion is that the constructive part of the wall should be placed on the inside, so as to be immediately under the superincumbent load of floors, &c., the outer 4½in. being regarded more in the light of a weather-proof or non-conductive covering; thus the wet cannot penetrate beyond the outer skin. If the wall is stone-faced the alternative method is better, but the damp may then penetrate rather far into the wall. The arguments for and against may be found clearly stated in Rivington's "Building Construction: Part II." We believe we have seen it claimed by the makers of the "Tenax" rock composition that a wall built with two 4½in. sections and a cavity of 1in. filled up with their composition is stronger than an ordinary 14in. wall. From our own experience we should say that a heating apparatus in a private house is not to be recommended; but this is largely a matter of opinion. If it is employed at all, we should suggest that it be confined to the hall, landings and passages, but a really good close stove in a central position and in the lower part of a house should answer the purpose. A. G. B.

House Planned Like the Ace of Clubs.

BEWDLEY.—J. W. writes: "Who was it that made a heavy gambling on cards and won, and then built himself a house in the shape of the ace of clubs? I have an impression it is to be seen in Ireland."

We know nothing of such a house. Perhaps some of our readers do, and will let us know.

Flooring for Billiard Room.

PUDSEY.—C. H. P. writes: "Which is the best kind of flooring for a billiard room on the first floor of a house?"

We should recommend querist to provide steel girders immediately beneath the points at which the legs of the billiard table are calculated to be placed. On the top of these girders hardwood supports, brought up flush with the ultimate level of the flooring, can then be fixed; they might be made about 8in. or 9in. square. This would ensure a true and level foundation for the table, and the rest of the floor could be treated in any way desired. By using a solid breeze-concrete floor and small steel joists about 1ft. 9in. apart, with a hardwood parquet flooring, the necessity for the above method would be avoided, but the girders should always be placed beneath the table-legs. A. G. B.

R.I.B.A. Preliminary Examination.

BOLTON.—H. S. writes: "Are Theoretical, Practical or Applied Mechanics and Physics required for the Preliminary Examination of the R.I.B.A.? Please name some elementary books which you advise for this examination."

Full information on all the subjects of examination, and a set of papers recently set, can be obtained in the Kalendar of the R.I.B.A. (price 2s. 6d.) by applying to the Secretary, at No. 9 Conduit Street, W. "Elementary Mechanics and Physics" forms one of the subjects for the Preliminary Examination. There are many good text-books for these subjects—among others may be mentioned Taylor's "Mechanics," 2s. 6d.; and Wright's "Physics," 2s. 6d. A. G. B.

Bonding Walls.

MANCHESTER.—An OLD SUBSCRIBER writes: "In altering some old property it is necessary to thicken out a large number of *old* 4½in. walls to 9in. Which is the way to bond the new to the old, the new work to be in mortar?"

Querist cannot do better than carry the work out in cement, to avoid settlement. He states that mortar is to be used, but we presume he means nothing other than cement mortar. We should say that bonders about one to every 3 sq. ft. would answer the purpose. A. G. B.

Legal Definition of "Drain" and "Sewer."

DULVERTON.—R. L. S. writes: "I am interested in the building of two houses at Dulverton, plans and specifications of which have been submitted to the R. D. C., whose only objection is in regard to the drainage. It was proposed to connect the drainage of the houses with the public sewer in the manner shown on Fig. 1 by the drain A, B, C. This, it appears, will not be allowed, as the Council are advised that the fact of two dwelling-houses being connected to one drain makes that drain a public sewer, for the maintenance of which the Council will be held responsible, and a refusal is given. The consequence is that the two houses will have to be drained in the manner shown in Fig. 2, namely, by laying two drains parallel to each other, and by having a separate connection for each house. I should be greatly obliged if you would kindly tell me (1) if the clerk of the Council is right in saying that the fact of two houses discharging their sewage into one drain (which is entirely within private property) makes that drain a public sewer; and (2) if such be the case, whether the Council has the power to veto the construction? I may say that the Council's by-laws forbid a drain being carried under any part of a dwelling-house when any other course is practicable. Now it is possible to build on sites adjoining the one under consideration between ten and fifteen houses; in fact, the owner contemplates doing so, and if the Council's ruling is right there will have to be ten or fifteen separate drains where one drain would suffice."

The fact that all "sewers" are maintained by the local authorities, while "drains" are private property, has given rise to considerable litigation in order to determine what is a "drain" and what is a "sewer." Under the Public Health Act of 1875 a "drain" is "any drain of and used for the drainage of one building only, or premises within the same curtilage." In the Public Health (Amendment) Act of 1890 the definition of "drain" is "a drain used for the drainage of two or more houses belonging to different owners." The first-mentioned Act applies to the whole

country (except the Metropolis, which is governed by special Acts of Parliament), while the Amendment Act of 1890 is known as an "adoptive" Act, i.e., it is left to the discretion of the local authorities to adopt it or not. The word "drain" being thus differently defined in the two Acts, while at the same time the Amendment Act has been adopted in some districts and not in others, has resulted in several apparently conflicting legal decisions. In the well-known Halifax case of *Travis* v. *Uttley* it was decided by the High Court that a drain taking the discharge from several houses, and constructed on private property (in fact, passing under the buildings), was a "sewer" within the meaning of the Act. A somewhat similar decision was given in the Carlisle case of *Hill* v. *Hare*. In the case of *Seal* v. *Merthyr Tydfil* it was decided that a drain into which sewage flowed from the houses of the owner, as well as from adjoining houses, was a "private drain" within the meaning of the Public Health Act of 1890. Under the Metropolitan Acts it was decided in the case of *The Shoreditch Vestry* v. *Phelan* that when once a drainage pipe becomes a sewer, by being combined with the drainage of other houses, it still continues to be a "sewer" although the pipe afterwards only drains one house. From the foregoing decisions it will

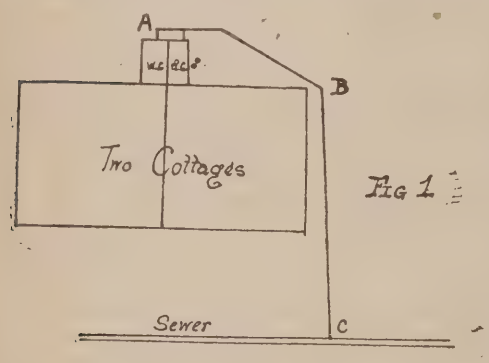


FIG 1.

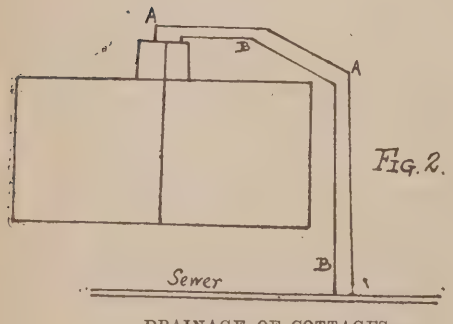


FIG. 2.

DRAINAGE OF COTTAGES.

therefore be seen that the legal definition of a "drain" or "sewer" can only be determined in a great measure by a consideration of the particular circumstances of each case. In some districts the local authorities have been compelled to reconstruct and maintain, at very heavy cost, a large number of so-called "sewers" laid on private ground, and which were originally constructed by the property owners. The result is that many local authorities will not now permit the construction of combined drains for the use of two or more houses, but insist upon a separate drain to each building. Unless there is anything to the contrary in the by-laws, &c., of your Rural District Council, they may refuse to sanction the construction of any combined drains within the area under their control. T. E. C.

Expansion Joints in Roof Truss.

LEICESTER.—J. S. M. writes: "What is the best form of expansion joint for an ordinary steel tie-rod roof truss for a 60ft. span? Should the feet be secured to stone templates with Lewis bolts?"

I do not consider it necessary in the proposed principal to have any form of expansion joint. The foot of principal might be bolted to the stone template by Lewis bolts, through slotted holes, but even this is not absolutely necessary. BREES VAN HOMAN.

Builders' Book-keeping.

SHERBORNE.—E. J. C. writes:—"I shall be obliged if you can inform me whether there is any good standard book on builders' accounts and book-keeping; and, if so, where it can be obtained."

"Builders' Book-keeping: a Perfected System," by Mr. Sidney Saker (published at 95-97, Finsbury Pavement, E.C.), price 3s. 6d.

Books of Church Planning.

REIGATE. — S. writes: "Will you kindly tell me what works would be helpful in church and chapel planning?

"Church Design for Congregations: its Development and Possibilities," by James Cubitt; "English Church Architecture," by George Gilbert Scott, F.S.A., 26s.; and Walcott's "Church and Conventual Arrangement," 9s. 6d. These can be obtained from Mr. B. T. Batsford, 94 High Holborn, W.C.

Government Appointments.

LONDON, E.C.—STUDENT writes: "Are there any Government appointments to be had in the architectural line? If so, what are the examinations I should have to pass?"

Examinations are held for Assistant Civil Engineers in the Admiralty and for Assistant Surveyors in the Royal Engineers. Draughtsmen are also engaged by H.M. Office of Works. There are several books published giving particulars of the Civil Service which will aid you.

THE BUILDING TRADES' GIFT.

MR. EDWIN O. SACHS, Chairman of the Executive of the Building Trades' Gift to the Nation, announces the following further list of contributions:—

	£	s.	d
The Birmingham Master Builders' Association, 2nd instalment (per Mr. W. Sapcote)	200	0	0
The Manchester Builders' Association	65	3	0
Mr. Samuel Warburton, Manchester	20	0	0
The Longridge Builders' Association	9	5	0
Workmen of Messrs. Thompson and Beveridge..	7	11	8
Association of Clerks of Works and Builders' Foremen, Bristol	5	5	0
The Preston Builders' Association..	5	5	0
Messrs. J. and W. Simpson and workmen ..	3	15	6
Mr. J. Parsons and workmen	3	0	0
Workmen of Mr. Samuel Warburton, Manchester	2	11	6
Mr. James Kent and workmen	2	11	6
Workmen of Mr. A. E. Symes, Stratford.. ..	2	2	0
Workmen of Mr. F. Britton	2	2	0
Messrs. W. H. Lambert and Sons and employees	1	10	6
Mr. J. A. Murray and workmen, Reigate ..	1	4	0
Mr. H. B. Oldrey and workmen	1	1	0
Mr. W. Carr and workmen	1	1	0
Employees of Messrs. Bray and Pope	1	0	0

New Church and Schools at Heaton, Newcastle.—The foundation-stones of the new schools to be erected by the Free Methodists at the junction of Heaton Road and Simonside Terrace, Heaton, were laid last week. A church is also to be erected, and, with the school, will cost about £7,500.

A Fish, Butter and Vegetable Market at Douglas, I.M., is about to be erected by the Corporation at a cost of about £3,000. This building has been designed entirely of iron to provide a market that can be kept perfectly open in summer during the hot weather and closed in winter, with the exception of the principal entrances. The site is one adjoining the new butchers' market, and is in close proximity to the quay where the fishing boats discharge. The building measures 115ft. 6in. by 43ft. 6in. at one side of angle and 9ft. 10in. by 37ft. at the other side, and is 12ft. high to the underside of the ornamental steel girders. All entrances are fitted with patent collapsible steel gates. The fish and vegetable markets are divided by a white glazed-brick wall running the full height of the building. There are lavatories for both sexes, also built with glazed bricks, with tiled floor, and fitted up with Twyford's urinals and water-closets. A boiler-house is provided, so that hot water can be obtained at any time for washing the stalls and fittings.

Bricks and Mortar.

APHORISM FOR THE WEEK.

"*Greek architecture is the flowering of geometry.*"—EMERSON.

Our Plates. THE block of three cottages at Tankerton, Whitstable, is about to be erected on the sea front for Mr. Ernest Beard, from designs by W. I. Chambers, architect, of Savoy House, W.C. The upper part will be finished with rough-cast and yellow beach pebbles, the bay windows and half timber work to be in English oak. The ground floor will be faced with dark red sand-faced bricks, and the roofs covered with brindled Broseley tiles. All the external woodwork will be painted white. Mr. Waring's Leyden drawings were made on a visit to Holland in fulfilment of the conditions of the Architectural Association Travelling Studentship, which he gained in 1898. The Stadhuis is a fine example of the Dutch Renaissance, having been erected in 1570. Stone is used throughout in its construction, and some good woodcarving is to be seen inside. An article dealing with Mr. Waring's tour was published in the BUILDERS' JOURNAL for February 22nd and March 8th, 1899. We are unable to give any particulars this week of the block of workmen's dwellings at Hull. These shall appear in our next issue.

Cardiff Asylum Competition. ABOUT fifty sets of designs for the new asylum which is to be erected at Whitchurch have been deposited at Cardiff Town Hall, and are now being considered by the assessor, Mr. G. T. Hine, F.R.I.B.A. A few particulars as to the general character of the new buildings as they will be when completed will therefore be of interest. In the first place, the building is to be erected on a site which, in respect to its admirable aspect and altitude, has already received the approval of the Lunacy Commissioners, and is within reasonably easy access of the town. The estate of which the site is a portion is that of Velindre, but it is stated that it is not proposed to alter this mansion at all, except to make it usable by a certain class of patients. In the first instance the asylum will be made to accommodate 800 patients, together with the large staff necessary in such an institution. The plans, however, allow an extension up to 1,250 patients, beyond which it seems undesirable to extend. Most of the local architects have sent in competitive plans, and these are largely supplemented by those of outsiders. It should be added that the present competition is intended to be a preliminary one, and not like that for the municipal buildings. Six designs have been selected out of the fifty sent in, and the six architects will enter into a second competition, the best set of plans submitted by one of these half-dozen being finally selected. The authors of the six selected plans are:—Messrs. Wills and Anderson (Swansea), J. Kirkland (Clapham Park), Greenaway and Newberry (Westminster), Law and Allen (Arundel Street, Strand), Hooley and Sander (Nottingham), Oatley and Skinner (Bristol). The estimates (which were, if anything, under the mark) varied from £195,000 to £226,000 for 800 patients, and from £224,000 to £296,000 for 1,250 patients.

The Forum Excavations. THE discoveries made by Signor Giacomo Boni in the course of his excavations in the Forum at Rome are most striking and play havoc with the accepted topography of the place. The Niger Lapis and Cippus with the archaic inscription, the Basilica Æmilia, the Sacrario of Mars, the house of the Vestals, and the many sacred wells scarcely possess the poetical interest of the discoveries now made under the site of the demolished Church of Santa Maria Liberatrice. Here were found first a magnificent Greek torso of an Apollo, then the Fons Juturnæ (a deep well crowned with a fine marble top), then an altar and other statues (all of the best Greek marble, worked in the best Greek style), and finally the Lacus

Juturnæ, which is at least 40 sq. yds. in extent, having in the centre a pedestal on which no doubt a statue of the nymph Juturna once stood. The fountain was most disgracefully treated by the Christians, and it is a striking epilogue to this desecration that, when the negligence of the Popes had allowed the Roman aqueducts to fall into ruin, the Christians should have been obliged to obtain water by sinking wells in the Forum at the very edge of the main sewer. Almost simultaneously with these discoveries Signor Boni, in another part of the Forum, near the Capitol, came on the rostrum of the Cæsars, which many writers have erroneously placed at a spot at some distance from the real site. In addition, a fourth cloaca maxima has been discovered. Since Signor Boni obtained the conjunction of the so-called cloaca maxima with the present main sewer of Rome he has been able to prevent the flooding of the Forum whenever the Tiber rises, and to explore the cloaca itself. This proceeding has led to the discovery of three other cloaca, each older and larger than the one hitherto known. They have proved to contain many fragments of splendid Etruscan vases and other interesting relics. The examination of the fourth cloaca, which has been sealed for at least two thousand years, will begin this week.

Brechin Cathedral. ON Saturday, September 22nd, the memorial stone in connection with the restoration of the Cathedral Church of Brechin was laid. The work is being carried out under the direction of Mr. John Honeyman, of Glasgow, and is estimated to cost about £12,000. It is believed that previous to the introduction of Christianity into Scotland Druidical rites were celebrated on the rocky knoll on which the present cathedral stands; and the disciples of St. Columba at a later date founded a cell there, and also a training college for priests and missionaries. The buildings then erected were probably mere wattle huts, similar to those which were put up at Iona and elsewhere. They would be superseded by more permanent buildings, but the only existing relic of the Culdees is the wonderful Round Tower, which has long been a subject of controversy among archæologists. The only other Round Tower in Great Britain is at Abernethy, in Perthshire, but both bear a resemblance to to the Round Towers of Ireland. The Bishopric of Brechin was founded about 1150, by David the First, and the present church was probably begun about that time. But the work in connection with the present restoration has proved that the building stands on the foundations of a much older edifice.

What the "Reconstructors" Did. BRECHIN CATHEDRAL was not injured much at the time of the Reformation: this work was left for the Philistines living at the beginning of the present century. The one object of the scheme was to make the building suitable for a parish church, and to secure the largest possible amount of sitting accommodation; and this is what the "reconstructors" did. The inners walls of the side aisles were removed, and the outer walls built up higher, the transepts demolished, and the clerestory windows in the nave hidden. The chancel arch was closed up and galleries were put all round the church, the pillars and walls of the nave being cut and defaced to receive the woodwork. To complete the destruction, a plastered ceiling was put across the whole building, hiding the roof and the beautiful tracery of the large west window, and the stonework of the nave was coated with plaster. The sapient architect who was responsible for this scheme even proposed to demolish the famous Round Tower and use the stones. But this economical proposal was prevented from being carried out. A neighbouring landed proprietor interfered, and threatened to hang from the top of the tower the first man who touched a stone!

Mr. Honeyman's Plans. MR. HONEYMAN'S plans provide for the complete restoration of the choir, the rebuilding of the aisle walls, the roofing of the aisles, the removal of the plaster roof, &c., and of the north, south and east galleries, re-roofing the nave, and building a north porch and small south transept. The operations are already fairly well advanced. The plaster ceiling has been taken down, and it has been found that the old clerestory is, happily, almost uninjured. In the foundations of the west gable of the south aisle a number of carved stones have been found which are believed to have formed part of a Norman building which stood on the site of the cathedral. Other pieces of Norman work have been found which still retain traces of coloured decoration.



THE SCHOOL-HOUSE, TEMPLE BALSALL. DRAWN BY E. STANLEY MITTON.

London University and Architecture. IN reply to Mr. Emerson's letter in the "Times" in connection with the fact that there is no Faculty of Architecture in the University of London (see last week's issue), Mr. T. Bailey Saunders says: "The University of London Act of 1898, in fixing the constitution of the Senate, did not, it is true, provide for any representation to be given to the Institute. But neither did it mention the Royal Society and some other distinguished bodies, . . . if the Institute was excluded from direct representation on the Senate, it was excluded in good company. But in no other respect is there, I think, much cause for dissatisfaction in regard to the position which architecture holds, and may hold, in the University. The President is technically right in saying that the statutes do not mention the subject, but if he will turn to those dealing with boards of studies he will find that certain boards enumerated in the annexed regulations are to be appointed, and amongst them 'A Board of Fine Art, including Architecture.' This provision embodies the recommendation of Lord Cowper's Commission. There is nothing whatever in the statutes to prevent the future Senate, if it so see fit, from recognising architecture as a branch of the faculty of science or of engineering. Nay, more, there is a particular statute enabling the Senate, if it so see fit, to conduct examinations of a professional character, jointly with institutions holding such examinations. . . . But the Senate cannot encourage systematic courses where none exist, or provide them itself without funds. So far as I am aware, there is no school of architecture in London at the present moment which has reached the level of efficiency displayed in the schools of medicine and engineering, or at all comparable with any of the more advanced schools of architecture abroad, of the standing, for example, of the department devoted to that subject in the great technical University of Charlottenburg, Berlin. With the amount of rebuilding that is in progress and in prospect in the metropolis, such a school might accomplish a great work. I am not unmindful of an association, protected to some extent by the Institute, which, without the command of any large resources, is yet doing useful service in the way of instruction. But its best friends can scarcely claim that it has now attained to University rank. When it develops, or when an efficient school for the study of architecture arises in London, it is hardly likely to be ignored by a University anxious to promote the interests of all branches of science and learning. But the promotion of those interests depends upon proper endowment, and there is no place of education in the Empire which is just now worthier of attention at the hands of generous donors than the University of London."

Temple Balsall School-house. THE illustration of this school-house shown on this page is from a drawing by Mr. E. Stanley Mitton, architect, of Birmingham. We have not been able to ascertain the exact date of its erection, but we are given to understand that this took place about thirty years ago from designs by Mr. Garner.

New National Museum at Munich. ON Saturday last the Prince-Regent of Bavaria opened the new National Museum at Munich, the novel arrangement of which is well worthy of study on the part of those who will be responsible for the proper display of our South Kensington possessions. The architect is Herr Gabriel Seidl, who built the important Annakirche in the town; the building cost £200,000, is of two floors, and contains no fewer than 100 rooms. The style is the nondescript which one finds in so many German buildings of the sixteenth century, where mediæval high-pitched roofs and round turrets come into quaint juxtaposition with doors and windows suggested by Italy. The leading principle adopted is that the rooms on the ground floor should show, in strict chronological order, Bavarian life at different epochs, from the little circular room which, in its architecture and in its contents, recalls the tenth and earlier centuries, down to the blue and gold magnificence of the late King Louis. In the early rooms, the sense of architectural evolution is greatly helped by the fact that the various castles of the Bavarian Crown have contributed ceilings, windows, &c.; and in many cases the rooms have been planned specially to receive these. One ceiling, from the Castle of Dachau, is of great beauty. But all kinds of other objects are shown—in fact, the Bavarian Museum neglects nothing, and is in consequence one of the most complete of its kind to be found in Europe.

Current Periodicals.

The British Clay-Worker for September expresses the opinion, in connection with the alleged injury to Westminster Abbey through the smoke from the potteries on the south side of the Thames, that, though the stone used in restoring the building during recent years is no doubt of excellent quality, "most of the stone used in olden times in the structure was about as bad as a stone can be." More than 200 years ago, Sir Christopher Wren was called in as an expert, and he alluded to some of the stone of the Abbey being considerably decayed, while 50 years ago some of the flying buttresses were found to be in a deplorable state—Messrs. Doulton and Messrs. Stiff had not then been long established. In conclusion, our contemporary says (and we endorse the opinion): "In view of the present state of our knowledge concerning the composition of the London atmosphere, we do not think anybody is justified in laying the disintegration of building stones in the metropolis at the door of any particular firms. As well might we charge them with causing the London fogs. Everybody who lights a fire contributes to the pollution of the atmosphere and the production of acids deleterious to the life of building stones—especially calcareous stones."



PLAN OF COTTAGES AT TANKERTON. W. I. CHAMBERS, ARCHITECT. (*For perspective see centre plate.*)

Pall Mall Magazine.—After an outburst which is not the climax of artistic writing, the writer of the article on "Wollaton Hall" in the October number of this magazine descends to "prosaic detail," and says that this magnificent building was erected in the days of Elizabeth by John Thorpe (of Padua) with his "architector," John Smithson. The work was begun in 1580 and finished eight years later. After an excellent description of Wollaton, the author closes with a note of sadness, for he says: "Sad is the gradual creep of the city down to the park walls; when the distance to lend enchantment will be absent from that view, when chimneys can no more appear as fairy spires, the gas-holders as mediæval granaries, and the big factories with their hard iron-framed windows lose charming value as ruddy blurs through the hazes of blue. Sad is the nighness of the local colliery, which it was left to the last generation to plant in the pretty village itself, and whose smouldering pit-bank generates sulphur fumes which will surely in time do to death the noblest trees." In the issue of the BUILDERS' JOURNAL for May 30th last will be found reproductions of John Thorpe's original designs for Wollaton Hall.

The Engineering Times.—Five shillings is the price of the special Paris Exhibition number of this magazine; and it is well worth this amount It is of course impossible here to do more than indicate the branches of engineering dealt with—railway plant, steam-engines, wood-working, electrical, milling, agricultural, metal-working and other machinery, oil and gas engines, pneumatic tools, &c.; but a few of the writer's conclusions may be noted. To begin with, he says that the show of Great Britain (in size) is contemptible; it will not compare even with that of Switzerland; and he blames the Royal Commission "for the disgraceful way in which British commercial interests have been trifled with at this great Exhibition." France has 30,000 exhibits, the United States 6,564, Germany 2,000, Russia 1,500—Great Britain 600, the same as British Columbia! "To say that we are represented would be absurd, and yet foreign buyers will think we are—and there is the sting." The illustrations are numerous and the printing is very good. As before stated, the number is an excellent one.

The Artist.—The September issue of this publication contains an article on "Rye" by Mr. G. Forrester Scott, illustrated with some pleasing sketches. The only other article of special interest to the architect is that on "Interiors and Furniture at the Paris Exhibition," among the illustrations to which we notice one titled, "Boudoir *by* 'L'Art Nouveau,' Paris," and another titled "Sofa, *by* 'L'Art Nouveau,' Paris." The italics are ours, as we always understood that "L'Art Nouveau" was a particular style.

Feilden's Magazine for September has a cover which accomplishes its object—that of catching the eye. Inside, however, is much of interest. Mr. R. G. Allanson-Winn contributes an article on groynes, while Mr. W. M. Twelvetrees, M.I.M.E., deals with the Central London Railway. "Some Notable Exhibits at the Paris Exhibition" and "Recent Bridges" are the titles of two other articles in this number.

The Antiquary.—Dealing with the new guard-house at the Tower, which was strongly condemned by us a short time ago, the following remarks are made in the October number of this publication: "The hideous ugliness of the new, cheap, red brick against, and by the side of, the old, gray, time-toned and time-stained stone of the ancient fortress, must be seen to be thoroughly realised. No one seems to know who is directly responsible for this gross act of vandalism, but the War Office must take the blame of, perhaps, the most wanton and outrageous architectural crime that has been committed for many years past." This number also contains "Notes on some Stone Finds at Killucan, co. Westmeath," by the Rev. W. Falkiner, M.R.I.A.

Harper's Monthly Magazine for October is a very interesting number. Mr. Chalmers Roberts supplies an illustrated article on Mr. Mortimer Menpes, who, besides being an artist, is a crack rifle-shot, a wrestler, and a raiser of prize fowls. His residence, 25 Cadogan Gardens, W., is described by himself as "a gold house, with a lace-work of delicate wood-carving on the gold," which is true, for your first impression is one of carved black wood everywhere over a ground of rich gold. All about the house are little Japanese lamps and lanterns enclosing electric lights; the decoration, however, is not copied from Japan, but Mr. Menpes' own production after a course of close study in the East. In fact, he is an artist to the finger tips, and one of the best known men in London.

Home Art Work for October completes another volume, and with the next issue its eighteenth year will commence. The designs presented include a good line drawing of an angel, after Fra Angelico. We note that some designs are promised during 1901 by Mr. G. C. Haité, Mr. F. Hamilton Jackson and Miss Bowley.

Journal of the Society of Architects.—The Society thinks it discerns a favourable change in the attitude of the R.I.B.A. in regard to architects' registration, and asks if it is not going too far to surmise that the leading association is gradually preparing itself "for the inevitable." We rather think the Institute would deny such an imputation; but we admire the Society of Architects for saying that they are disinterested enough "to place freely at the disposal of the Institute the results of the labours and expenditure of the past sixteen years, with only the reasonable proviso that the Institute shall definitely pledge itself to carry on the work." "Thunderstorms, and the Damage they Cause," is the title of Mr. Alfred Hands's paper in the number under review.

The R.I.B.A. Journal for September 20th contains an article by Mr. G. Hurst Seager, of Christchurch, New Zealand, on "Architectural Art in New Zealand." In regretting not being able to speak of the art *of* New Zealand, the author says: "Unfortunately, there has been no true development; we have no style, no distinctive forms of art. . . . All our methods are those of the Old World. . . . With a knowledge of the principles which govern the ancient work it is possible only to the most gifted to free themselves from the forms in which those principles are embodied." This view is borne out by a depressing series of illustrations. The only works which are truly characteristic of colonial life are the early wooden buildings put up by the first settlers, and these are mere imitations in wood of brick and stone forms. A paper read by Mr. J. Eadie Reid at a meeting of the Northern Architectural Association on "Some Principles of Christian Art Historically Considered" is included in the number.

American Architect.—It appears that, owing to some difficulty in determining its permanent site, the Dewey Arch in New York is causing dissension, and it is said that those who undertook to procure funds for rebuilding it in marble are ready to abandon the undertaking. Meanwhile the plaster structure is becoming so discoloured that by many it is regarded as an eyesore. A writer in the issue of this publication for September 1st says: "Marble fronts and marble statuary are out of place in city streets frequented by pigeons and sparrows, or where soot and dust must be deposited upon their horizontal surfaces, or in their carved recesses." Among the plates presented with this number are two of the first and second premiated designs in the recent Liverpool Dock Offices competition. In the issue for September 8th there is an interesting article by Mr. Paul Waterhouse dealing with Sens Cathedral (where William of Sens, "who laboured at the Canterbury Choir, and, as some say, planted the pointed arch in England, worked in 1168 and the preceding years"), Auxerre Cathedral and the surrounding country. The plates include two of Mr. Mountford's design for the new Sessions House and a beautiful photographic

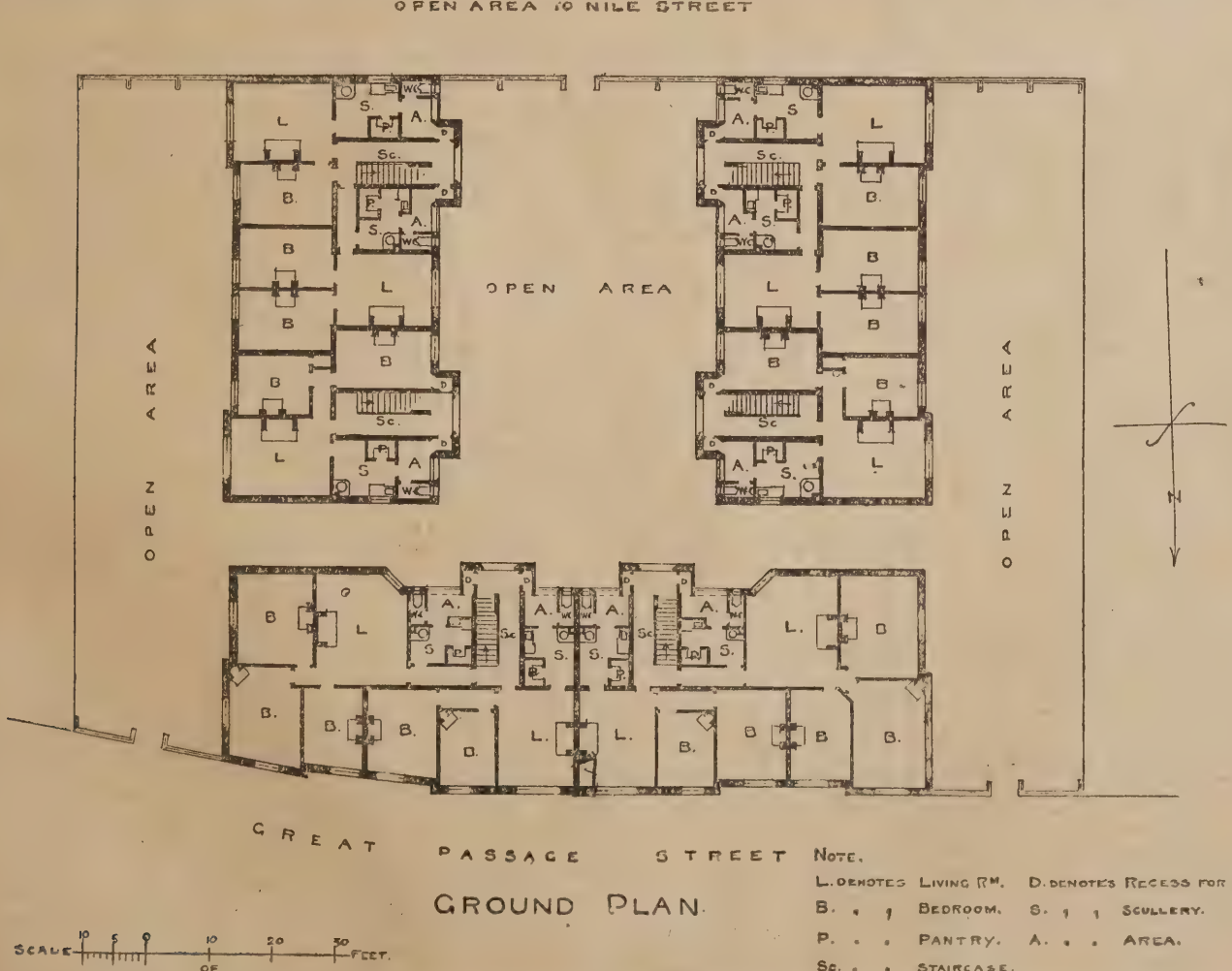
reproduction of the Prudential Insurance Company's Office in Newark, N.J., of which Mr. George B. Post is the architect. It is about ten storeys high, and has been very successfully treated with an exterior built of large blocks of stone, giving it a substantial appearance. It is far ahead of the usual buildings of its class. The only thing worth noting in the issue for September 15th is the excellent article (continued) on the development of the acanthus and spiral scroll, which is illustrated by most suitable line drawings.

The Brickbuilder (Boston, Mass.) for August says: "The English-Portland cement held a high place in public favour for many years, and there were some contractors who used to claim that it was not possible to manufacture really first-class Portland anywhere except in England. But a protective tariff and large opportunities have changed all that. The English article has almost gone out of the market, and German cements have very largely taken its place, but these in turn are being supplanted by our own manufacture." In an article on "Brickwork of the Royal Châteaux of France," Mr. William T. Partridge deals with the Château de Maintenon, Château de Saint Germain-en-Laye, Fontainebleau and Versailles, and points out that with the Château de Saint Germain-en-Laye a new use of brickwork began, the colour of the brick being utilised; another innovation was the covering of the body of the building with stucco, and leaving pilasters, reveals and string-courses of red brick. Several illustrations are given in this issue of the designs by members of the T-square Club for a domestic establishment in the neighbourhood of Philadelphia: the winning design is by Mr. Lloyd Titus, who thus gains the European Travelling Scholarship. The plates presented with the issue under review are splendidly printed, but the designs are not remarkable for merit—the best is that of a New York house by Mr. Ernest Flagg.

The Architectural Review (Boston, Mass.).—In the August number there is an illustrated article by Mr. Glenn Brown in which suggestions are made for the grouping of Government buildings; but it deals almost entirely with Washington, and largely with a new boulevard proposed through the Mall, so its interest becomes localised. The view of the Capitol down Maryland Avenue shows, however, what an excellent effect is possible when the setting of buildings is thoroughly and intelligently considered. The genius of America, the dominant note of American life, is aspiration, and in attempting to monumentalise this Professor Désiré Despradelle designed the "Beacon of Progress," an obelisk 1 500ft. high, having a brilliant beacon light at its apex. The design was awarded the first medal in architecture at the Paris Salon this year; it is an extraordinary conception, but looks Egyptian rather than American. It is not proposed to be carried out. In dealing with the new Sessions House designs, criticism is free and hostile. They are described as being all bad in plan—the art of planning having been lost in England—though it is acknowledged that the best design is that by Mr. Mountford, which is considered dignified and expressive of its purpose. But on this side of the Atlantic the plan of this building has been thought excellent. Elevations and plans of the building for the Department of Architecture, Harvard University, by Messrs. McKim, Mead and White, are included among the plates: the planning is straightforward and good. The September number of this journal illustrates many small American houses: they vary in merit between atrociousness and passability; but they are printed in a manner which is greatly superior to similar work on this side of the Atlantic.

Stone (New York).—"Early Use of Second-hand Stone, and Jobbery at the Reformation" is the title (not an altogether pleasing one) of an article in the issue for August. There is a frontispiece showing the interior of the Mosque of Cordova. Concerning the columns, Edmondo de Amicis says in his book on Spain: "The Mosque of Cordova, which was converted into a cathedral after the overthrow of the Moors, but which must always remain a mosque, was built on the ruins of the original cathedral, a little way back from the bank of the Guadalquiver. Abdurrahman commenced its construction in the year 785 or 786 A.D. 'Let us rear a mosque,' said he, 'which shall surpass that of Bagdad, of Damascus, and of Jerusalem—a mosque which shall be the greatest temple of Islam, one which shall become the Mecca of the West!'" This he did. Other articles in this number are "The Formation of Limestones," "Ancient Picture Mosaics and the Tiles and Mosaics of Venice," "Spiral Staircases," and "Greek Marble."

Scientific American (Building Edition).—The issue for September contains a review of the "Architectural Annual" published under the auspices of the Architectural League of America. It contains the following remarks: "With few exceptions, until five or ten years ago architecture in the United States was but a business; now it is a recognised profession, although some of its members are not inaptly called by the 'Architectural Annual' nothing more than unscrupulous business men. . . . It is gratifying to note the advance in architectural design, but such advance seems to have been more amazing when the present state of architecture is considered. An architect is now paid, not in proportion to the excellence of his design, the watchfulness of his superintendence, or the conscientious effort on his part to minimise expense (of course not, such an arrangement would be impracticable), but in proportion to the entire cost of his work. This has encouraged the structural steel companies to include in their bids the service of an engineer who works out the construction, and has enabled terra-cotta companies to make detailed drawings from small scale sketches, without apparently charging either architect or owner for them. . . . A promising sign of the advance in the profession is the unanimous decision by its better element that open unlimited competitions are demoralising and unusually productive of most unsatisfactory results."



WORKMEN'S DWELLINGS, GREAT PASSAGE STREET, HULL. JOSEPH H. HIRST, CITY ARCHITECT, HULL. (*For perspective see centre plate*)

The Bricklayer and Mason (New York) for September contains an expressly-written article on "Compulsory Arbitration" by the Secretary of Labour for New Zealand. Considerable attention has recently been drawn in the British press to the excellent Arbitration Court established in our far-off colony; we could only wish that such results were made possible here.

La Revue de l'Art Ancien et Moderne (Paris).—The September number is entirely devoted to art exhibits at the Paris Exhibition. In regard to the sculpture, our contemporary says that little of importance emanates from this country, though Mr. Onslow Ford, Mr. Drury, Mr. Pomeroy and Mr. Frampton come in for a little praise. On page 197 is a line drawing of a metal milk jug, and on page 204 are three drawings of two candlesticks and an arm-chair: these are mentioned because of their splendid technique; though the greatest care has been taken by the artist, and every detail is accurately rendered, the result is not in the least laboured. In fact, the drawings are models of technique in their particular class, and equal those of Jacquemart and Bacher.

Die Kunst (Munich).—The October number is mainly an easel-picture number, and therefore of not much direct interest to our professional readers. But there are some good reproductions of British furniture and interior decoration at the Paris Exhibition. At the beginning, however, of the article accompanying these illustrations we are again informed that "England is badly represented." The work shown includes a tapestry designed by Burne-Jones and executed by William Morris, the result being very beautiful. The work of the Bromsgrove Guild of Applied Arts, of Mr. Cecil Brewer and of Messrs. Waring and Gillow is also included.

Professional Practice.

Cromford.—The new Wesleyan church and Sunday schools were opened on September 18th by the President of the Wesleyan Conference, the Rev. Dr. Allen. The buildings are on an excellent site in the centre of the town, and consist of the church, measuring 70ft. by 30ft., with a semi-octagonal rostrum, apse, organ chamber and minister's vestry; the schoolroom, 32ft. by 30ft.; an infants' room, 22ft. by 17ft.; and two classrooms, each 14ft. by 10ft. 6in. At the rear of the building are the boiler house and offices, and the heating chamber is underneath the rostrum. The materials used are local gritstone with Bentley Brook dressings, varnished pitch pine for internal fittings, wainscot and roofing, with Bath stone for internal arches and columns between chapel and schoolroom. The windows are glazed with stained lead lights and tinted Muranese glass. The style adopted is a free treatment of Gothic, and the interior arrangements and acoustic properties give entire satisfaction. Mr. William F. Bird, M.S.A., of Midsomer Norton, Somerset, is the architect, and the contractor Mr. William Boden, of Matlock Bank. The cost has been £2,000. The heating by hot water low pressure has been carried out by Messrs. Bates and Son, of Sheffield. The wrought-iron casements, gas fittings and ventilating appliances were made by Messrs. A. Gardiner, Sons and Company, of Bristol, and the rostrum railing by Messrs. W. Macfarlane and Company, of Glasgow.

Glasgow.—Public halls and public baths are to be erected at Kinning Park. Mr. Donald Bruce, of Messrs. Bruce and Hay, architects, 271 West George Street, the burgh surveyor, has prepared the plans. The expenditure will be about £20,000. The halls are to be erected on the north side of West Scotland Street, at the corner of Smith Street, and the baths on the south side of West Scotland Street, nearly opposite the halls. The principal entrance to the halls is from Smith Street by a flight of steps to a large vestibule, leading through glass doors to a crush hall, 65ft. by 12ft. Off the crush hall there are several ladies' and gentlemen's retiring rooms, lavatories, cloakroom, ticket office, and the stair which leads to the gallery of the large hall. The hall will be capable of accommodating 1,000 persons in the area, while the gallery will seat over 200. There will be a separate entrance to the platform from West Scotland Street, which can also be utilised as an entrance to the lesser hall, the committee rooms, reading room and library. On each side of the platform of the large hall there are other ladies' and gentlemen's retiring rooms, which in a case of emergency can be used in connection with the platform of the lesser hall. Immediately behind the platform of the larger hall there will be a four-manual hydraulic organ, with full pedal compass. Communicating with both halls there are other side rooms, to be used for booking purposes, and also a refreshment bar. The large hall will be lighted by side windows, and the lesser hall by roof lights. The heating and ventilation of the buildings will be on the most modern system. The frontage to Smith Street has a three-light Romanesque window over the main entrance, with minarets at each side, and a truncated gable with a niche in which the Goddess of Harmony is to be placed. The building is to be constructed of Dumfries polished stone, and when completed will be the most artistic building in this industrial suburb. Owing to the situation of the site upon which the baths are to be erected, the building will not have such a conspicuous appearance as the halls—only the north elevation, which faces West Scotland Street, being exposed. The swimming pond is 75ft. long by 37ft. broad, with a depth of 6ft. 9in. at the spring-board end and 3ft. 6in. at the shallow end. The interior of the building will be lined with white brick, and the floor of the passages with Italian mosaic having panelled borders. The water is to be heated by steam injectors. Around the pond will be seventy-six dressing boxes, also foot-baths, spray-baths and douches fitted up in an elaborate manner, together with private slipper baths of porcelain in white-glazed chambers. Over the dressing boxes there will be a gallery enclosed by handsome wrought steel panels and rails. Abutting the gallery will be a club room, which is situated in the roof over the main entrance.

London, S.W.—Six foundation stones of the U.M.S. Church, schools, &c., Fentiman Road, South Lambeth, were laid recently. The church is flanked on one side by a square tower, which is terminated by a small spirelet and weather vane, a staircase in it leading up to a small end gallery. A projecting narthex with the two main entrances forms a prominent feature of the design. The dressings are of Bath stone and the facings of red brick. The seating is circular on plan, so that the whole of the congregation immediately face the preacher. The preacher's platform or rostrum is placed centrally in an octagonal apse, where the choir is also accommodated. The organ chamber is arranged on one side of the apse, having organ fronts into both the church and the apse. The vestries are placed immediately behind the apse. A large schoolroom with a gallery is provided, together with additional classrooms and other conveniences. The school is placed by the side of the church, facing Fentiman Road. A suitable church parlour is provided, also fronting upon Fentiman Road. The style of the church is Perpendicular Gothic, freely treated. The contract for the whole block, including boundary walls, amounts to £6,506, and is let to Mr. J. O. Richardson, builder, Peckham. The architects are Messrs. George Baines, F.R.I.B.A., and Reginald Palmer Baines, 5 Clements' Inn, Strand, W.C.

Millport.—The new hospital at Millport is centrally situated on the rising ground behind Breakough Farm, about half a mile from the town, having a south-west exposure, the pavilions running approximately north and south. The hospital has been designed for the isolation of two different diseases, the south pavilion consisting of a four-bed ward for males, and a two-bed ward for females. The nurses' duty-room is situated immediately behind, and is so arranged as to overlook both apartments. The north pavilion consists of a two-bed ward for males and a one-bed ward for females, and is intended for the treatment of enteric fever. The one-bed ward will also be used for special cases and for the reception of private patients. The administrative block is situated to the south-west of the pavilion block, and in this building there is accommodation for caretaker, nurses, matron and servants. There is also provided a septic tank for the treatment of the sewage. The water supply is obtained from a spring considerably above the hospital, where it is stored, and allows the water to gravitate to the highest point of the building, the storage capacity being equal to eight days' supply for twenty persons at 30gals. per head per day. The accommodation is equal to the requirements of nine patients, allowing 2,000 cubic feet per adult. Considering that the greater proportion of the patients will be children, the local authority has in view the providing of several cots, when they will be able to accommodate three to four times the number of patients. The cost of the building will run close on £5,000. The plans are by Messrs. Fergus and Penman, architects, Largs, and the furnishings have been supplied by Messrs. Moore, Taggart and Co., Glasgow.

Reigate.—The foundation stone of the new municipal buildings now being erected in Castle Field was laid recently. Messrs. Mackintosh and Newman, of London, are the architects, and Mr. A. J. Amos is the clerk of works. The buildings are in three blocks: the main block, the fire station, and the house for the chief constable. The main block is divided into two portions, one of which is set aside for the transaction of the municipal business and the other for the work of the police and the borough court. The municipal portion will be provided with offices for the various officials of the Corporation, which will be kept together on the ground floor, while the first floor of the municipal portion is to be devoted entirely to the Council chamber. Committee rooms are to be arranged *en suite* for receptions, &c., with sub-committee rooms and rooms of that description. Thus the municipal business, the business of the Council chamber, and any receptions that may take place will be entirely apart from each other. In the police department, in the basement, will be the cells for prisoners and a large recreation room for the police. On the ground floor will be the various police offices, and the first floor will be entirely set apart for the borough court and such rooms as magistrates' rooms, solicitors' rooms, and rooms for witnesses, &c. Here there is a similar arrangement in the police department to the municipal department: each section of the building will be able to be used apart from every other section. In order to facilitate the arrangement, special attention has been paid to the entrances. The principal entrance will be set apart entirely for the use of the mayor and councillors, while the municipal business will be transacted entirely through a further entrance which is provided in the corridor which joins up to the fire-station block and the municipal block. The business of the borough court, too, will be transacted and kept apart from the police business by the use of that entrance, whilst the ordinary police work will be entirely served by a subsidiary entrance. The magistrates will be provided with a private entrance. The fire station will be on the highest point of the site, so that in the event of a fire the fire engine can get a good start. A look-out tower to the fire-station block will be provided. The tower also will serve for the purpose of hose drying. The chief constable's dwelling will be a small domestic building. The dimensions of the main block will have a frontage of 180ft., but there is a space of 22ft. between the main block and the fire-station block. The fire-station block itself has a frontage of 55ft., which gives a total frontage of 257ft. The corridor between the main block and the fire-station block will be joined up so as to give the whole of the buildings the appearance of one block, though it will be really separated by a space of 22ft. There will be an average depth of 50ft. The height of the main portion of the building, measured from the ground up to the parapet, will be 36ft., and the tower will be 70ft. The style of the building is to be Renaissance, freely treated. The chief constable's house will be rough cast and tiled.

Ulverston.—The Victoria Higher Grade and Technical School was opened recently. One and a half acres of a field abutting on Hart

Street form the site. The cost has been about £9,000. The school has a frontage of 175ft., and is of two storeys. Accommodation as a higher grade school for boys and girls is provided on the ground floor, and for technical and art classes on the first floor. Separate entrances for girls in the road lead to Ford Park, and for boys from the front of the building and also from Spent Lane. Ample playgrounds and offices are provided at the ends and rear of the school building. The entrances and staircases are so arranged that the rooms on the ground floor may be entirely cut off from the first floor, when the latter is in use by evening or exterior classes. The design is Victorian Classic in style, carried out in limestone, with red stone dressings. The building is to contain 380 boys and girls. On the ground floor is the school hall, large classrooms for boys and girls, cloakrooms, teachers' private rooms, workshop, kitchen and cookery centre with a separate entrance. The basement is taken up entirely with the heating apparatus. On the second floor are situated the lecture room, chemical and physical laboratories, storeroom, advanced and elementary art rooms, &c. The architect is Mr. J. Y. McIntosh, and Mr. J. Aldred clerk of works.

Westbury-on-Trym.—A new workhouse and infirmary for the Barton Regis Union Guardians is being erected at Southmead. The site of the workhouse is a commanding one. The Guardians have purchased 13½ acres of land, which form a healthy site. The workhouse and infirmary are on a small scale, and will be built on the pavilion system. No children will be kept in the workhouse, some being boarded out and the rest at two cottage homes situated about half a mile away, recently purchased by the Guardians. The workhouse buildings are divided into five main blocks:—Block A: Board room and clerk's offices. This block will be fenced off from the remainder of the workhouse buildings, and has a separate entrance for persons having business with the clerk, who is also superintendent registrar, or with the relieving officers, &c. Block B: Male and female tramp wards, with accommodation for 16 male tramps and eight female tramps, also four receiving wards, porter's lodge, clothes stores, and disinfecting chambers. The stone yard is placed at the back of Block B, and the porter's lodge is situated close to the main entrance to the workhouse buildings, so that the porter may have control of the access to and exit from the institution. Block C: Master's and matron's department, with accommodation for 82 inmates. The block consists of the master's house, which is placed in the centre, the main entrance to the block being alongside, dining room, kitchen, and stores department immediately behind, and on either wing pavilions two storeys in height, those on the right being for the women and those on the left for the men. A married couple's block for two married couples is also provided. At the rear of the pavilions are the laundry, carpenter's and shoemaker's shops, boiler-house, &c. In designing Block C the pavilion type of arrangement was adopted in preference to the old-fashioned style of workhouse because it gave a much better opportunity of classification, as well as thorough ventilation and light to each room. The inmates will be classified into four divisions in each sex. Block D: The infirmary ward has accommodation for twelve males and twelve females, divided into three separate wards on either side, so as to allow for the separation of doubtful cases. In the centre is the administrative department, consisting of kitchen, surgery, nurses' sitting room and nurses' bedrooms, and at the rear, connected by a covered-in way, is the lying-in ward for two women. Block E contains the mortuary and stables. The buildings have been designed in English Renaissance style and are plain in character. The whole site is surrounded by a wall which is nearly half a mile in length. Where it adjoins the road it is surmounted with railings, with ornamental pillars at the main entrances. The estimated cost of purchase of land, building and furnishing the whole of the above-mentioned blocks (which altogether have accommodation for 110 inmates and for 24 in the casual wards) is £32,852. The architects are Messrs. W. H. Thorp, of Leeds, and A. P. I. Cotterell, of Bristol. The boundary walls have been built by Messrs. W. and J. Bennett, and the foundations and buildings of the boardroom, clerk's offices, porter's lodge, casual wards, workhouse and infirmary, &c., are being carried out by Messrs. H. A. Forse and Sons, of Bristol.

Builders' Notes.

Creditors of the New Haslingden Plastic Brick Company, Limited, are required, on or before the 10th day of November, 1900, to send their names and addresses, and the particulars of their debts or claims, and the name or address of their solicitor, if any, to Mr. Harry Rothwell, of 2 Piccadilly Street, Haslingden, liquidator of the Company, which is to be wound up voluntarily.

The Building Trade of Newquay has met with a severe check. This is ascribed principally to the present demand for houses in Newquay not equalling the supply and the higher prices of labour and building materials. Dr. Martyn, formerly of Saltash, is building a residence for himself on the Pentire Estate. With the exception of two houses at Mount Wise in course of erection by Mr. William Tippett, there is little else going on in the building line.

A Warning to Builders.—Messrs. J. and H. Bangs, of 142 High Street, Camden Town, write as follows:—"In the interests of the trade we should like to call attention to what we fear is not an uncommon experience, in the hope that steps might be taken to avoid its recurrence as much as possible. At one of our jobs in Tavistock Square, after the men had left off work for the day, a decently-dressed man called and presented a note to one of the servants to the effect: 'Please give bearer brushes for me. J. Stone, foreman.' The girl, thinking it was all right, allowed the man to go and help himself, with the result that he took away all the men's brushes, although branded with our name. We suggest that if builders were to advise the domestics that no one has authority to remove any of the men's things after leaving-off time it would materially assist in the prevention of such frauds."

The Builders' Clerks' Benevolent Institution.—A meeting of the Committee of this institution was held at the offices, 21 New Bridge Street last week. The dinner committee presented their report on the dinner held in March last. In all, it was stated, 321 attended, and the funds of the charity benefited to the extent of £440, including £400 in donations and new subscriptions. The list of Mr. Henry Holloway, the president, alone totalled £315, and the valuable aid he thus rendered to the institution was acknowledged. The committee complimented the dinner committee on their work and the amount they had been instrumental in procuring. Mr. E. B. Gammon stated that as a result of these subscriptions by the end of the year they would be able to record the appointment of three new pensioners, the presentation of one orphan to the Orphan Working School, and the granting of several sums in the form of temporary relief.

Dissolutions of Partnerships.—Messrs. Charles Sutcliffe Crabtree and James Moorhouse, carrying on business as joiners and builders, at Lister Lane Joinery Works, Halifax, under the style or firm of "Crabtree and Moorhouse," has dissolved partnership from September 21st. All debts due to and owing by the firm will be received and paid by Mr. Charles Sutcliffe Crabtree, who will in future carry on the business in his own name and on his own account. The partnership between Messrs. Frederick John Rutter, Edward Rutter, and Algernon Rutter, carrying on business as brickmakers, at 41 Parliament Street, London, S.W., under the style or firm of D. and C. Rutter, has been dissolved by mutual consent as and from the first day of June, 1900, and in future the business will be carried on by Messrs. Frederick John Rutter and Edward Rutter alone, under the style of D. and C. Rutter. All debts due to and owing by the said late firm will be received and paid by them.

Halifax Building Trades Federation held a meeting recently, when Councillors Parker and Morley spoke on the benefits of federation, and of the desirability of all building trades being federated. Discussion followed, and it was hoped that, as a result of the meeting, the federation would be strengthened.

Wall Construction.—Reference was made last week to the Fireproof and Soundproof Wall Construction Company, Limited, and a few particulars were given of the patented system which they propose to acquire and work. On Tuesday in last week a demonstration was given in the Medici Room of the Hôtel Cecil to a number of pressmen, architects, builders and others, when the secretary of the company (Mr. E. P. Stanley) explained the advantages which the system afforded. The blocks used are 2ft. 8½in. long, 10in. deep, and 2in. thick, and are composed of a light fireproof material, five continuous tunnels being formed longitudinally through them for the purpose of checking the transmission of sound. By a simple arrangement of Z- and U-shaped iron clamps the whole partition or wall is made firm, and when a ½in. coat of plaster has been given to each side one solid strong mass is obtained. There can be no doubt that the system offers great advantages over brickwork, for not only is there a saving of weight and space, but not half the inconvenience is caused during erection. A room, for instance, may be permanently divided off by one of these partitions with very little trouble, noise and dirt. In flats and similar buildings where it is highly desirable to prevent sound passing from one room to another, or from one floor to another, the system should be largely employed. Any plaster may be used (for the slabs afford an excellent key), but the company's "Hygienic" variety is preferable; by its use a marble-like finish is obtained, besides which the surface can be washed down when required. As we have already pointed out, the fact that large corporations, leading architects, and builders of integrity have used and highly recommended the system is the best possible proof of its genuineness and value.

Three Builders' Bankruptcies.—At Dudley County Court, last week, John Henry Whittaker, trading as Whittaker and Company, residing and carrying on business at Dudley as a builder and contractor, was examined. The statement of affairs showed gross liabilities at £30,555, unsecured creditors £10,529, creditors fully secured, £19,984, the estimated value of the securities being £20,119, and a deficiency of £7,918. October 22nd was fixed for the adjourned hearing.—A receiving order in bankruptcy has been issued in the matter of Jabez Octavius Ford, builder, of 36 Tower Road, Eastbourne. The debtor has also been formally adjudicated. The statement of affairs shows liabilities—gross, £5,374 12s. 5d.; expected to rank, £1,301 18s. Including £1,128 13s. 4d., estimated by the bankrupt as the surplus from securities in the hands of creditors fully secured, the assets are put at £1,183 9s. 7d., leaving a deficiency of £118 8s. 5d. There are five creditors fully secured and forty-one unsecured. In his observations the Official Receiver says: "The bankrupt states he started as a builder in December, 1897, without capital, having previously been a journeyman carpenter, and that he does not think he is now insolvent if his properties could be sold for their full value."—The first meeting of creditors of Messrs. William Edwards and Edward Medway, who carried on business as builders and contractors at 19 Ethelred Street, Kennington Cross, Surrey, was held last week. It appears from their statements that they commenced business in March 1891, each of them providing £300 capital. They do not consider themselves to be insolvent, but state that want of capital has brought their business to a standstill. The liabilities were returned at £18,000 or £19,000, the assets being estimated to produce £21,000 or £22,000, a large portion of which consisted of the debtors' interest in building contracts. The creditors resolved that the debtors be adjudged bankrupt, and appointed Mr. F. W. Davis, chartered accountant, trustee of the estate, with a committee of inspection.

Keystones.

Marlborough Town Hall is to be reconstructed at a cost of £7,270.

The New Town Hall and Law Courts for Cardiff are to be commenced shortly.

A new Chancel at Buckley Church, Flintshire, is being erected as a memorial of Mr. W. E. Gladstone. The cost will amount to £2,000.

A new Church at Denaby Main has been opened. The total cost of the structure is £3,500. A vicarage, including a residence for a curate, has been erected near the church at a cost of £1,500. Messrs. Fowler and Smethurst were the architects.

Mr. Henry W. Dodd, M.S.A., of 54 and 55 London Wall, E.C., is the architect of five warehouses and alterations to two shops in Pitfield Street and Bowling Green Walk, E., now being erected by Messrs. W. Lawrence and Son, builders, at a cost of £5,337.

Roman Remains in Hayling Island.—Mr. Talfourd Ely, F.S.A., who has been engaged on the excavation of a Roman building in the "Towncil Field," Hayling Island, writes from Stoke, Havant, to say that he has now laid open the foundations of the outer wall for a distance of over 80ft. north of the point reached in 1898. The wall then turns, he says, at a right angle westwards, in which direction he has followed it for 60ft. He has also excavated one of the rooms, 18ft. square, where he found a brooch of bronze and blue enamel.

A Stained Glass Window at St. James's Church, Bristol, has been erected. It has been designed and executed by Messrs. Joseph Bell and Son, of Bristol, and is in the south aisle. It is 12ft. high and 8ft. 6in. wide. The four main lights containing the subjects are 9ft. high, and are surmounted by ornamental canopies. In the two centre lights the subject is "The Resurrection Morn," the subject on the left being "The Nativity," and on the right "The Crucifixion." In the tracery, with colouring of the same tone, are three angels bearing shields with emblems of the Passion, namely, scourging pillar, scourge, crown of thorns, cross, spear, reed and sponge, and on either side of these are shields with the inscriptions, "Alpha" and "Omega."

Extensions in Dublin.—In Dawson Street, Dublin, a new furniture warehouse is being erected for Messrs. Millar and Beatty, whose premises now extend from Grafton Street to Dawson Street, the connection being effected by an overhead bridge. The new building is five storeys high, and extends back about 180ft. to where it joins the old building. It is constructed specially for the furnishing trade, and will have a large arched entrance showing a window two storeys high. Several portions of the building are adapted for special fitments of the firm's own manufacture. The approaches to the different floors will be by wide staircases in easy stages, and when the warehouses are completed customers will be enabled to enter in Grafton Street and pass right through to Dawson Street. The furniture factory and upholstery workshops have been remodelled and fitted with additional machinery.

The Ancient Cross at Bitterley, Ludlow, in the churchyard, fortunately escaped destruction by the Puritans, and is still standing unharmed after more than 500 years. This tall tabernacle cross has, under the representation of the Crucifixion, some light and peculiar brackets that are almost unique and rather resemble thirteenth-century work. At the visit of Mr. A. E. Lloyd Oswell (the diocesan architect) to the church last year it was noticed the old cross was in a most critical condition. The shaft was considerably out of the upright and in danger of falling owing to the giving way of its foundation. The churchwardens, parishioners, and neighbours are to be complimented on their worthy action in preserving it. The cross is nearly 20ft. high, so that the task of preservation—not restoration—was a most delicate one; but it has been accomplished without taking down the shaft or removing any of the octagonal steps. Nothing has been altered, only insecurity has been replaced by firmness, not even the picturesque moss removed.

A Fever Hospital at Plaistow is being erected from designs by Mr. E. T. Hall, of 57 Moorgate Street, E.C., at a cost of £100,000.

Mr. James Prentice, a member of the firm of Messrs. Burns and Prentice, builders and contractors, of Dromore, died recently.

The new Infirmary in Acton Lane, Willesden, will be erected from the designs of Mr. A. Saxon Snell, architect, 22 Southampton Buildings.

A House with Corner Shop at Pitsea has been erected in the centre of the parish by Mr. C. Sheldrick from plans of Mr. H. G. Clark, of Wickford.

Four New Board Schools are now being built at West Hendon. The memorial stone of one which is to cost £17,916, including furniture, ventilation and heating, and which will accommodate 1,100 children, was laid last week.

The new Robert Hall Memorial Church, Leicester, has just been completed. The new church is situated in the Narborough Road, and is an effort of the Leicester Baptist Church Extension. The estimated cost is nearly £12,000, inclusive of the site.

Commissions for Sculpture for definite work, public and private, are increasing. Mr. Henry C. Fehr, among others, is profiting by the new demand for public monuments. He has been given the order for two "memorials," one to Ruskin, the other to Browning, both to be executed in marble, and to be erected in a public institution in London.

The School of Art Wood Carving, Imperial Institute, South Kensington, has been re-opened after the usual summer vacation. Some of the free studentships maintained by means of funds granted to the school by the Drapers' and the Cloth Workers' Companies are vacant. The evening class is for the present closed, but to meet the requirements of those professionally engaged during the week a special Saturday afternoon class is held. Forms of application for the free studentships and any further particulars relating to the school may be obtained from the manager.

A Central Hall at Bermondsey, S.E., capable of seating 2,200 persons, has been opened in connection with the South London Wesleyan Mission. The building is situated in Bermondsey New Road, and is the first of its kind in London. The designs for the new structure were furnished by the Rev. H. T. Meakin. The exterior is of red brick. The main entrance is through a central archway beneath the tower. The plan of the hall is that of a square with the corners cut off. Below this hall is another capable of accommodating 600 persons, and there are other rooms for clubs, &c. The hall is lighted by electricity, and the heating will be done by hot air, forced throughout the building by an electric motor. The total cost is £30,000, of which £23,000 has been secured.

The R.I.B.A. Examinations, November, 1900.—The examinations will be held as follows:—The Preliminary Examination, qualifying for registration as Probationer R.I.B.A., on November 6th and 7th. Applications must be sent in on or before Saturday, October 13th. The Intermediate Examination, qualifying for registration as Student R.I.B.A., on November 6th, 7th, 8th, and 9th. Applications must be sent in on or before Saturday, October 13th. The Final and Special Examinations, qualifying for candidature as Associate R.I.B.A., from November 16th to the 22nd inclusive. Applications must be sent in on or before Saturday, October 27th. The Testimonies of Study, &c., with the necessary fees, should accompany the applications, all of which should be addressed to the Secretary R.I.B.A., at the offices of the Institute, 9 Conduit Street, W. Examinations qualifying for the office of District Surveyor in London (pursuant to the provisions of the London Building Act 57 & 58 Vict. c. ccxiii. s. 140) and of Building Surveyor under Local Authorities will be held by the Royal Institute on October 25th and 26th, 1900. Applications must be sent to the Secretary R.I.B.A. on or before Thursday, October 11th. All applications must be made on the official forms, to be obtained from the Secretary.

A new School at Edmonton is to be erected in Croyland Road. Designs have been prepared by Mr. H. W. Dobb, of 54 and 55 London Wall, E.C.

Mr. Sidney Cooper, R.A., has entered upon his ninety-eighth year. Notwithstanding his great age, the output of work of the veteran artist shows but a slight decrease. He is still usually in his studio by eight o'clock in the morning, and walks out or drives in the afternoon.

Walsall Municipal Buildings Competition.—On the recommendation of the Assessor, Mr. J. Macvicar Anderson, F.R.I.B.A., the General Purposes Committee of the Corporation have recommended the Council to adopt the design of Mr. J. Glenn Gibson, of 4 Gray's Inn Square, London, W.C. The other premiated designs in order of merit are those sent in by Messrs. Cranfield and Potter (London), Messrs. Pite and Balfour (London), Messrs. Cackett and Burns Dick (Newcastle-upon-Tyne) and Mr. James A. Bowden (London), each of whom becomes entitled to a premium of £100.

Crediton Parish Church has been fitted with new chancel stalls, the erection of which completes the work of reseating the church, commenced in 1887 in commemoration of the Queen's Jubilee. The estimated cost is nearly £400, of which £300 has been raised. The new stalls, which are of oak grown in the neighbourhood, seat about 40 persons. The bench ends are richly carved, as also are the front book boards. The side walls of the chancel between the main columns have been reduced 6in. in thickness, thereby exposing to view the shafts and bases of the columns which have been hitherto buried in the walls.

"French Architects and Sculptors of the Eighteenth Century" is the title of a book by Lady Dilke which carries forward the work begun in the authoress's "French Painters." In the new, as in the former book, representative men in each department are chosen, and typical examples of their works selected. The architects are seen to be engaged in "solving the problems connected with the creation of the modern house, remodelling old palaces, such as the Hôtels de Toulouse and de Soubise; erecting stately official monuments, of which the fine Garde-meuble of the Place de la Concorde is an admirable type; and building dwelling places, the charm of which still hangs about the walls of the Petit Trianon and the lovely Hôtel de Salm." The authoress shows how the sculptors give a new direction to the "sculpture d'appartement." She traces the tradition by which the sculptors were guided, and gives us many interesting particulars concerning their lives. The work is announced by Messrs. Bell and Sons.

The Worshipful Company of Plumbers.—At the quarterly meeting of the Court, held at the Guildhall last Saturday, Mr. Charles Hudson was sworn into the office of Master and Mr. Alderman Richard Hind and Alderman Sir John Knill into the offices of Warden and Renter Warden respectively for the year ensuing. Dr. F. J. Waldo, medical officer of health for Temple and St. George's, Southwark, and Dr. Reginald Dudfield, medical officer of health, Paddington, were admitted to the freedom and livery of the Company. A copy of a memorial to Mr. Balfour was laid before the Court calling attention to the desirability of the Government's dealing with the registration of qualified plumbers in the interest of the public health. It was reported that the following resolutions were passed at the Tenth International Congress of Hygiene and Demography held in Paris:—(1) That all plumbers' work, as much in the supply of drinking water as in the removal of soil or slop water, should be the object of particular attention. The pipes for the distribution of water, as well as the hydraulic apparatus (reservoirs, syphons, &c.) and the down pipes for slop water, should be completely protected from frost. (2) That a professional education with a test examination before obtaining a diploma should be demanded of "sanitary plumbers" with a view to spreading among plumbers a knowledge of hygiene and of rational and economic construction in their work.

Surveying and Sanitary Notes.

Manchester Improvements.—A meeting of the General Purposes Committee of the Manchester City Council had under consideration last week the proposed widening and improvement of Corporation Street, Cannon Street, Cateaton Street, Hanging Ditch, Market Street, Market Place, and Old Millgate. There were three schemes, the largest of which was estimated to cost £500,000, the second £300,000, and the third £200,000. It was decided to apply for Parliamentary powers in pursuance of the scheme involving the smallest outlay.

Water Supply of India.—A report on the work of the Geological Survey during the year 1899-1900 states that the director of the survey has been endeavouring to ascertain the chances of increasing the water supply by means of artesian borings. It had been insinuated that Government had neglected its duties by not resorting more frequently to artesian well-sinking. An immense mass of official papers, says the director, proves the contrary. Attempts have been made in various parts to sink artesian wells, but with indifferent success, except in the Quetta district.

Insanitary Essex.—A few weeks ago an epidemic of typhoid fever broke out in the village of Roxwell, near Chelmsford, among the cottagers, and a number of deaths resulted. The villagers had been drinking from a brook which acted as the sewer of a group of other houses higher up the stream. When the matter was reported to the Rural District Council it was found that Roxwell had to depend upon the polluted brook for this necessary of life. In Essex there are now forty-one cases of infectious disease in half-a-dozen villages, the epidemic is spreading, and the isolation hospital is full.

The Sanitary Condition of Windsor has been censured by Dr. Bulstrode, a Local Government Board inspector, in a report to the Board. Complaints of smells from the sewers he attributes to the main outfall being made to act for the greater part of each twenty-four hours as a storage tank. There is room for much improvement, too, he says, in dealing with the house refuse in the poorer parts. The accumulation of heaps of refuse, partly vegetable and partly animal, upon the bare ground cannot, he argues, be good for health. Dilapidations, darkness, dampness, overcrowding and inadequate water supply are some of the defects he finds in certain properties. The report winds up with a lecture to the authorities as wanting in the initiating and guiding force necessary for vigorous administration.

American Asphalt Combine.—Particulars have been published in New York of the scheme for amalgamating the principal asphalt companies in the United States. The new company is to be called the National Asphalt Company, and the capital will be $22,000,000. In addition there is an authorised issue of $6,000,000 twenty-year collateral gold bonds. The National Asphalt Company will take in all the Barber properties, the Asphalt Company of America, the Pennsylvania Asphalt Company, Gilson Asphaltum Company, which controls the Gilson Asphaltum Company of St. Louis, owning mines in Utah, and the Gilsonite Roofing and Paving Company of St. Louis, which has an extensive paving business in western cities. It will also combine the New Jersey-Mexican Asphaltum Company, which has two leases of important asphalt properties near Tuxpan, Mexico; Manhattan Trap Rock Company, which owns valuable quarry lands and appurtenances at Upper Nyack, Rockland County, New York; titles to three valuable asphalt deposits upon the east shore of Lake Maracaibo, in Venezuela, known as El Mene, Templador and Laguinillas. These properties taken over by the National Asphalt Company give it an important control of the best raw asphalt deposits on the American continent. The officers of the company are: President, Amzi L. Barber; first vice-president, John M. Mack; second vice-president and general consul, Avery D. Andrews.

New Companies.

Incorporated Bristol Channel Timber Importers' Association.

This company was registered on September 19th with 50 members, each liable for £5 in the event of winding up, to promote the interests of the timber trade generally. The management is vested in a committee.

County Louth Granite Quarries, Limited.

This company was registered on September 12th with a capital of £20,000 in £1 shares to acquire a lease of certain granite property at Earl's Quarter Bush, County Louth, Ireland, and to carry on the business of quarry and mine owners, mineral merchants, &c. The first directors are A. S. Caine, E. Littlejohn and J. McAuslane. Registered office: 60 Watling Street, E.C.

County of London Estates Company, Limited.

This company was registered on September 24th with a capital of £5,000 in £1 shares to take over from J. G. Arrow a contract with Mary Christie-Miller and S. R. Christie-Miller for the acquisition of certain freehold properties in Solon New Road and Bedford Road, Clapham, and to deal in property of any kind. The first directors (to number not less than two nor more than four) are R. Price, J. G. Arrow and R. A. Price.

British Iron Foundry Company, Limited.

This company was registered on September 24th with a capital of £20,000 in £1 shares, to carry on the business of ironfounders, merchants and agents, dealers in stoves, mantels, railings, radiators and sanitary appliances, &c. The first directors (to number not less than two nor more than seven) are to be appointed by the subscribers. Registered office: 220 Upper Thames Street, E.C.

William Stead, Limited.

This company was registered on September 22nd with a capital of £10,000 in £10 shares to acquire the business carried on at Brighton as William Stead, and to carry on the business of upholsterers, house decorators and wholesale and retail dealers in household furniture, ironmongery, turnery, household fittings and utensils, ornaments, hardware, &c. The first directors (to number not less than two nor more than five) are A. F. Griffith and G. J. Horlock.

Stokell, Limited.

This company was registered on September 21st with a capital of £5,000 in £1 shares to adopt an agreement with T. W. Stokell and to carry on the business of painters, decorators, paperhangers, paper merchants, oil, paint, varnish and brush merchants, &c. The first directors (to number not less than three nor more than seven) are T. W. Stokell, W. Canham, J. Proud, F. W. Appleyard and R. H. Barker. Registered office: Chapel Buildings, Lynn Street, West Hartlepool.

British Power Traction and Lighting Co., Ltd.

This company was registered on September 15th with a capital of £52,000 in £1 shares, of which 50,000 are preference, to adopt and carry into effect agreements made between the Engineer Cycle Works, the Eclipse Copper Company, the Anglo-American Motor Car Manufacturing Company, the Power Transmission and Traction Company and G. J. Gibbs, and generally to carry on the business of machinery manufacturers, metal founders, mechanical, electrical, and general engineers, smiths, ironmongers, contractors, &c.; as ironmasters, iron, brass and metal founders, engineers, metallurgists, &c. The first directors (of whom there shall not be less than three nor more than seven) are to be elected by the signatories—A. Hodgson, G. J. Gibbs, C. Midgley, A. E. Miethe, W. Peddie, W. H. Spencer and M. Patchett.

TENDERS.

Information from accredited sources should be sent to "The Editor." Results of tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the Work.

BRITON FERRY, Glam.—For the construction of a brick sewer (700 yards) for the Urban District Council. Mr. H. Alec Clarke, engineer, Council Offices, Briton Ferry. Quantities by the engineer:—

J. Sutherland	£2,397 0 0	T. Waters	£1,475 19 6
J. Williams	1,911 0 0	W. Thompson	1,486 1 1
J. Grove	1,604 18 5	H. Jones, Briton Ferry*	1,434 10 0
L. Gower	1,600 0 0		

* Accepted. [Engineer's estimate, £1,450.]

BRISTOL.—For the erection of the superstructure of the offices and depot of the Public Benefit Boot Company (Lennards Limited), Park Place, Clifton. Mr. H. Dare Bryan, architect, 38 College Green, Bristol. Quantities by Messrs. Bernard & Pearson, Bristol:—

	Bath.	Doulting.	Ham Hill.
Thos. Rowbotham, Birmingham	£54,960	£57,160	£58,710
Perry & Co., Bow, London	54,300	56,500	58,150
Hayward & Wooster, Bath	53,700	56,010	57,100
Parnell & Son, Rugby	53,407	55,860	57,000
J. Long & Sons, Bath	52,210	54,600	56,590
A. J. Beaven, Bristol	50,700	53,100	54,900
Stephens & Bastow, Bristol	48,324	50,624	50,624
Cowlin & Son, Bristol	48,124	50,496	52,079
Shillitoe & Son, Bury St. Edmunds	42,950	46,000	46,500
R. Wilkins & Son, Bristol	41,680*	44,900	45,600

* Accepted at the reduced tender of £33,774.

CROYDON.—For the erection of schools, Portland Road, South Norwood, for the Croydon School Board. Mr. H. Carter Pegg, architect, 187 Brigstock Road, Thornton Heath:—

Foster Bros.	£25,362	W. Smith & Son	£19,500
S. Redhouse	21,165	Akers & Co.	18,949
Patman & Fothering-ham	20,771	J. Smith & Sons	18,881
		E. J. Saunders, Croydon*	17,800

* Accepted.

LONDON.—For the erection of nurses' home and additions to kitchen at Church Lane, Tooting, for the Guardians of the Wandsworth and Clapham Union. Mr. Cecil A. Sharp, architect, 11 Old Queen Street, Queen Anne's Gate, S.W.:—

Garrett & Son	£3,108 10 0	Akers & Co.	£2,447 0 0
R. A. Jewell	2,788 7 4	Huntley Bros.	2,398 0 0
Cropley Bros.	2,750 0 0	Foster Bros., Norwood Junction*	2,296 0 0
H. Wall	2,659 0 0		
W. H. Lascells	2,503 0 0		

* Accepted.

PORTSMOUTH.—For the erection of power station buildings and chimney-shaft, Vivash Road, Fratton Grove, for the Corporation. Mr. E. Rotter, C.E., Town Hall, Portsmouth. Quantities by Messrs. Rake & Cogswell, Prudential Buildings, Portsmouth:—

Light & Son	£12,200 0 0	J. J. Cockerell	£11,075 0 0
W. W. Learmouth	11,473 0 0	W. W. Evans	10,990 0 0
Clark & Son	11,450 0 0	M. Coltherup	10,826 8 5
T. W. Quick	11,45[illegible] 0 0	J. W. Perkins, Clive Road, Portsmouth*	10,515 8 0
W. Ward	11,30[illegible] 0 0		
J. Croad	11,200 0 0		

* Accepted.

WAKEFIELD, Yorks.—Accepted for the erection of Wesleyan Church and Sunday Schools at Newton Lane End, for the Committee. Messrs. Garside & Pennington, architects, Pontefract, Castleford, and Selby. Quantities by the architects:—

Brickwork.—Armitage, Outwood... £1,470 12 0
Joinery.—J. W. Harrop, Ossett ... 629 14 0
Plumbing.—J. H. Wilson, Outwood ... 202 0 0
Plastering.—Lockwood, Castleford ... 135 15 0
Slating.—Pickles Bros., Leeds ... 270 0 0
Painting.—Geo. Thompson, Leeds ... 84 0 0

PENRITH.—For additions to the Brunswick Road Board Schools, for the Penrith School Board. Messrs. G. Watson & Son, F.I.S.A., architects, 3 St. Andrew's Place, Penrith:—

Masonry, &c.

George Dixon	£996 0 0	William Forrester*	£860 0 0
Dixon & Gardiner	870 0 0		

Carpenter and Joiner.

J. Moor & Son	£954 19 9	J. Richardson	£794 0 0
G. Brown	845 6 5	J. Richardson & Son*	748 0 0

Mason and Joiner (combined).—W. Grisenthwaite, £1,800.

Slater.

George Dixon	£173 0 0	James Bailey*	£164 8 10

Plumber, Plasterer, Painter and Glazier.

George Dixon	£548 0 0	George Smiley	£398 9 7
Joseph Purdie	457 0 0	J. & W. Scott	395 0 0
Joseph Dixon	435 15 9	J. Jackson*	349 8 0
George Carruthers	400 0 0		

Heating and Ventilation.

Edwin Oldroyd & Co., Leeds ... £157 0 0
[Rest of Penrith.] * Accepted; total, £2,121 16s. 10d.

MIDSOMER NORTON (Somerset).—Accepted for the erection of a villa, in North Road, for the Rev. G. G. Pinder. Mr. William F. Bird, architect, Midsomer Norton. Quantities by the architect:—

W. A. Catley, Midsomer Norton... £530

MIDSOMER NORTON (Somerset).—For the erection of a villa, in North Road, for the Rev. W. E. Newling. Mr. William F. Bird, architect, Midsomer Norton. Quantities by the architect:—

J. Sperring	£921	T. Keeling	£752
Thomas Foster	869	J. H. Tovey*	735
A. W. J. Catley	820		

* Accepted.

NOTTINGHAM.—For the erection of four dwelling houses and shop, Poplar Street, for the Home Brewery Company, Limited. Mr. Frederick C. Martin, architect, Angel Row, Nottingham:—

C. Wooll	£726 0 0	E. Morris	£680 0 0
G. Walker	683 7 8	T. H. Harper*	580 0 0

* Accepted.

RICHMOND (Surrey).—For the erection of new infirmary buildings, for the Guardians of Richmond Union (Surrey). Mr. Edward J. Partridge, architect:—

W. Wisdom, Isleworth	£32,608	W. Downs, Walworth	£37,784
Holloway Bros., Lambeth	34,220	J. W. Brooking, Richmond	36,750
Soole & Son, Richmond	34,000	W. B. Nightingale Lambeth	36,800
Martin, Wells & Co., Vauxhall	35,225	G. Godson & Sons, Kilburn	38,381
William Gibson, Exeter	35,382		

WALSALL.—For the erection of schools, Wolverhampton Road, for the School Board. Messrs. Bailey & McConnal, architects, Bridge Street, Walsall. Quantities by the architects:—

J. Harley	£6,400	T. Tildesley	£5,854
F. L. Jones	6,380	M. A. Lynex	5,850
J. Dallow	6,220	Brockhurst & Wood	5,815
G. H. Marshall	6,172	W. Wistance	5,714
W. Harvey Gibbs	6,000	T. Mason	5,700
J. Mallin	5,890	S. Wootton, Bloxwich*	5,541

* Accepted.

WESTON-SUPER-MARE.—For the erection of swimming bath, &c., Knightstone, for the Urban District Council. Mr. Hugh Nettleton, surveyor, Town Hall, Weston-super-Mare:—

Hayward & Wooster	£8,992	W. Gibson, Exeter*	£8,563
Krauss & Son	8,886	W. M. Dubin	8,067
H. W. Pollard	8,645		

* Accepted.

WORKSOP.—For the erection of electricity supply works, Canal Road, for the Urban District Council:—

Ilett & Sons	£4,494	H. Pickers, Ltd.	£4,104
G. Wright	4,313	W. Hall, Potter Street, Worksop*	3,960
H. Wickers	4,310		

* Accepted.

COMPLETE LIST OF CONTRACTS OPEN.

DATE OF DELIVERY.		WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
		BUILDING.		
Oct.	5	Manchester—Wall	Corporation	City Surveyor, Town Hall, Manchester.
,,	5	Nantymoel, Wales—Institute		J. Rees, Hillside Cottage, Pentre.
,,	5	Bedford—Pumping House	Midland Railway Company	Engineer, Midland Railway Station, Derby.
,,	5	Rotherham—Classroom		J. Platts, Architect, Old Bank Buildings, Rotherham.
,,	6	Buxton—Viaduct	New Lime Company, Limited	New Lime Company, Limited, 66 South Street, Buxton.
,,	6	Exmouth—Depository	Blackmore and Sons	E. E. Ellis, Architect, The Strand, Exmouth.
,,	6	Methley, Yorks—Churchyard Extension		A. W. Jackson, Melwood House, Methley.
,,	6	St. Levan, Cornwall—House	Mr. C. Bottrell	C. Bottrell, Polggiga, St. Levan.
,,	8	Gallow's Plain, near Hertford—Porter's Lodge	Hertford and Ware Joint Hospital Board	G. H. Gisby, Town Hall, Ware, Herts.
,,	8	Gravesend—Additions	Town Council	E. J. Bennett, 13 Gray's Inn Square, W.C.
,,	8	Newhaven, Sussex—Wall	Guardians	W. Gates, 86 High Street, Lewes.
,,	8	Middlesbrough—County Court	Commissioners of H.M. Works, &c.	H. Gritten & Son, 8 Prince's Street, S.W.
,,	8	Poyntington—Viaduct	Dorset County Council	County Surveyor, Sherborne.
,,	8	Cefn Cribbwr, Bridgend—School	School Board	Cook and Edwards, Masonic Buildings, Bridgend.
,,	8	London, S.W.—Mission and Schoolroom	Trustees of Fulham Baptist Chapel	T. Boughton, 18 Doria Road, Parson's Green, S.W.
,,	8	Sutton, near Dublin—Roof Works	G.N.R. Company (Ireland)	T. Morrison, Amiens St. Terminus, Dublin.
,,	8	Manchester—Alterations	Corporation	J. M. M'Elroy, Town Hall, Manchester.
,,	9	Pembroke—Schools	School Board	G. Morgan and Son, 24 King Street, Carmarthen.
,,	9	Pwllheli—Town and Market Hall	Town Council	E. R. Davies, 6 Church Place, Pwllheli.
,,	9	Clonmel, Ireland—Post Office		Post Office, Clonmel.
,,	9	Southampton—School	School Board	J. H. Blizard, Lansdowne House, Castle Lane, Southampton.
,,	10	Worcester—Maternity Wards and Nurses' Building	Union Guardians	H. Rowe & Son, Worcester Chambers, Pierpoint Street, Worcester.
,,	10	Bingley—Converting	Urban District Council	H. Bottomley, Surveyor, Town Hall, Bingley.
,,	10	Woolwich—Alterations	Guardians	J. O. Cook, Eleanor Road, Woolwich.
,,	11	Middleton, Lancs.—Buildings		Stones and Stones, 10 Richmond Terrace, Blackburn.
,,	11	Horsham—Electricity Supply Works	Urban District Council	Gordon & Gunton, Architects, Finsbury House, E.C.
,,	11	Winlaton—Alterations	School Board	Liddle and Brown, Prudential Buildings, Mosley Street Newcastle-on-Tyne.
,,	11	Twickenham—Workmen's Dwellings	Urban District Council	Surveyor, Council Offices, Twickenham.
,,	11	Grays Thurrock—Cottages	Urban District Council	Surveyor, Council Offices, Grays.
,,	13	Lichfield—School	Governors of Grammar School	H. H. Brown, Clerk to Governors, Lichfield.
,,	13	Middleton, Lancs.—Greenhouse	Corporation	Borough Surveyor, Middleton, Lancs.
,,	16	Luton—School Buildings	School Board	J. R. Brown and Son, Castle Street, Luton.
,,	20	Dartford—Electric Light Station	Urban District Council	Hesketh and Stokes, 110 Cheapside, E.C.
,,	20	Springfield, Essex—Constabulary Headquarters	Standing Joint Committee	Clare and Ross, 66 Duke Street, Chelmsford.
,,	24	Croydon—Shops		F. and W. Stocker, Architects, Queen Street, Cheapside E.C.
Nov.	1	Lisnaskea, Ireland—School	Board of Public Works	B. L. Winslow, Solicitor, Lisnaskea.
,,	30	Port of Recife—Works	Federal Government	Commercial Department, Foreign Office, S.W.
		ENGINEERING.		
Oct.	5	Melton, Suffolk—Wiring	Visiting Committee	A. J. Wood, 22 Surrey Street, London, W.C.
,,	6	Sheffield—Alternators	Corporation	S. E. Fedden, Commercial Street, Sheffield.
,,	6	Grimsby—Wiring	Corporation	W. A. Vignoles, Borough Electrical Engineer, Grimsby.
,,	6	Newbury—Air Compressors	Rural District Council	S. J. L. Vincent, Market Place, Newbury.
,,	8	Edinburgh—Carbonising Plant	Gas Commissioners	W. R. Herring, New Street, Edinburgh.
,,	9	London, S.W.—River Wall	County Council	Engineer, County Hall, Spring Gardens, S.W.
,,	9	Dover—Strengthening Pierhead	Promenade Pier and Pavilion Company	M. N. Ridley, 11 Dartmouth Street, London, S.W.
,,	9	London, E.—Penstocks	County Council	Engineer, County Hall, Spring Gardens, S.W.
,,	9	Bradford—Dynamo	Corporation	R. A. Chattock, Town Hall, Bradford.
,,	10	Chester-le-Street—Water Supply Works	Rural District Council	J. H. Mole, Surveyor, Chester-le-Street.
,,	12	Glasgow—Waterworks	Western District Commitee of the County Council of Stirlingshire	Kyle and Frew, 140 West George Street, Glasgow.
,,	13	Whitehaven—Switchboard	Water and Lighting Committee	E. W. Dunton, Electrical Engineer, Whitehaven.
,,	13	Leicester—Pumping Engine	Water Committee	F. Griffiths, Waterworks Office, Bowling Green Street, Leicester.
,,	15	London, S.E.—Steampipes	Bermondsey Vestry	F. Ryall, Town Hall, Spa Road, Bermondsey.
,,	17	Gainsborough—Pumping Machinery	Urban District Council	P. Griffith, 54 Parliament Street, London, S.W.
,,	17	Aberdeen—Tramcars	Tramways Committee	J. A. Bell, Electrical Engineer, Cotton Street, Aberdeen.
,,	31	Kendal—Gasholder Tank	Gas, Water and Electricity Committee	T. N. Ritson, Gasworks, Kendal.
Nov.	1	Dundrum Bay, co. Down—Harbour Works	County Council	County Surveyor, Court House, Downpatrick, co. Down.
,,	14	Lahore, India—Tramway Materials	Municipal Committee	Secretary Municipal Committee, Lahore.
,,	15	Newcastle-upon-Tyne—Widening Bridge	Corporation	Town Clerk, Town Hall, Newcastle-upon-Tyne.
		IRON AND STEEL.		
Oct.	5	London, S.W.—Hurdles	County Council	Parks Department, 11 Regent Street, S.W.
,,	6	Hexham—Mains	Urban District Council	R. T. Surtees, Town Surveyor, Hexham.
,,	8	Ilford—Fencing	Urban District Council	J. W. Benton, Clerk, Council Offices, Ilford.
,,	8	Nottingham—Tramrails	City Council	A. Brown, Guildhall, Nottingham.
,,	10	Woolwich—Fencing	Union	J. O. Cook, Eleanor Road, Woolwich.
,,	23	Glasgow—Rails	Corporation	J. Young, 88 Renfield Street, Glasgow
		PAINTING AND PLUMBING.		
Oct.	5	Bromley, Kent—Painting	Joint Hospital Board	R. G. Mullen, 96 High Street, Bromley, Kent.
,,	5	Farsley, Yorks—Painting		Vestry, Baptist Chapel, Farsley, Yorks.
,,	8	Leeds—Painting	Corporation	City Engineer, Municipal Buildings, Leeds.
,,	11	London, S.E.—Painting	St. Saviour's Union	G. D. Stevenson, 13 King Street, E.C.
		ROADS AND CARTAGE.		
Oct.	8	Margate—Road Works	Town Council	Borough Surveyor, Town Hall, Margate.
,,	8	Ryton-on-Tyne—Cartage	Urban District Council	J. P. Dalton, Surveyor, Ryton-on-Tyne.
,,	10	Hemel Hempsted—Street Works	Corporation	W. R. Locke, Town Hall, Hemel Hempsted.
,,	15	Beckenham—Making-up	Urban District Council	Surveyor, Council Offices, Beckenham, Kent.
,,	15	Guildford—Granite	Town Council	C. G. Mason, Borough Surveyor, Tuns Gate, Guildford.
,,	15	Hanwell—Broken granite	Urban District Council	Clerk, Council Offices, Hanwell.
,,	15	Tredegar—Road Metal	Urban District Council	W. C. Widdowson, Surveyor, Tredegar.
		SANITARY.		
Oct.	6	Hindley, Lancs.—Sewer	Urban District Council	A. Holden, Council Offices, Hindley.
,,	9	Lymington, Hants—Sewers	Town Council	I. Pym-Jones, 14 High Street, Lymington.
,,	9	Canterbury—Sewer	Corporation	A. C. Turley, Tudor Chambers, High Street, Canterbury.
,,	9	London, E.—Sewer Works	County Council	Engineer, County Hall, Spring Gardens, S.W.
,,	9	Bromley, Kent—Sewage Works	Urban District Council	Surveyor, Council Offices, Bromley, Kent.
,,	9	Goole—Scavenging	Rural District Council	E. C. B. Tudor, Goole.
,,	10	Chester-le-Street—Sewers	Rural District Council	J. H. Mole, Surveyor, Chester-le-Street.
,,	11	Nottingham—Sewers	Works and Ways Committee	A. Brown, City Engineer, Guildhall, Nottingham.
,,	27	Aughnacloy, Ireland—Drainage		G. P. Hatton, Church Street, Dungannon.

COMPETITIONS OPEN.

DATE OF DELIVERY.		DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	BY WHOM ADVERTISED.
Oct.	8	Stockport—Architects wanted for Infirmary	£150, £100, £50	C. F. Johnson, Clerk to Guardians, Union Offices, Stockport.
,,	20	Sevenoaks—Hospital	£10 10s.	Surveyor, Council Offices, Sevenoaks.
,,	22	Swindon—Laying-out Grounds	£50	E. T. Jones, 42 Cricklade Street, Swindon.
,,	30	Devizes—Hospital	£20, £10	O. Sheppard, Clerk to Joint Committee, Devizes.
,,	30	Musselburgh—Town Hall	£26 5s. and £15 15s.	Town Clerk, Council Offices, Musselburgh.
,,	30	South Shields—Municipal Buildings	£200, £100, £50	J. M. Hayton, Town Clerk, Court Buildings, South Shields.
Nov.	30	Swansea—Harbour Offices	£100, £50	T. Strick, Harbour Offices, Swansea.
Dec.	1	Bridlington—Parade Extension	£36 5s., £15 15s.	A. E. Matthewman, Town Hall, Bridlington.
March	25	Basford—Sewerage Scheme		C. J. Spencer, Clerk, Public Offices, Basford.

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Effingham House,
Arundel Street,
Strand, W.C.

An Architectural Causerie.

An Abstract Consideration of Design.

To define design is difficult — definitions as a rule are difficult, and when acccomplished more or less indifferent—but this definition of design is almost as difficult to state as design itself is to accomplish. A well-known French artist, venturing where angels might with reasonable caution fear to tread, tells us that design is the result of a fine evanescent spirit of originality working in conjunction with accepted historical precedents and under traditional and acknowledged standards of art. This is a very excellent start towards our end, but it does not go far enough: it does not give a hint as to what percentage of "fine evanescent spirit of originality" is to go with the historical precedents of the art, or how predominant the tradition is to be. The percentage of originality may be painfully small in some cases, infinitesimal in others. Still, the definition would allow it to be labelled design. Such an acknowledgment would make a pitiful lowering of the standards referred to, and therefore may in no sense be permitted, and we must seek for more light on the subject elsewhere. Above all, we must remember that as we are judging design—and design in its greatest sense enters only into the highest and purest forms of art—we must keep our standards on the hill-tops, and not in the valleys accessible to men.

I have heard it stated by an art teacher—who has been teaching long enough to have had all the enthusiasm beaten out of him, but who still obstinately refuses to have that natural process of disillusionment dealt out to him—that there is a strong vein of individuality in any boy if he is taken in hand early enough. He also claims that this individuality is but the beginning of that larger originality which shall hereafter produce design, if only trained properly. Of course he has his theories of proper training; very pretty theories they are, and much I should like to follow them out to their logical conclusions, but not here. You can glean proof for yourself by watching the boys at their work, or you can trust the good faith of the teacher, which latter course is advisable, and follow the various work of the students accomplished alone and unaided—that is, aided only indirectly by the teacher. The boys are mostly sons of artisans, craftsmen in various trades, without the faintest familiarity with the art-jargon of the South Kensington student. In fact, the teacher has a positive dislike to any other material with which to work.

Work can be seen which alone bears the seal of originality without the endorsement of the integrity of the teacher. I will not say the work will please everyone; it is so extremely strange, original to a fault, individual to a failing almost. The enthusiasm of the teacher is such, however, that he will trace a likeness between the work of some of his boys and quaint old Egyptian, Assyrian, and Asiatic art to which these boys could not possibly have had access. In this, as in much the teacher says, is a large element of truth; and it will be readily granted that the interest of his experiment is not lessened thereby.



SPRING HILL, BRISTOL. DRAWN BY W. LEE CLARKE.

To the complete satisfaction of a discriminating few, he has proved his case; and where does it lead us? That originality is a gift of Nature inherent in many when young. Then follows the natural question, Why not compass more design? And that is a question which may now be examined.

The art student nowadays has easy recourse in his studies to copies, casts, counterfeits and sometimes originals, of a great percentage of the notable art works of the world. The great sculptors are open to him; great painters display their hardly-won secrets, canons, and ideals to his gaze; the architecture of a thousand years and more rears itself up before his eyes; and the whole world-wide artistic pageantry of the centuries passes in review before him. What a heritage is his! What a wealth of treasure for his discriminating sense! And yet—alas! that it should be written—this priceless treasure of the ages, this peerless heritage, is often the cause of his artistic downfall. He becomes a slavish admirer of some part of it: he is of this school or of that, but rarely the founder, consolidator, and pioneer of his own school. He must attach himself to one or other of the ancient giants whom he can never reach, far less excel, until his art, enfeebled by copying, plagiarised by persistent reiteration, and disgraced by slavery, becomes a commonplace, a nonentity, without style, without force, and, above all, without design. Such is often the result of a too close study of historic art. The greater the art, the greater the danger; for these ancients are so great, "they tease us out of thought," and the student must beware their fascination, must beware their charm, until he has built firmly upon his foundation of originality his structure of

design. Our definition tells us that for a work to enjoy the right of being called "design" it must show distinctive originality in conjunction with traditional and acknowledged standards of art; and how are we to judge this? Judgment, of course, will depend wholly upon the individual; but in this matter of judging, the greater the knowledge of the individual in historic art, the greater his capacity to seize the true quality of the design. For to design in any "school" of art, it is not only necessary to reproduce the character and feeling of such a school, but to instil new ideas, make new progress, while maintaining throughout the traditional character and style of such art. Therefore it will follow, the greater the knowledge of the tradition the greater the capacity to judge the advance over and above that tradition. When any "style," as we call it in architecture, or any national, historic, or particular art no more allows progress in its development by its exponents, it has lost its vitality, lost its real utility for the human race, and should be discarded. *The* test for this lies in this judgment of design. If the new work can honestly claim that name, it is progressive; and if not, it is the opposite; and the opposite means feeble and degenerate art. Let us take for example the pre-Raphaelite Dutch painters. Their style was pronounced enough, but it in no way precluded the painter from introducing his special scheme of design; his individual originality came out in spite of the school and the tradition, and not because of it. With a painter it is most imperative that he should have this quality of design. Painting Nature as he does, he cannot paint her whole unless he would use the globe itself for canvas—he must paint her in part. Yet Nature's own design for that part is relative to the whole, which his painting cannot portray; therefore, as he cannot seize Nature's own scheme of design, he has to make his own, which shall reflect that of Nature. In reality, his ideas are from Nature herself. This design and its quality lies in the truth, in the excellence with which he reproduces the unbounded scheme of Nature on the small finite square of his canvas.

Now how to gain this "illusive evanescent quality of design"? We see that a too slavish adoration of the ancients will not give it; that a too indiscriminate study, however enthusiastic, leaves us lost without it. Well, I may only give an individual conviction, in no way a universal belief, as to how it is to be attained. A surveillance over precedents, a stern judgment of the value of artistic convention, and a rigid adhesion to any quality of imagination and originality we may possess, will carry us far; but in the main back we must go to Nature. Back we must go to the fields for our conceptions, to the intricate tangled hedgerows, the many-wooded uplands, and the great cloud capes and promontories of heaven. The inspiration we require for our art, the knowledge, is not to be found in the master-brain of a studio-worm fixedly regarding his plaster wall for happy thoughts. Then, when the artist shall make his bid for refinement, shall wish to qualify for artistic culture, he shall look upon the world's artistic record without fear of numbing enthralment or danger of historical distraction. F. B.

Spring Hill, Bristol. To the casual man Spring Hill, Bristol, is but a short cut from the suburbs of Kingsdown and Redland to the City, and it probably causes him no second thought as he hurries to and fro in his daily journeyings; that it possesses more than passing interest is, however, apparent from the sketch by Mr. W. Lee Clarke on the previous page.

On Reflection.

Church Competitions. We print on another page the able address delivered by Mr. E. S. Prior at the recent Church Congress held at Newcastle-on-Tyne. The reiteration of the truth that the architecture of to-day is feeble and devoid of originality has become somewhat wearisome now, and it is therefore refreshing when someone takes up a new line of thought or makes specific charges against specific practices. We agree with Mr. Prior when he says that modern church architecture is the least real, the least progressive, and the least conscious of practical purpose; and that more than half of the large amount of money put into church-building during the last fifty years has been "work of supererogation in adding decorations and ornaments of Gothic and other copied styles outside the practical necessity of accommodation." But for the moment we would draw attention to his remarks about church competitions. The subject of competitions, though a hackneyed one, is nevertheless still a most important one; for, despite all that has been said against the way in which they are generally conducted, competitions are numerous, unsatisfactory in many instances, and capable of exerting a most baneful effect on architects and architecture. Mr. Prior cites the case of a church competition in the South of England which attracted 150 competitors. For the sake of argument it is assumed that six weeks were occupied by each competitor on his design, giving an aggregate of forty years' work occasioned by this competition. Now as only one competitor—the successful one—received any remuneration for his labour, the question may reasonably be put, What of the remaining 149 competitors who were unsuccessful, and therefore unpaid? It is futile to reply that they all entered on the same footing and took their chance, because the profession of architecture is not a polite form of gambling. Also, the argument that all the competitors were commissioned, so to speak, and submitted designs just as an architect might submit a design to a client, will not stand. In the latter case there is every probability that the architect will have the carrying-out of his design, though the client may wish certain alterations to be made first; whereas in an open competition it is only the authors of the successful designs who are rewarded. And this brings us to another point, that of the competition drawings themselves. It is now the practice for the work of selection to be done by an assessor, who, being at least able to grasp the appearance of a building from geometrical drawings, needs not the usual architectural perspective. We say "usual" because this is generally a drawing which boasts the qualities of prettiness and over-elaboration. If there is no assessor, and the selection rests with, say, a building committee, it is only fair that a pictorial view should be included with the designs; but the fault is that architects pander to the ignorance and lack of taste often characteristic of committees, and instead of submitting a perspective done with breadth of effect, and showing the building as a mass—supplemental to the geometrical drawings—they make one which gives every little angle and corner, and every bit of ornamentation, with microscopic definition; and to this picture all the really architectural drawings are made subservient. Unfortunately, competitions have fostered the detailed perspective, putting draughtsmanship before design; and this is perhaps one of the worst evils which the competitive system, so strongly denounced by Mr. Prior, has introduced.

Stained-Glass Windows. Mr. Selwyn Image's paper on stained glass, which appears on another page, commends itself by its advocacy of present-day themes of design and its condemnation of the trade-artist. The fact cannot be too strongly urged that it is better for a building to have no decoration at all than to have bad or paltry decoration; better for the windows to be glazed with good plain glass than to be filled with tawdry designs carried out in a manner worthy of a successful music-hall or a first-class hotel. Mr. Image insists that a stained-glass window should be regarded as a piece of fine art, just as much as a picture; and instead of bringing its cost down to the level of the available purse, we should be content to wait till the purse was full enough to pay for a good window. To take a case in point. A clergyman has a range of windows in his church filled with plain or tinted glass, and he desires to replace them with stained-glass windows. Now, considering the means at his disposal, he is generally in much too great a hurry to fill those windows, with the result that within a short time St. Johns and St. Pauls stand there in stained glass to memorialise the departed. They are probably not very expensive, and not very good; with the result that, instead of enhancing the appearance of the church, new features have been introduced which to any artist would be displeasing. According to our view, not only is the modern art of stained glass deficient in design, but there is far too much mixing of colours, which gives to the finished window a restless and spotty effect. What is badly needed is a greater use of colour in mass. Designers seem to be afraid to do this, though there are numerous examples—like some in Glasgow Cathedral—of windows of this kind to testify to the excellence of the principle, which, by the way, is also applicable to the laying-out of flower beds. Sir William Richmond's windows in St. Paul's Cathedral lack to some extent this broad effect of colour, and they are consequently less effective than they might be. Next to the method of supplying stained-glass windows at so much "per square foot," we think that this wholesale mixing of colours, this "crazy patch-work" form of design, requires reforming, and its place taken by something more artistic, more harmonious, and more beautiful.

Architectural Education. If a man is ever to do anything really great he must have an ideal, and this truism is particularly applicable to artists and architects. The ideal architect of to-day would be one who combined with the ability to design, to construct and to draw, the business capacity so essential to modern success. We have all around us engineers whose work, constructively excellent, drags architecture to a low level, and architects who should be ashamed of the inexcusable ignorance of true construction displayed in their designs. This is, of course, the result of a one-sided view of things, the result of an inability to appreciate beauty on the one hand and the neglect of the material on the other: a view which is the outcome of imperfections in our technical and architectural education. The suggestion is made that there should be established in this country a purely architectural college controlled entirely be experienced architects for the better training of architects. This proposal deserves support. We badly need a proper system of architectural education. Khartoum is being rebuilt by Royal Engineers, and the question—what training in architecture do Woolwich and Cooper's Hill and other colleges afford?—has its negative answer. Perhaps one day it will be generally recognised that architecture is not only a thing of strains and stresses, but one demanding the quality of fitness and beauty.

NEW YORK OFFICE BUILDINGS.

By W. G. P.

DURING Li Hung Chang's visit to New York it was observed that the Chinese statesman manifested great interest in the enormous "skyscrapers" which have grown up within a comparatively small area of the city, lying at the lower end of Manhattan Island. And to all newcomers from "foreign parts" they form objects of striking interest, if not of admiration. The European architect who sees them for the first time, and who probably approaches them with a mind biased by Old World veneration for the ethics of truthful building construction, and whose range of architectural criticism has hitherto been confined to buildings with a wall-head line of not more than 100ft. or so in height, finds that he has new subjects to examine, and that in order to come to a just conclusion as to their merits as architectural structures he must acquire some knowledge of the conditions which have guided and controlled the processes of designing and erecting them. Though, perhaps, disposed to view them at first sight with an interest similar to that in which surgeons examine a human monstrosity, he finds on closer inspection that many, especially the more recent productions, are pleasant to look upon, well proportioned, and composed of such excellently designed features, that he pauses and asks himself whether, after all, this "monstrosity" is other than a sudden and great development of the architectural species on a scale to which he is unaccustomed. He will disregard as "freaks" a few which are ill-proportioned and remarkable only for their size, and artistically useful only as warnings to future producers. The more he examines the buildings and acquires information as to their construction and erection, the higher will rise his admiration for the pluck and enterprise of the architects, engineers, and builders, whose combined skill and energy have quickly solved the problem imposed upon them by the capitalist, of erecting safe buildings of twenty to thirty storeys in height. It is true that no new principles have been used in dealing with the problem, for the engineer of twenty years ago would never have doubted the possibility of constructing these huge steel cages which form the skeletons of the structures; but he would certainly have regarded a demand to supply the parts for constructing one over 200ft. high within such space of time as would allow the entire building to be finished within twelve months' time as rather a "large order."

To the architect the problem presented has been, in the first place, to provide on a given site a floor area double, or more than double, in extent that which had hitherto been considered practicable. The demand for this arose from the desire for centralisation which in New York is peculiarly urgent owing to the narrowness of Manhattan Island at the lower end, in which part the centre of commercial activity is located. The Wall Street brokers, the banking and insurance companies, shipping agents, and professional men all desire to have their offices in that comparatively small triangular piece of the island which lies below City Hall Park, and the nearer to Broadway the better. The demand raises the price of land, which in this district varies from $150 to $250 per square foot, and the architect is called upon to provide sufficient floor space to yield in office rentals a proper return for the outlay on this and on the cost of erection. Each additional storey he puts up lessens the cost of site in relation to floor area, and after passing a certain point the construction of each storey is in itself less than that of those below. If the building rises to twenty storeys or more, the return increases sufficiently to yield a good margin for external architectural decoration as well as for internal finishings. By the erection of these huge offices buildings it is calculated that an addition of about twenty acres of floor space has been recently made in this part of the city.

One building alone, the new Bowling Green offices, has a floor area of 560,000 sq. ft., sufficient to hold, at the allowance of 4 sq. ft. to each person, a crowd of 140,000 persons, equal to the population of a moderately-sized town.

The most serious condition attached to the requirements laid before the architect is that the building shall be erected and entirely finished within the space of one year, so as to be ready for letting by May 1st following that on which possession of the site has been effected. This has been accomplished notably in the case of the Manhattan Life Building.

How, then, were the architects who first had this problem put before them to set about solving it?

In order to comply with the requirement of maximum amount of floor space, some means of reducing the thickness of walls had to be looked for. Under the system of self-supporting walls the base portions of walls for buildings twenty storeys in height would of necessity be built about 6ft. in thickness, to the great sacrifice of rental value, for every square foot of floor space is worth $1 to $2 of annual rent. The Chicago method of steel cage construction met the difficulty. It consists of a framework of steel standards, spanned by steel girders, further strengthend by ties and wind braces. The girders of each storey support the walls and partitions of that storey, and the weight of these is conveyed to the steel standards; and thus each storey of masonry or brickwork is independent of support from walls below, and a uniform thickness of walls and partitions can be used from basement topmost storey. This thickness can be reduced to the limit advisable for resisting weather and extremes of temperature, and thus the maximum of floor space is obtained. At the same time complete freedom of fenestration treatment is obtained.

In many cases a compromise has been used by making the steel framework carry only the floor and partition loads, the external walls being independent and self-supporting; but the advantage of this half-measure is not apparent, except that it allows of a genuine depth of reveal for façade features.

All steelwork is encased with terra-cotta or fireclay, for fireproofing purposes, by methods which will be referred to later.

Every opportunity of reducing the loads on the frames is taken by the use of hollow terra-cotta arching for floors and hollow brick or terra-cotta for partitions. The adoption of numerous lifts constantly running disposes of any difficulty in regard to access to the various floor and the upper floors are of equal rental



AMERICAN SURETY BUILDING, NEW YORK. BRUCE PRICE, ARCHITECT.
(STATUE OF PEACE BY J. MASSEY RHIND, SCULPTOR.)

value to the lower ones, and preferable on account of better light and air.

Thus in a practical common-sense way has the American architect responded to the demands of his financier client.

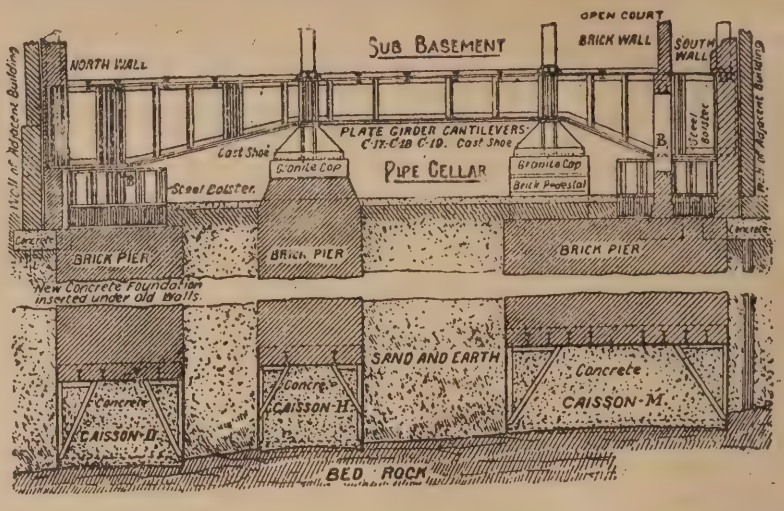
But how has the *art* of architecture fared in this revolution in constructive methods? The American Surety Building, when seen by the newcomer approaching the city on one of the great ocean liners, stands up in all its pure whiteness against the sky, which in New York has all the clearness, if not the intensity, of an Italian sky, and reminds him of an Italian campanile, the strength of its main horizontal lines, and the restraint shown in subordinating the treatment of the several storeys to the general design, giving an effect of dignified repose such as we have admired in Venice—and why not in New York? It is true that "there are others" (to use an Americanism), but the artistic success of this one building is sufficient to disprove any contention that such high structures must, *ipso facto*, be monstrosities.

It may be concluded, then, that so far as the eye can judge, this revolution in building methods is not detrimental to art. But what about the principles of æsthetic propriety in architectural construction? If we are purists and upholders of literal truthfulness in respect of architectural anatomy expressing itself in the external features, then we must own that the principle has suffered somewhat, for in these high piers of apparently solid masonry there is no suggestion to the eye of the steel-work hidden within; but if we are reasonably disposed to take into consideration the necessitous conditions absolutely imposed on the designers of "skyscrapers," our thought will be that in complying with these conditions the architect has fought a good fight for his art, and has achieved more artistic success than appeared probable. What result would purism lead to in the design of such buildings? Would it be considered necessary to expose the "altogether" of the steel uprights and girders, and to fill in the interspaces with metal plating, for consistency's sake? As reasonable would it be to form the internal wall surfaces of corrugated steel sheeting, instead of plaster.

But the discussion of this point has been long since done to death, and has not greatly affected the practice of architects. They must needs continue to comply with the demands of commercial requirements, well knowing that if they do not someone else will. We can all sympathise with that well-known architect who thanked God that he never had and never would use an iron beam or supporting pier in the construction of his buildings. He was fortunate in being able to preserve the moral rectitude of his principles of construction. But it is probable he was never asked to construct a building containing, in addition to public and executive offices for an insurance company, about 200 offices for general letting purposes, on a site 120ft. by 67ft., and to make the enterprise a financial success.

As an offset against this moral backsliding, if such it be, is set an advantage of some consequence to the appearance of the street façades. The margin accruing from the rental of offices is large enough to justify a considerable expenditure on the façade and such parts of the interior of the building as it is desirable to finish with some display of decorative completeness. Façades of white marble or granite enriched with carving and coloured marbles, internal screens, elevator frames, gates, and other finishings of bronze, brass, and wrought iron, and a generous use of marbles, onyx, and other rich stones, as well as of the finest varieties of wood for finishings, become possible. According to the writer's views, the loss in structural ethics is more than balanced by the gain in decorative resources.

Perhaps the point which amazes one "from the other side" most of all is the rapidity with which these buildings are erected. How does the architect produce his working drawings with the speed required to keep the works progressing without intermission? It seems undoubted that the drawing-office work is turned out more quickly than in British offices, and yet a similar supply of enlarged detail and full-size drawings is supplied to the contractor. The average draughtsman there is not better



SECTION SHOWING FOUNDATIONS OF THE MANHATTAN LIFE INSURANCE BUILDING, NEW YORK.

trained than are British draughtsmen. Probably there is proportionately a smaller number of first-class men in New York than in, say, London, though there are many draughtsmen who have been through the course of training at L'École des Beaux-Arts in Paris. But the secret must lie in good management. The offices are most commodiously arranged with the best appliances for the convenient execution of the largest drawings. The working plans are pencilled to a scale of ¼ inch to the foot, and then traced on cloth for reproduction by the blue process. The work is divided as much as possible, and in such a way as to employ each draughtsman, according to his special ability, on plans, sections or elevations, and ornamental details. An engineering draughtsman or an outside engineer is employed on the detailing of steel construction, and he and the architectural staff must work hand in hand. Many of the New York offices are large establishments, one firm employing between 50 and 60 assistants. There is always a clerk, often a gentleman of colour, to receive callers and apparently to prevent their access to the principals or to the drawing-office precincts.

The following printed notice, posted on the office walls of a well-known firm, is suggestive in relation to office discipline: "The hours for political discussion in this office are before 9 a.m. and after 5 p.m." An architect's office is not the only place where such a rule might with advantage be applied. Each office has its telephone connection and a few typewriters.

A description of some of the more recent buildings of this class will give some idea of their character. First, however, a few points noticeable in their construction.

Foundations.—The greatest care must of necessity be exercised in the foundations when such heavy loading is involved. Where not founded on a hard or firm stratum, piling or concrete with steel rails embedded in it is usually adopted. Where the latter is used, it is laid in several off-setting layers. The lowermost layer is of cement-concrete between 12in. and 24in. thick. On this are placed layers of steel rails embedded in concrete, each layer being laid transversely to that below and above; and on top of these is the cast-iron shoe to receive the steel piers. Where the position of piers is such that unequal distribution of loading is feared, compound foundations combining to support several bases are used, and various methods of cantilever form employed to distribute, and if necessary divert, the load. In the Manhattan Life Building, where it was necessary to start from the bed-rock, about 57ft. below the level of Broadway, pneumatic caissons of steel were used, in order to avoid injury to the walls of the adjoining building, which were founded on the natural soil at a much higher level. These caissons, varying in size from 9ft. in diameter to 25ft. by 21ft. 6in. and 11ft. in height, were filled with concrete, and the piers on them, up to the level of cast-iron shoes, were built of hard burned bricks with granite coping course. Steel cantilevers were employed to divert the loading from piers of side walls on to the caisson foundations, and thus all interference with the side walls was avoided. As basements for boiler and electric-lighting plants are necessary for these office buildings, excavation has to be made in all cases. The rock crops up to the surface in many parts of the city, and it is usual to see extensive operations progressing in the way of boring and blasting. The reports of dynamite may be heard all day long, even in the most populous parts.

Steel Piers.—Although cast-iron columns are still being used as the main supports in some buildings, the unsuitability of the material for use in frames 200ft. high or more is being recognised, and it will suffice to describe only some of the forms of steel columns employed. These are many, comprising various combinations of L plates, Z bars, H bars, circular, octagonal and box forms. The amount of labour involved in the putting together of these combinations is the chief factor in choosing a particular form. The form most in favour hitherto appears to be the Z-bar column, composed in its simplest form of four Z bars riveted together with a web plate, and with only two rows of rivets. This form is probably the cheapest and best where the sectional area thus obtained is sufficient for the strain to which it is to be subjected; but when a larger sectional area has to be obtained by the addition of cover plates and a larger number of Z bars, the amount of labour in riveting about ten or twelve rows of rivets renders it an expensive form for large columns. A form recently brought out, and known as the Larimer column, seems to be a more economical form for large columns. It consists of two rolled I beams, bent in the middle of their webs so as to form an L, and riveted together in the middle with a smaller I beam as filler. The base and cap plates are connected by riveting angle pieces to the outside flanges and to plates. With the same sectional area it is claimed that the ultimate strength of the Larimer as compared with the Z-bar column is as 37 to 31.

The columns are cased in terra-cotta or fire-clay tiling 2in. or more in thickness, and finished in plaster. The material which has proved most suitable for resisting heat and the application of water when heated is the porous tile rather than the hard-surfaced tile. The tiles are wired to one another and to the column with copper wire.

Floors.—The floors are generally formed of steel rolled beams spaced at from 4ft. to 7ft. centres with flat arches of hollow terra-cotta, springing from skewbacks resting on the flange of beam, and so formed as to encase the soffit of flange. Tie-rods connect the beams. A layer of concrete 3½in. thick is laid on top of arch to receive the finished flooring.

Spandrel Walling.—When each storey of walling is carried by the steel framing, the spandrel walling of stone or terra-cotta is connected to the girders by means of hooks, bolts, and cramps, as the section may require. Where the projection is great, steel cantilevers are projected from the main girders, carrying at

their outer end smaller beams T or L bars, as required to support the walling.

One of the best examples of a 20-storey building finished so far as to be ready for occupation within the space of one year is the Manhattan Life Building, designed by Messrs. Kimball and Thomson. Nearly the half of this time was spent on the foundations, in which occurred unforeseen difficulties; but the superstructure was then put together with such rapidity that in three months' time the roof or eighteenth-floor level was reached, and the offices were ready for occupation in less than seven months from the date on which foundations were ready, while the whole was completed one month later. Some figures will help the reader to realise the amount of work executed in this time. The concrete foundations contained 1,260 cub. yds. In the brick piers continuing these up to cellar level were 1,500,000 bricks. The Broadway front contains about 30,000 cub. ft. of masonry, which was cut and set in position in 80 days. More than 5½ miles of piping for gas, water, waste and vent pipes, 5 miles of steam pipes, and 35 miles of electric wiring were fitted up.

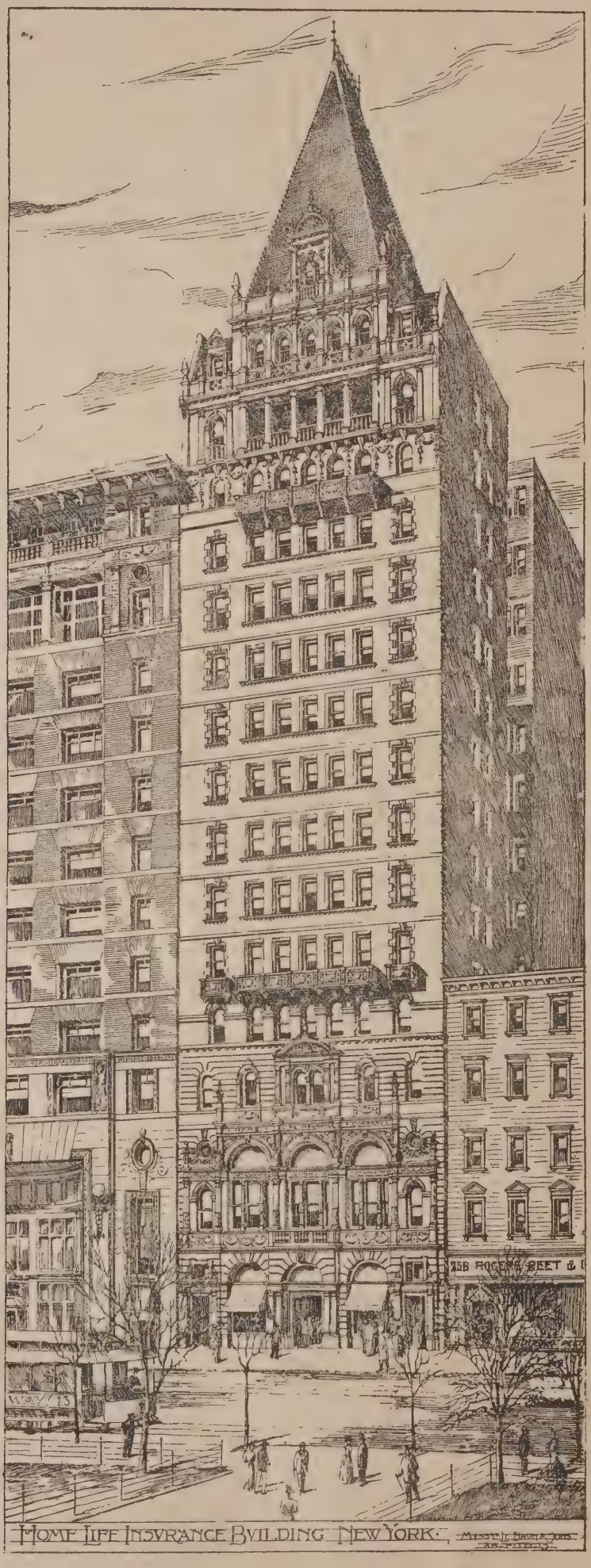
The style of the Broadway elevation is the Early Italian Renaissance. It is entirely executed with Indiana limestone. A huge archway, extending up through the two lowermost storeys, gives prominence to the entrance. In its design it reminds one of the west doorway of the Church of the Certosa at Pavia. The central composition continues up for two more storeys, when it finishes with a central-pedimented window. At a higher level a colonnaded treatment running through sixth and seventh storeys, with a projecting balcony underneath, produces a fine play of light and shade, and at the same time binds the front together at the point where the front is broken up into a triple composition continuing up to the top of building. The middle portion is recessed, and the projecting side portions carried up through main cornice and finished as pavilions with dome roofs. Over the middle portion, which is further recessed above main cornice, the composition is carried up higher, and finally finishes in a copper lantern of elegant proportions. The grouping of pavilions and lantern gives a most picturesque outline when viewed from any point from which the skyline of the back portion of building is not visible; but this building shares in the fault common to most of the skyscraper class in which a grouped skyline is obtained, in that little regard seems to have been given to their outline when viewed from a distance or from the rear.

The interior offices show some excellently-designed finishings in metal and marble screens, and elaborate wood and plaster work, all well worthy of illustration, but not coming within the scope of this article.

The Home Life Insurance Building is another example showing a picturesque skyline. It is finished with a high-pitched wedge roof covered with deep red tiles, with a most pleasing result. The general design of the façade is of a French Renaissance character, but the details of the façade are from the best Early Italian Renaissance sources, and have much refinement,



METROPOLITAN LIFE BUILDING NEW YORK. Messrs N. Le Brun & Sons Architects



if somewhat "petite" in scale. The three lower storeys which form a base to the façade are built with rusticated joints, forming a good ground to the richly-decorated fenestration applied thereon. The walling and fenestration above is severely simple, until broken by a richly-corbelled balcony and a deeply-recessed loggia stage under the wall-head. The contrast of light and shade thus obtained is heightened by the use of white marble throughout. The main dimensions are: Width 55ft. 6in.; height to top of stone gable, 237ft.; to top of spire, 280ft. The construction is of the skeleton steel and brick order, except the front wall, which is built of solid white marble, the joints of each course extending right through the wall. This method was adopted in order to avoid the danger of unequal settlement owing to rapidity of building, which would probably have occurred if brick backing had been used. There are 162 offices, arranged in suites, in addition to the company's offices, which are on ground storey and basement. Messrs. N. Le Brun and Sons were the architects.

The Metropolitan Life Insurance Building is another work by the same architects. It is also Italian Renaissance in style, though of a stronger type than the Home Life Building. The materials used are white granite from Maine, with brick backing for the exterior walls. The internal hall and staircase, which are of a most palatial character, are of local and Italian marbles, with onyx handrail, balusters, and pedestals, the metal work being of bronze and brass. The cove at ceiling is of coloured marble mosaic. The exterior façade finishes with a massive cornice of about 6ft. projection.

The building covers a site 145ft. by 125ft., in which the company's executive offices are placed on the first and mezzanine floors; while a large annexe, 100ft. by 115 ft., on Twenty-fourth Street, is entirely appropriated to the administrative department of the company. Steel beams and terra-cotta flat arches with cast-iron columns form the internal construction, the outer walls being self-supporting. The work occupied two years in erection and completion.

The American Surety Building has a frontage on Broadway of 84ft. 6in., with a return on Pine Street of 85ft. 6in., the plan being a parallelogram but little removed from the square. It has a total height of 308ft. from pavement to coping, embracing twenty-one storeys. The external walls are entirely faced with dressed Hallowell granite, and have a slight batter. They are for the first hundred feet about 4ft. in thickness, which is reduced as it rises, the average thickness being 2ft. 4in. The walls do not carry the floor loads, which rest on steel supports encased in the walls. The treatment of fenestration is interesting, in that the lower-storey windows have the shallowest reveal, thus giving the maximum of light where it is most needed, and the depth of reveal is increased gradually towards the top, so that the glass plane inclines inwards from base to top, producing an effect which gives a subtle aid to the perspective.

In style, the details of the tower—for such the whole building may be termed—are Greek. The two lower storeys on the Broadway façade are combined in a hexastyle Ionic portico composition, with details reproduced from the Erectheion at Athens. The details of capitals and other carved enrichments are exquisitely executed, and have all the refined spirit of Greek art. Over the colonnade is a Greek attic, with a row of allegorical figures designed and carved by Mr. J. Massey Rhind, a Scotch sculptor of Edinburgh, and a brother of J. Birnie Rhind, A.R.S.A., of that city. The figures symbolise the various virtues which a charitable age accepts as controlling commercial success. At once stately and pleasing, calm rather than severe in conception, the figures draped with simple restrained lines harmonise perfectly with their architectural surroundings, and may be truly regarded as architectural features. The whole composition of these lower storeys, which forms a podium to the superstructure, has a rare effect of unity and dignified repose. Within the portico is a hemicycle with a radius of 19ft. and a height of 32ft., with a doorway on each side entering into the banking rooms, and a central one into

main building. The walling above the third storey is treated with granite courses, each alternate course recessed. The windows have moulded architraves, and the angles are formed with rusticated quoins. With the exception of one string course above the fourth storey the wall is continued up without any projecting band to the fourteenth storey, above which occurs a carved band. Considering the whole tower as a column, the fifteenth storey corresponds to the necking of capital, and the next four storeys above constitute the bell. This stage of four storeys is treated with a colonnade, in fine contrast to the comparative plainness of skill and gracefulness of line. They suggest French rather than Greek art, and in so doing soften the transition in style which occurs in the façade. The lower portion is pure Greek, while the upper stages are designed with considerable freedom of style in detail, though the general effect is that of Neo-Grec. These figures, as well as all other carved work, except the statuary before mentioned, were executed under the general granite contract by Mr. J. Pierce, New York.

The architect, Mr. Bruce Price, is to be congratulated on the production of a design having much originality, and in which the principle



* Gillendar Building, in distance. Berg and Clark, Architects. † Union Trust Building. George B. Post, architect. ‡ Commercial Cable Company's Building—almost hidden. Harding and Gouch, Architects. § Manhattan Life Building. Kimball and Thomson, Architects. Trinity Church, New York, in foreground.

the shaft below, and finishes with a massive and richly-detailed main cornice which has a projection of 6ft. Above is an attic storey, the skyline consisting of a row of Greek antefixæ in gilded bronze. The one enrichment to the shaft of the composition occurs at the fourteenth and fifteenth storeys on the Broadway front, and is an excellently-designed central group of two classically-draped female figures clinging to the sides of an oval window which is the central feature of the fifteenth storey and extending down to the sill of the fourteenth storey, terminating there in voluted scrolls. The figures are modelled and carved with much of unity has been successfully carried out. The time occupied in erection was 175 days.

The foundations start from the bed-rock, about 70ft. below Broadway, and the pneumatic caisson system was adopted. One of the foundation columns is capable of sustaining a load of 1,685 tons. The total estimated load on the foundation is 25,000 tons or 7·2 tons per square foot. Four millions of bricks were used in the foundations, and an equal number in the external walls of the superstructure. The cubical contents of the building inside walls is 2,000,000 cubic feet.

The shell of the building is constructed on the steel-cage principle, with terra-cotta arching for floors.

It is satisfactory to learn that practically complete rigidity has been obtained in this huge tower, as the following quotation from a description published by the company will show: "During the height of a heavy storm, January 4th, 1896, when an official wind velocity of 82 miles per hour was registered, Mr. Rogers, the architect's assistant and superintendent of the construction of the building, and Mr. Wiegand, engineer of the Jackson Architectural Ironworks, made a test with transit and level, and were able to discover only one-sixteenth of an inch vibration in any part of the building, though the estimated pressure on the whole front at the time was 332 tons, and the bending or overturning moment over 52,000 tons, which gives an impressive idea of the solidity of the construction."

Mr. Bruce Price's design for the Sun Building is modelled on the lines of the Campanile of St. Mark at Venice. It is higher than the American Surety Building

Many other "skyscrapers" are in progress and on paper, some more than thirty storeys in height, and many worthy of special notice, such as the Bowling Green offices, by the Messrs. Audsley, a building whose details recall the works of "Greek" Thomson in Glasgow; but space forbids.

ARCHITECTURE IN RELATION TO RELIGION.*

By EDWARD S. PRIOR.

I TRUST that the speakers who have so ably represented painting and sculpture (see p. 172 of last week's issue) will not suspect me of disrespect to their arts when I pointedly speak of architecture as the *practical* art. As regards painting and sculpture, the relations of these to the Church may be ideal—those of happy fortune—and if there have been moods of caprice, in which painted and carved imagery has been repulsed and chided instead of fondled, it has been as the "falling out of faithful friends" with ever a *redintegratio amoris*. But for architecture there has been a constant, though only prosaic, link of a practical necessity—architecture has necessarily been church-building, and the Church has not been able to say to the builder "I have no need of thee." And I take this practical quality of architecture as my text—upon this platform let the art of building come into relation with religion.

I had the advantage this summer of hearing two great speakers of our Church refer to the connections of religion and architecture. The Archbishop of Canterbury eloquently described the effect of great church-building; how its contemplation lifted the heart of the worshipper; what suggestions of reverence grew out of its ordered immensity; the still voice of its perpetual preaching. Far be it from me to deprecate this conception of architecture, or to minimise what is a genuine practical quality of its expression. The Bishop of London, who followed him, went further, however; he suggested that architecture found its ideal in church-work because that alone could lift it above the drudgery and meanness of everyday needs. And, further, that it is by the association of painting and sculpture in their buildings that architects must make good their claim to be artists.

Now this was sad hearing for architects: my art of architecture was put in a false positin false historically if I might say so to an historian, for never in history has architecture been an art save by its own quality of practical building. And neither to the Church on the one hand, nor to painting and sculpture on the other, has it owed this quality.

And depressing, too, was the Bishop's suggestion in its bearing on the work of to-day. His words were perhaps half ironical, but the

* Speech before the Church Congress at Newcastle-on-Tyne, September 26th, 1900.

suggestion made, that architecture can be an art outside its practical use, is what perpetuates its degradation. While it is taken that the Church can supply an ideal or style to building, and sculpture and painting can make decoration, and so that it is made art, which without these is only practical ugliness, so long as this idea is abroad must the Church miss the meaning of architecture: and make no good use of it.

While it may be a question whether art *can* come into definite relation with religion, it can be no question that such relationship must base itself on real expressions, not on false ones and make-believes. Yet, if we look at the building work of to-day, one can only observe that church architecture is of all the least real, the least progressive, and the least conscious of practical purpose. The amount of money and design that has been put into church-building during the last fifty years has been very large, yet certainly more than half of this has been work of supererogation, in adding the decorations and ornaments of Gothic and other copied styles outside the practical necessities of accommodation. Yet no life of architecture, despite the expense and pains given, has been realised. Church-building has set no example; it has kept itself from no abuses; it has created no hope among artists and but little reverence. Is not this because it has missed the practical purpose of building which alone makes architecture art?

I go at once to the particulars. In how many cases has church-building sought the aid of architectural competition. There is nothing to be said against competition in the abstract, as one of the seeming laws of our existence. But an architectural competition is not one in real work, in building capacity, but in the presentment of it—the drawing of design. I am not concerned here with the abuses of honesty which have made architectural competitions a by-word; but with the practical futility of instituting a competition in one thing, the designing on paper when the thing to be selected is another, the ability of a church-wright. That there is a practical failure in the method of architectural competition has been acknowledged for thirty years. It clearly proposes a false standard to its competitors, that of pleasing by representation, not by work. So far as they are architects, workers in building, they are degraded by forcing themselves under such a standard. Nor has the Church disguised its opinion of those thus invited to degrade themselves. The conditions of church competitions which have come under my eye are such that they express contempt; they have all the unfairness of the usurer's bond, giving nothing and taking all things — that legal security which the commercial sweater exacts from the victims of necessity. Under such conditions a church competition lately in the south of England proposed to spend £5,000. It obtained 150 competitors, and as six weeks of work would be necessary for each church design, 900 weeks (or about forty years) of useless unpaid work were spent; useless, for of what avail to this or any other church were the 149 rejected designs? The out-of-pocket expenses of the candidates probably exceeded the proposed outlay on the church.

Of course the Church does not realise this view of its competition procedure. It only does what others do: it takes what it can get. There is no compulsion on the architects to compete. So the usurer says: "The borrower signed the bond of his own free will." But the art of architecture does realise the waste, the low ideal, the practical futility of architectural competitions, and refuses to appear in competition churches. Let it be that money payment is never the payment of art, that the exercise of a man's faculties in a noble purpose is its own reward, that church design is such a purpose, and so is never wasted. So doubtless the Church thinks; but then let the Church honour this exercise. Does it do so now?

It has been too seldom that the proposer of church-building, rejecting the evils of competition and the status of professional business, has proceeded on the common-sense of selecting an artist whose art he perceives to be one of a personal ability in building. Still not seldom have parson and architect with one soul desired and spent themselves on the best expression of church-building that lay within their means; with such in its truest sense *laborare est orare*. But there succeeds to this inheritance another incumbent: is there any security that he will honour the good work done? It is notorious that the incoming parson has no scruples as to the *art* of the church to which he succeeds. He can transform it and ruin it as he chooses, feeling quite unbound by his predecessor's selection of architect; handing the building over to commercial firms or others to add furniture, glass, screens, and such like, which by the nature of their making cannot but be an insult to the real work of an artist. I know a case where the patrons of a living, the lay-rectors, had the scruple that what was well begun should not be ruined by irresponsible additions. They forbade the introduction of manifestly vulgar and manifestly unsuitable fittings into their church. But the incumbent was wishful for what was denied him, and went on a journey. The prohibited articles were smuggled into the church in his absence, so that he might have, but not know, and on his return plead the six months' use. Now, in thus getting furniture for his church by what in plain language was a trick he was applauded by his brethren, and the reason is clear. The patrons' control was considered unreasonable, for the architectural *art* of a church is in no honour compared with the ecclesiastical *style* of its fittings. However contemptible the art of such things, they were offered as gifts to the church, their donor had paid money for them, and this money's-worth of ecclesiastical style could not be refused. Such donations are the passport to the title of "good churchmen." I am not speaking without authority, for in the last six weeks has not a dean publicly declared that only subscribers to its decoration can be regarded as having any interest in a cathedral? And how often do we not hear it said by our clerical friends: "Yes, we in the charge of our churches know the value, and wish the religious expression of real art. But what are we to do? Our people will give us what they can see in the shop window, or pick out from a tradesman's catalogue. We know such things are contemptible, but can we refuse them?" No, you cannot refuse if you do not feel that religion is hurt by a false art of church-building and church-fitting; if you think it no great matter that the artist cannot enter a church except with repulsion, that he must hide out of sight of the chancel and come to the altar with averted eyes. Yet there is a larger body than, I think, the Church understands who are sensitive, whose consciences are troubled when they see the decorations of a church to be very much those of the restaurant or music hall, redolent of money and display, but with no heart, truth, or faith in them.

Ecclesiastical styles have made the cloak which has hidden this want of reality in our art, but that cloak is slipping away and showing what is beneath. Sixty years ago, in the fervour of the Gothic revival, while it was believed that the forms of ecclesiastical architecture made religion art, and when in this conviction was done earnest work by Pugin, by Street, Burges, and Butterfield, then churches could be built and decorated in Gothic style, expressing this conviction, and not merely as business forms. But how is it now? The life of Revival Gothic is manifestly over. Its forms are an avowed professional stock-in-trade, and can be manufactured at so much per foot by any and every firm of tradesmen; but the earnestness, the self-respect of architects will not have such things. For it is perceived that the truth of art cannot be expressed in copies, in stereotype, in what can be stamped out by a machine—human and mechanical—but can come only by the emotion of the artist, and in the experimental creation that emotion fructifies. We have made a dead Gothic; have made caricatures, because by the nature of things living art was impossible to us. And caricatures, when seen to be such, what can they be in a church but offensive? The reproduction of Romanesque, Gothic, and Renaissance church-building, the nearer it gets to the originals, the more exact it is, the more machine-like—by that very quality has become the more false in spirit, the fouler to the taste, the less fitted for religious use.

There are our old churches, where "restoration" has made this offence the greatest. And I speak here not only of the actual removal, but of the swamping of the true religious work of our forefathers, the contempt of it which our church additions show, so that in the last fifty years there has been wiped out that religious expression of the Gothic centuries (and of the seventeenth and eighteenth too) which in every church of our land forged a *catena sanctorum* —surely of value to the English Church—but now broken, its real links taken away and base metal substituted, so that there is scarcely a church left to us in which seven-eighths are not substitutions. The accomplished author of "Walks in Rome" speaks of what was till lately the best-preserved Saxon church in England, but now, he says, a "mere rebuilding" with "all that vulgar tiles, revolting glass, and coarse woodwork can give liberally bestowed." Of how many thousands of our churches must not this be said? Is there no other use of our old architecture possible but to make it a block upon which to exhibit the failure of Modern Gothic? When Edmund Street's nave to Bristol and Sir Arthur Blomfield's nave to Southwark are seen to be cold graceless works, doing no honour to the old work, is it proposed to add the same sham dead thing to Hexham?

This is no practical use of our present-day art of architecture, to bid it be untrue to itself and think not of its real function of building, but only how it can caper, as it were, and gesticulate in mimicry of artists long dead; now with cusps and crockets, and now with pilasters and friezes, now with traceried reredos or canopied baldachino, now with winged archangels and haloed saints, and now with *Amorini* and cherubs, pretending to emotions which it feels not and cannot feel, because they do not grow of its present needs. I believe that there are among churchmen, lay and clerical alike, many —I had almost said all who have thought on the matter—with the feeling that there should be building by the Church other than these forgeries of ancient church decorations, this burying of the history of the English Church, its love and its art under the ashes of "restoration."

I believe the haphazard system by which our churches get their building and decoration is largely the reason that this feeling has not prevailed to produce a true church art of practical building. A definite authority in the Church, advisatory and suggestive, with at least that standing which would have enabled it to review all church-building and all church-decoration, would have done a great deal to prevent the abuses of open church competitions and the neglect and contempt of existing church fabric, whether new or old; would have set at least a value on real art, by stating knowledge of its existence, so that it could not be removed or disfigured as a matter of course to make way for a rich man's gift. But the real hope for architecture—that it may again arise in the service of religion—does not lie in any established authority, but in a change of feeling; in the growing conviction that church-building should meet the practical necessities of accommodation with the common-sense materials of good building, and not with any copying of ancient models; for revivals and restorations are mimicking forms, but denying the spirit—the hypocrisy of art—and the hypocrisy of art is offence to religion. What was bidden to the feast would not come, for it was busy with ecclesiastical style, professional success, and commercial profit. Now art must be compelled to come in out of the highways and hedges of plain practical building and the plain honest love of the artist.

Proposed New Baths and Fire Station for Birmingham. — A Local Government Board enquiry was held last week with reference to the application of the City Council to borrow £12,100 for purposes of public baths, and £7,500 for the erection of a fire station in Saltley Road. There was no opposition.

Bricks and Mortar.

APHORISM FOR THE WEEK.

"The most difficult thing in all works of art is to make that which has been most highly elaborated appear as if it had not been elaborated at all."—WINKELMANN.

Our Plates. PARTICULARS of the mountain church design by Mr. R. Wynn Owen will be found on page 197 of the present issue. The bird's-eye view of numerous tall buildings on Manhattan Island, New York, forms part of the illustrations to the article on high office buildings which begins on page 183. Mr. Baillie Scott's design for the drawing-room at the Palace, Darmstadt, was exhibited at the Royal Academy in 1898. It is an admirable piece of work.

Welbeck Abbey. ON Friday morning last the Oxford wing of Welbeck Abbey (the Nottinghamshire residence of the Duke of Portland) was destroyed by fire. Extensive alterations were being carried out, and there was a large staff of men employed. The fire was discovered shortly after two o'clock, the flames being noticed by the night watchman. The alarm was immediately given, and the two steam fire-engines upon the estate were brought into requisition, and Sheffield was asked by telephone to send on one of their engines. This was done, a special train being employed for the purpose. The Worksop Fire Brigade was also summoned, and promptly responded to the call, but the flames spread with alarming rapidity. The work of the brigade was rendered very arduous by a strong breeze, which fanned the flames and threatened the other portion of the Abbey. All efforts were therefore concentrated upon limiting the area of the fire. It was not until eight o'clock that the fire was got under. The whole of the upper portion of the Oxford wing, which constituted the new storey of the south front, was destroyed. All the valuables and works of art were, fortunately, removed during the progress of the fire, great assistance in this direction being rendered by the miners from the neighbouring colliery. The damage is estimated at £25,000. Happily the magnificent Gothic Hall was not injured.

The Simplon Tunnel. AT the Simplon Tunnel there are now employed 3,000 workmen on the Swiss side and 2,500 on the Italian side. Nearly all of them are Italians. Two tunnels are being bored instead of one in order to avoid the possibility of collisions, the distance between the tunnels being 17 metres. The work must be finished, according to the contract, on May 13th, 1904. For every day required beyond that date, says the "Times," the contractors would have to pay £200 to the Swiss and Italian Governments; for every day saved the company will receive £200. The Gothard Tunnel, which is 15 kilometres long, took twelve years to bore. The Simplon, which will be 20 kilometres long (the longest in Europe), is to be completed in five years and a half. Nearly 3,000 metres have been completed on the Italian and nearly 4,000 on the Swiss side. The engineers guarantee that the junction of the two borings will be mathematically exact. The work is carried on by drilling and blasting two apertures, one at the top and another at the bottom of the tunnel. A squadron of workmen clears the upper aperture, standing on the diaphragm, which separates them from the lower aperture, in which another squadron of workmen is similarly employed. When these two apertures have been completed for thirty or forty yards the intervening diaphragm is blown up with dynamite, and the tunnel attains its full dimensions. It is then lined with masonry made of square blocks of stone cut from the rock excavated. About 1,200lb. of dynamite is used every day. The fragments of rock which are not needed for masonry are carried away by train and used to prepare the embankment on which the trains will mount up to the mouth of the tunnel.

St. Paul's Church, Bristol. A BAZAAR was held last week in aid of the scheme for restoring and re-seating St. Paul's Church, Portland Square, Bristol. The church was built more than one hundred years ago, and was opened for public worship on September 22nd, 1794. The pews were re-arranged about fifty years ago, but otherwise remain unaltered. Time and use have rendered the internal fittings obsolete, and they show manifest evidences of general decay. St. Paul's is regarded as probably the only church in Bristol where the worshippers are still seated in high pews with closed doors. The flooring, too, is much worn, and in some places quite decayed. It is proposed to re-floor and re-seat the whole of the nave and aisles, to remove the side galleries, re-construct the west end gallery, provide new heating apparatus, and thoroughly clean, paint, and decorate the whole of the interior of the church. The committee which has taken in hand this work are guided in their plans by the advice of Mr. G. H. Oatley, F.R.I.B.A., and estimate that about £1,400 will be spent in carrying out the scheme. In placing their case before the public, the Improvement Committee point out the marked change which has occurred in the character of the district in which the church is situated. The fine houses in Portland Square, formerly occupied by some of the best families in the City, are now, for the most part, turned into factories.

Eastbourne's New Mayor. AT a private meeting last week of the Eastbourne Town Council it was unanimously resolved to invite Alderman Strange to accept the office of Mayor of the borough during the ensuing municipal year. There are few men more widely known in the Eastbourne division of the county than Alderman Strange, who for about sixteen years has been a member of the Eastbourne Town Council. His interest in the various questions which engage the attention of the municipal administration has been reasonably comprehensive, but his speciality is sanitation and all connected with the cleanliness and health of the town. He has long held the position of Chairman of the Sanitary Committee. He was generally designated for the Mayoralty last year, but gave place on that occasion to Alderman Keay. The unanimous nomination of Alderman Strange for the Chief Magistracy this year is a happy circumstance, as his occupancy of the chair will coincide with the visit of the Congress of Public Health to Eastbourne next year, at the Aberdeen meeting of which body Alderman Strange was one of the Eastbourne representatives.

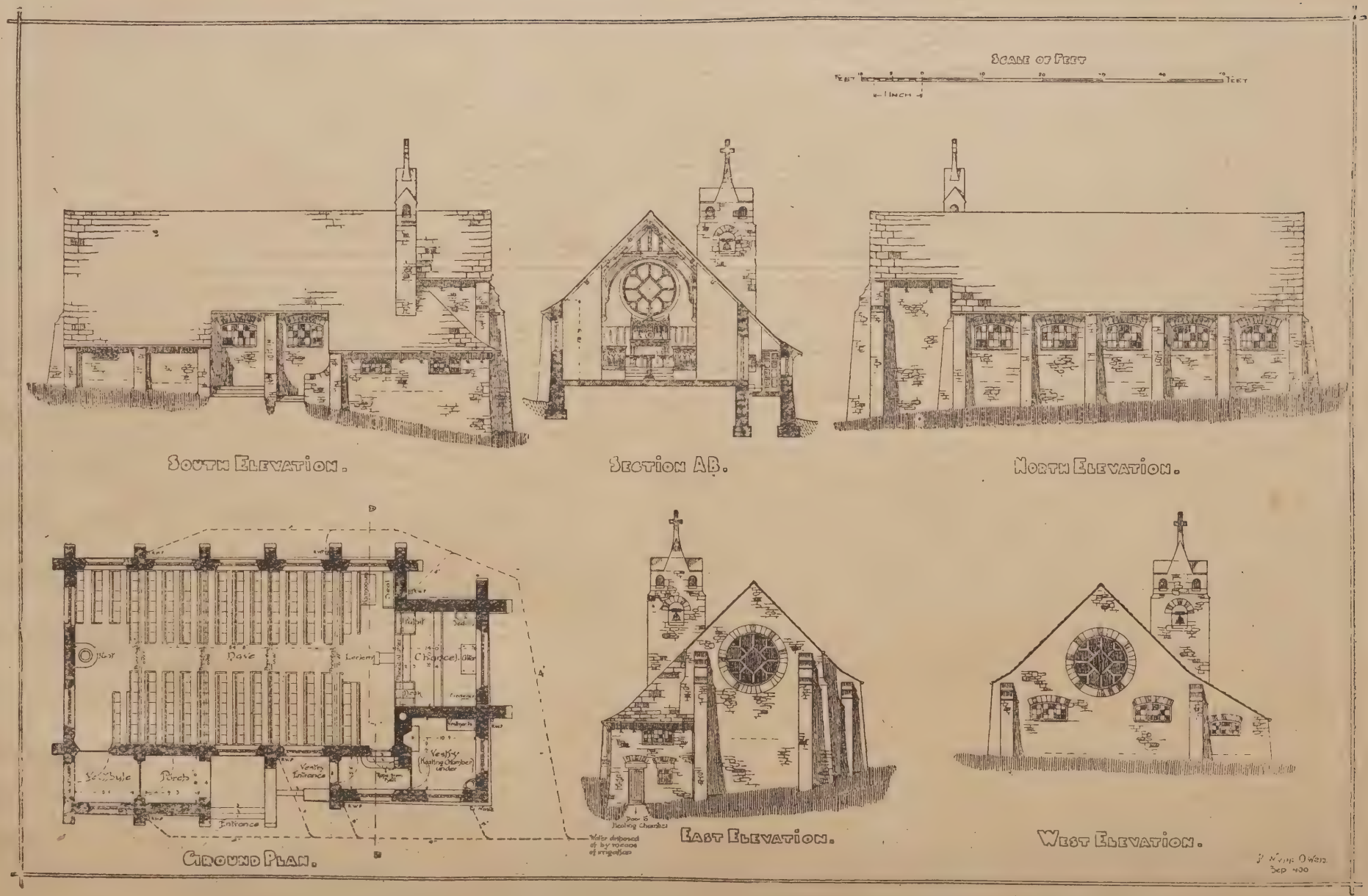
Cheltenham's Winter Garden. THE Cheltenham Town Council had a lengthy sitting last week with regard to the proposed alterations to the Winter Garden, in order to provide accommodation for social functions during the winter season, the Assembly Rooms, which for many years past were utilised, having been demolished. Plans and specifications, estimated to cost £3,500 for structural work, and heating, lighting, decoration, plants, platform, &c., to the cost of £1,950, were submitted for approval, with a resolution that application be made to the Local Government Board for sanction to borrow £5,500 to defray the cost. This gave rise to an animated discussion, in which it was argued that the building, which originally cost £26,000, should come down altogether, and the committee was roundly criticised as having been unbusinesslike. Eventually the committee's minutes were adopted.

Spring Gardens Chapel, Westminster. THE origin of Spring Gardens Chapel seems to be somewhat obscure and uncertain, says the "Daily Graphic." Spring Gardens took its name from a powerful spring of water which arose on its site, and was probably one of the feeders of the great canal now represented by the ornamental water in St. James's Park. The spring appears also to have supplied one of those fountains which were among the detestable class of practical jokes which delighted people in the seventeenth century. Examples of these fountains still exist at Chatsworth and elsewhere. They consist of a kind of concealed trap, which one treads upon unawares, starting a fountain that rises from the ground or falls from an imitation tree. Spring Gardens appears to have been partly built over about 1730, though it is not quite certain how much of it remained as a garden down even to that period. The Huguenot Chapel was destroyed by fire in 1726. The chapel was rebuilt very shortly afterwards, and used as a chapel-of-ease to St. Martin's Church. It has not been used for many years now; but it is not, as a contemporary recently stated, used as the depôt of a wine merchant. The wine merchant has his office in the vaults below, and this is probably the use to which they have been devoted from the first, as was the case with many chapels in London. Spring Gardens Chapel now belongs to the Admiralty, and with the enlargement of the new buildings of that department will no doubt disappear.

Art Galleries. MR. A. G. TEMPLE, F.S.A., the Director of the Guildhall Art Gallery, read a paper on "Art Galleries in Relation to Public Libraries" at the recent meeting of the Library Association at University College, Bristol. At the outset Mr. Temple emphasised the usefulness of one institution to the other—the help the literary student derived from a properly-organised gallery, and the material aid afforded to the art student by free access to a good library. Books, he argued, should take precedence to pictures as a public requirement, inasmuch as the uninformed mind was unable to duly appreciate the fine art of a picture. Next he pointed to the refining tendency of all art, whether it be painting or statuary; and then spoke of the galleries already established throughout the country, and of their mode of maintenance, drawing particular attention to the Walker Art Gallery at Liverpool, which he termed one of the most prosperous of the provincial galleries. An interesting feature of the paper was Mr. Temple's advocacy of the establishment of art libraries. The lecturer concluded with the practical step of naming a list of works which might form a serviceable nucleus for such a library.

Hanover Square, London. HANOVER SQUARE, W., is in a state of transformation. Not long ago it was announced that a pile of flats would be erected on the site of the old Hanover Square Concert Rooms, until recently the home of the St. George's Club, which has just been demolished; and now the famous Harewood House, which was designed by Robert Adam for the Duke of Roxburghe, has also been razed to the ground. The contents of this mansion included a magnificent collection of china and other curios, which was originally formed by Lord Harewood's elder brother, the amiable Beau Lascelles, who died in 1814. Nor is this all, for the Royal Orthopædic Hospital, which has now its headquarters at No. 15, next door, is being rebuilt in Hunter Street, Brunswick Square, so that there is every probability that this fine old building, with its curiously-painted ceilings and quaint carvings and wainscoting, will before very long be numbered with the things of the past.

A City Church Organ. RESPECTING the church of St. Lawrence Jewry, Gresham Street, E.C., a correspondent writes to the "City Press" pointing out that the old organ was built by Renatus Harris in 1687, and, instead of the contents of the instrument as now standing representing the original, the interior—that is, the actual organ—is entirely new, and was erected as lately as 1875. As regards the case, that was brought out further into the church, and the gallery supporting the organ was likewise extended and added to. The large side fronts with "towers" and gilt pipes were then also added to the main or great case. On this work the sum of about £1,600 was expended. The depth of the original main case was limited—as with all similar old organs—to about three or four feet from the front to the back, and this one extended only as far as the carved side panel.



FIRST PRIZE DESIGN FOR A MOUNTAIN CHURCH, WELSH NATIONAL EISTEDDFOD, 1900. By R. WYNN OWEN.

LIBRARY
OF THE
UNIVERSITY OF ILLINOIS

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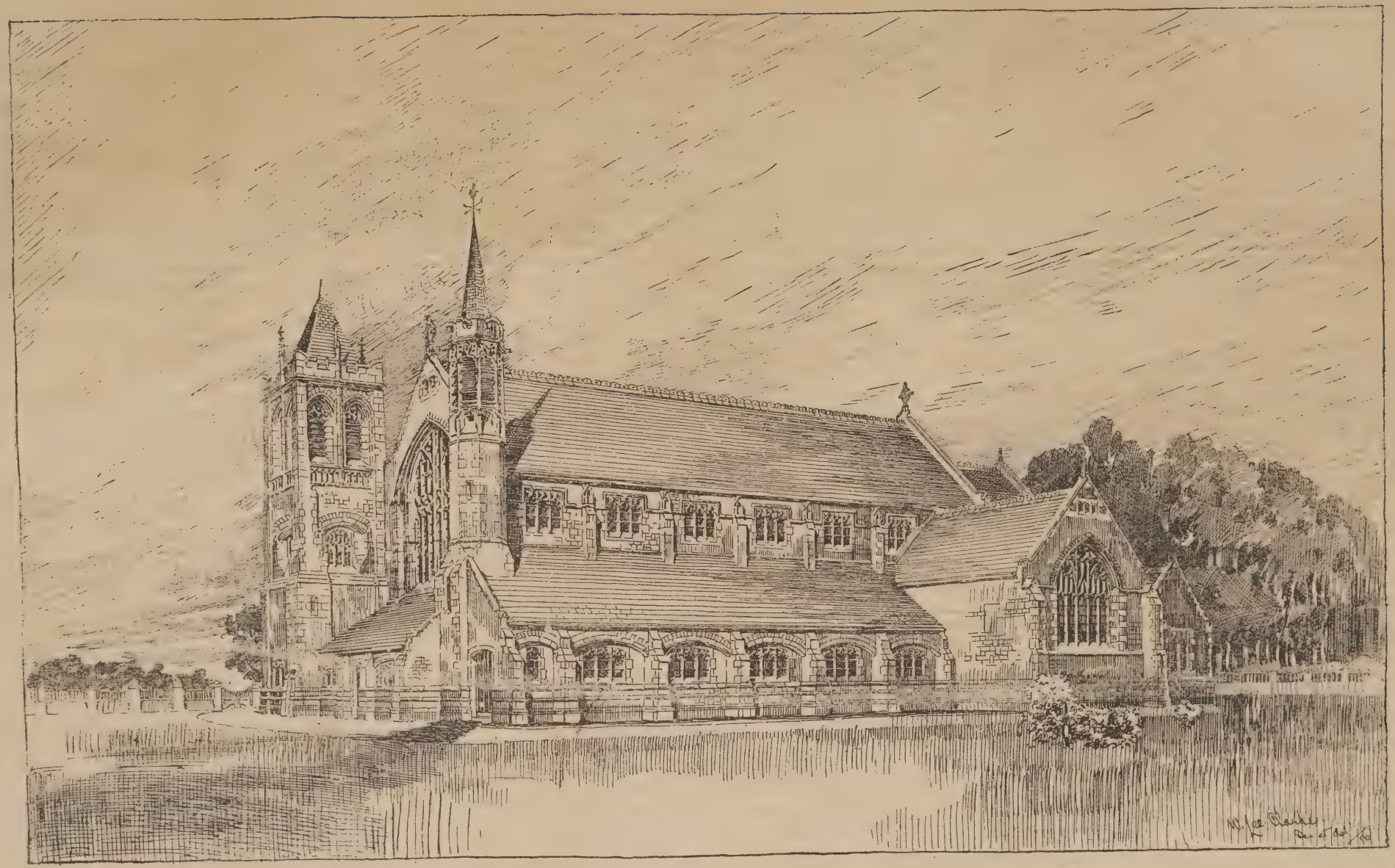
* Johnston Building. † Commercial Cable Building (in skeleton state). ‡ Bowling Green Office Building (in distance). § Manhattan Trust Company Building (upper part in skeleton state).
** Manhattan Life Building. †† American Surety Building.

VIEW FROM MUTUAL LIFE INSURANCE COMPANY BUILDING, NEW YORK, LOOKING SOUTH-WEST. (See p. 183.)



DRAWING-ROOM AT THE PALACE, DARMSTADT. M. H. BAILLIE SCOTT, Architect.

LIBRARY
OF THE
UNIVERSITY OF ILLINOIS



DESIGN FOR A SUBURBAN CHURCH. By W. Lee Clarke.

STAINED GLASS.*

BY SELWYN IMAGE, M.A.

THE important, many-sided, exhaustless subject before us this evening is the relation between art and religion. I have been asked, however, in this short paper to deal specifically with a single, practical aspect of this relation, and, as far as possible, I shall confine myself rigidly to the one thing set me. I have been asked to speak to you about stained glass; and that, certainly, is a matter wholly relevant to the question we have in hand. For is there any form of religious art more popular, more prevalent, than this of stained-glass windows? . . . . Again, it is an exceedingly permanent form of art. A stained-glass window, provided violence is not done it, is practically indestructible; it is not a thing of a day, it will last for ever, and in its qualities of tone and colour will improve more and more by the action of time upon it. This being so, I need hardly labour the point that in putting up a new window we ought to have all our wits about us, taking pains to understand as far as possible the sound principles of the business to which we have set our hands, prepared for no little sacrifice in securing a thoroughly good work, and not in a hurry and fidget to have something or another set up, contented if it is at once showy and attractive. . . . . A great number of new windows, as I have said, are every year erected in the country; and, to tell the plain truth, a considerable number of these are entirely uninteresting and worthless, and had far better be out of existence.

The reason of this unfortunate state of things is that so many of the people who have the management of affairs in their hands do not understand the principles and the proper conditions of what they are about. My effort this evening, my lord, will be to try and set forth in plain words two or three of these principles and conditions, as at all events they appear to my own mind after some experience. That I have the whole secret of the matter to give you I do not for a moment pretend. That I can hope to carry you all along with me I do not for a moment dream. But I do believe that what I have to say to you has—well, has reasonableness in it, and is worth at least some candid consideration, even where at first sight it seems a little too assertive and vexatious.

What a Stained-glass Window should be.

In the first place, then, let me say this. A stained-glass window in a church ought to be, and ought to be regarded as, a piece of individual fine art, just as a picture is regarded by a genuine connoisseur, who buys it for the enrichment of his house, and will have nothing in his collection but what from the artistic point of view is worthy to be there. When the matter is put to us in this simple form few will traverse the statement; it sounds like a truism. But here, as often in things more important, it is a truism upon which we have perpetually to be returning, lest, as the poet says, "lest we forget, lest we forget." As a matter of fact, we do not find a large proportion of us, whether clerics or laymen, keenly alive to the principle we are insisting on. See how differently most of us behave in entering upon negotiations for a picture and for a window. If we think of going to the expense of an oil-painting for our dining-room we commission a good artist to paint it for us, and we do not expect to get it too readily or too cheaply. If we think of going to the expense of a stained-glass window for our church we go to a firm that turns this sort of decoration out rapidly at so much a square foot. I am not wishing for an instant to throw any stone at our stained-glass firms. Some of them are my very good friends, to whom I owe many a debt of gratitude, and their work is often most accomplished. But I know that they would be amongst the first to agree with me as to how much they are hampered by the widespread unreasonableness and ignorance of their clients. The clients force their hands both as to time and as to cost. And why? Because their clients in a considerable majority of cases do not seriously in their heart of hearts regard a stained-glass window as an important piece of quite fine art, which only a genuine artist can give them: they regard it much more on the same level as a bit of patterned stuff or wallpaper or floor covering, the design for which, once made, is endlessly produced—to be retailed at the yard for so much. We are not right, but altogether wrong, and we shall never advance a step in this matter until we recognise that a stained-glass window should be considered on the level of a fine picture, and can be produced only under the same conditions.

Three Necessary Conditions.

Three of these conditions are as follows:—First, it must be a genuine artist who designs and carries out, or sees to the carrying-out of, the window. Secondly, we must be prepared to pay handsomely for our window, as we are prepared to pay for any other first-rate professional work. Thirdly, we must have patience, and wait until the work can be matured quietly and thoroughly.

I can well imagine a natural outcry at this point, and some of my clerical friends bristling up with the objection: "Yes, it is all very well, but on these terms what chance is there of getting my church filled with glass before a blue moon?" Believe me, I quite understand the objection; I sympathise with it; it is most natural and practical. My effort to meet it brings me on to my second heading.

After all, a stained-glass window in a church is not a necessity—even from the artistic point of view it is not a necessity; it is a most desirable ornament, no doubt—something after which one should strive and make sacrifices for—but not a necessity. A window filled with plain clear glass, properly leaded into diamonds or squares, is a completely satisfactory thing. It cannot be stated too plainly, or urged too constantly, that it is far more dignified and artistic to have no decoration at all than to have decoration which is bad or paltry. I am thoroughly serious when I say that, supposing we have not the means to put wholly good decoration into our churches, we ought to regard the temptation to put up poor decoration as a temptation of the devil. Leave the place for the time being plain and unadorned; be content to decorate it little bit by little bit, gradually, as you are able; refuse to have anything there in the shape of ornament which you could not take a sound judgment upon and feel that it would be pronounced, of its kind, good. . . . As a matter of historic fact, in the old days—those days to which, so far as art is concerned, most of us look back admiringly—the builders and adorners of our churches again and again deliberately left their work unfinished, because to finish it properly at the moment was not possible; and so in faith and patience they left the completion of it to generations that should follow. One small good window in our church, a specimen of the beautiful art which those who know may look upon with unceasing satisfaction, is a far worthier thing to erect in the cause of religion, as well as in the cause of art, than twenty poor windows, for all their glamour and momentary effect of completeness. A clergyman who realises this fact and strenuously acts upon it has trouble ahead of him—that cannot be denied for a moment; but if he has reasonableness and patience he will gradually win his people round bit by bit to see the soundness of his conduct and to appreciate it; of this, too, I have not the faintest doubt. At all events, in the literal sense he is a martyr in the cause of right and truth; and the day will come, whether he see it or not, in which his wisdom and courage will tell.

New Windows in Old Buildings.

I pass to another point. In a large number of cases stained-glass windows are erected in ancient buildings—churches, for example, built in the Decorated or Perpendicular periods; and even our new churches for the most part are built more or less in imitation of some form or other of historic architecture. It is a prevalent idea that any decoration set up in these churches should be throughout in imitation of the particular style of architecture in which the building is erected; so that glass, for instance, set in a Perpendicular tracery should more or less be imitative in its manner of the glass which obtained when the Perpendicular style was in the ascendant. Now I have no hesitation in saying that I believe this idea to be a wholly false and harmful idea, and that as far as it prevails with us it stultifies our work, rendering it uninteresting and unprogressive. I believe it to be false on two grounds—on the historic ground, and on the artistic. In bygone times, when an Early English builder, let us say, came along to alter a Norman church, he did not copy the Norman work, but he frankly set about the business in his own style; or when a Perpendicular builder came along to alter an Early English church he did not copy the Early English work, but he, too, frankly set about the business in his own style; and so on everywhere, right down to this century. . . . Their work therefore had always about it at any rate this fundamental element of genuinely artistic work—namely, that it was the proper, or natural, individual expression of the feeling and thought of the people who produced it. It had in it, that is to say, the prime cardinal virtue of art: it had *style*, which is nothing else than an individual way of seeing things, and of expressing in the terms of art what is so seen.

To-day's Difficulties.

Now, of course, the difficulty which besets us of to-day—speaking of us in the whole, as an age or people—is this obvious one: that as an age or people we have no one proper, natural, individual style, in which inevitably we build and decorate. The reason of this it would take much too long here and now to try to explain, but the fact is patent and incontrovertible. But though as an age we have no distinctive style, there are plenty of good artists up and down amongst us, each of whom has a style of his own, and is a good artist precisely in virtue of his having it; and therefore, after all, we are not so utterly forsaken and badly off as at the first flush of things might be supposed. My lord, how does this bear upon the special subject of this paper—upon the art of stained-glass windows? Assuredly its bearing is obvious. If, as I said to start with, a stained-glass window ought to be, and ought to be regarded as, a piece of individual fine art, just as a picture is regarded, then when we want such a window we must go to an artist for it; that is to say, to a man with an individual way of seeing things and of expressing them, to a man with style. And when we go to him we shall say: "Give us of your best, give us something stamped with your own character and methods; here is the space that you have to fill, fill it in your own way; never mind that there is other glass in the building which other imaginations have conceived and other hands executed; fill *this* window, which is all that concerns you, with the finest work you are capable of, as the spirit moves you to fill it." In this way, and in this way alone, I venture to assert, shall we be getting into our churches the best that it is in our power to get into them; for in this way, and in this way alone, shall we be following sound principles of art, and—allowing for our altered circumstances—following, too, in the steps of those past ages whose remains so fill us with admiration.

I have purposely confined myself to but a few points suggested by my subject, but they are fundamental points, not too commonly taken heed of. That certain difficulties would arise in trying to act upon them I am far enough from denying; but, after all, that difficulties lie in the way of a particular course is no absolute reason against a man's trying to pursue it. Whatever obstacles may stand against the application of the principles I have been laying down this evening, I believe them substantially to be true and necessary principles, if we wish the art of stained glass to flourish healthily in our midst, and to avail ourselves of its best fruits. And as such I very respectfully commend them to your quiet consideration.

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* Paper read at the Church Congress held at Newcastle-on-Tyne on September 26th, 1900.

Botusfleming Church, Cornwall, has just had a stained-glass window and memorial brass added in honour of Sir William Penn Symons. The work was executed by Mr. Taylor, of Berners Street, London.

ARCHITECTURAL ASSOCIATION.

PRESIDENTIAL ADDRESS.

By W. HOWARD SETH-SMITH, F.R.I.B.A.

THE session of this Association for 1900–1 opened last Friday evening with the annual general meeting, Mr. W. H. Seth-Smith occupying the chair. The minutes of the previous meeting having been read and confirmed, Mr. G. H. Fellowes Prynne formally moved the adoption of the report and balance-sheet of the last session. This was seconded by Mr. Elsey Smith, and adopted unanimously. On the motion of Mr. Hampden Pratt, seconded by Mr. Prynne, a vote of thanks was accorded to the honorary auditors, Messrs. W. E. Davis and E. Greenop. On the motion of Mr. Seth-Smith, a vote of thanks was passed to the Royal Institute of British Architects for its ninth annual grant of £100 to the educational work of the Association. Mr. G. H. Norman, of Old Ford, was then elected a member.

The President then presented the awards to successful winners of the Association's prizes, a list of whom was published on p. 108 of our issue for September 12th. Mr. Seth-Smith then delivered his presidential address, of which the following is a *résumé*:—My first word must be one of congratulation upon the

Prosperous Condition

of every department of our Association. We now number 1,291 members, and no one taking the trouble to read the annual report can fail to observe how great and varied is our work, how well it has been maintained, and how rapidly developed. There has been uninterrupted progress in the growth of our membership from the first. That prosperity during the past two years has beenin no small degree due to the enthusiasm and unwearying exertions of the retiring President, Mr. George H. Fellowes Prynne (ably assisted by the energetic Committee and other officers). His admirable epitome of the history of our educational work in the past, as given in his first presidential address, relieves me of that difficult task. His devotion forms a record surely even in the Architectural Association, to serve which nearly every well-known London architect, and many in the provinces, have cheerfully given so much time, thought, and experience. I hope the Association may before long be in a position to realise his workshop scheme. It is only want of space which has so far hampered what our students much need in this direction.

It is my duty to record our sense of loss in the death of six of our members during the past session. On the whole the students have shown commendable zeal by supporting all branches of our work, but it is necessary to warn some that no reading at home will make up for irregular attendance at the studio and the classes. System is as essential to study as to practice, and must be adhered to if we are to become proficient. Our Registrar reports that when business is brisk in London he has no difficulty in finding a good berth for every well-equipped young man when he emerges from the student stage; but the register contains too many who lack a knowledge of construction or the ability to design, and who realise too late their neglect of precious opportunities for making themselves competent assistants, and, in due course of time, capable architects. On the other hand, I would advise those working in the classes not to slacken their home work or to relax their exertions as the session advances; some students commence with enthusiasm, but as the session progresses their earnestness appears to decrease.

Our School of Design

offers the greatest attraction and the most unique opportunity for cultivating skill and taste. The subjects, as you know, are set and the designs are criticised by a large number of the most artistic and able architects in London; nor can I refrain from urging our students never to miss the spring or summer visits, by which we arrange to see the best old work as well as the most important buildings in progress of erection. Can anything be of greater value to all of us, old or young? The power of giving public expression to our thoughts and so of eliciting the ideas of other men is one to be cultivated by every young man, and members will find a fitting opportunity for this side of their education in our Discussion Section. They will at the same time be surprised at the amount of knowledge they derive from the debates. I scarcely think our A.A. Sketch Book, in which the best measured work of the members is published in quarterly parts, and which makes such a valuable book of reference in any architect's library, is sufficiently well known. We shall be glad if some of the members are disposed to encourage the energetic honorary editors, Messrs. W. A. Pite and W. G. B. Lewis, by subscribing to it this year. The library needs better support. Students should not be afraid of borrowing certain books on account of their large size.

Perhaps many of our young men are too busy in their evenings to attend more frequently than they do the papers read to us by the best men on the various subjects selected. Let me say they little realise their loss every time one is missed. Such papers generally represent the experience of a lifetime compressed into an hour's discourse and given gratis. The generous way in which these Esaus part with their birthright to their hungry younger brethren often astonishes me.

Gentlemen, we are entering upon the session which will see the commencement of

The Twentieth Century.

It is the privilege only of a very small minority of mankind to experience the emotions which such an occasion must inspire. To a much smaller number has it been given to review a century such as that to which we bid farewell. Shall we be safe in defining true progress as the increase of the sum of human comfort and happiness? If so, surely the past century has seen more progress not only than any previous hundred years, but perhaps than all previous centuries put together. The root of this progress has been the practical application of the central truth of Christianity—namely, the universal brotherhood of mankind—and from this root has sprung universal education, and to education may be attributed all the splendid achievements of modern science. But amid this phenomenal activity in science, has art been asleep? or has she made any corresponding contribution to human happiness? Has it been a century as fertile in the production of poetry, painting, sculpture, and architecture as in the discoveries and inventions of science? Perhaps not. This is an interesting inquiry, and my own belief is that the intellectual activity of the century has shown its influence in art, as well as in science, though not in the same degree. A century which has produced the great and essentially English water-colour school and such truly poetic schools as are best represented by Corot and Millet in France, and by some perhaps equally great Dutch and English artists, notably Turner, cannot be said to have been indifferent to art. Poetry and architecture, too, have been active enough in all conscience, even if wanting in concentration and consequent power. Music may be said to have triumphed; we are fast becoming a musical people.

Science and Art.

The faculties and habits of mind which respectively develop science and create art are essentially different; the one class of mind is objective, the other subjective. The one is inquisitive, familiar and practical in her friendship with Nature, the other is reverent and imaginative. The two classes of mind, both Nature's offspring and complements of one another, may be living their own lives side by side in an age in which the mind of the vast majority of men is centred upon science and its material benefits, but that age is in the nature of things unlikely equally to encourage, though it may pave the way for, the fine arts. Do not misunderstand me here, art is not a rival of science but it is a higher law regulating, and a feeling pervading every invention. We are on different ground, however, directly we deal with the applied art of architecture. Here we shall find that science has always been the origin of its greatest departures. The arch and its multiform developments and resultant features are ancient witnesses to this truth. If we consider, moreover, the extent to which education and sanitary science have multiplied and specialised the buildings which we are now called upon to design, we shall recognise at once how enlarged are our functions, and how likely it is that the twentieth century will see still greater developments. As regards

Monumental Architecture,

the imperious command of one great patron has given place to the more imperious directions of a co-operative body themselves merely fiduciaries of the will and purse of the community. But the wants of this co-operative community, if not so colossal, are infinitely more numerous and varied. They call for town halls, municipal offices, colleges, schools, polytechnics, hospitals, asylums, workhouses, electric lighting stations, baths and washhouses, &c. Surely, gentlemen, there is no room for disquietude as to the future of architectural practice if our training is equal to the demands of the public and if the policy of our profession is broad and well directed. All these are modern requirements, and show how really changed are the conditions of our work, how varied and how complicated that work has become, and how impossible it is to put the hand of time back, or to depreciate the influence of science. Why should we struggle to cast the mould of future architecture to the form of our own narrow and short-sighted prejudices? Our duty is clear and unmistakable—namely, to accept, and to accept joyfully, the altered conditions of our age and to do what our hand findeth to do in a spirit of devotion to the present and confidence in the future.

Taking its origin in the knowledge of building construction, and inseparable from it, the essence of architecture is nevertheless

Beautiful Design,

design full of thought and feeling. This differentiates it entirely from mere construction, however rude or however scientific. This constitutes our art. Design is to building what religion is to life, what poetry is to language—the indefinable and spiritual, the changeless element, the one thing needful. It leaves the prose and business of our calling essentially what they were, every department of our buildings worthy of our close and vigilant care, but makes us conscious of a higher order of desire and affection that guides us through all these and lifts us above commercialism. The latter is the instinctive faculty common to all, the former (art) is the conscience. The man who has this spirit is alone the true architect, and the ideal society of architects would be one from which all others would be excluded. It is the decree of providence, however, that both shall grow together, in spite of our rough tests, which may, it is true, do much, but can never be infallible. We need not regard engineers or builders as serious rivals in our field so long as we are true to this ideal and insist as far as practicable on its possession and its cultivation by every man who bears the title of architect.

Allow me to utter a note of warning to our students against pinning their faith exclusively to any of those schools of thought which lack the sense of proportion and tend just now to lead us away from the broader fields of systematic study, schools which on the one side insist that we should be content to be craftsmen and builders, and on the other hand appear to regard draughtsmanship and design as the be-all and end-all of an architect's training. None can know too much of construction, none can draw too well, but bear in mind Sir Joshua Reynolds' remark: "How difficult it is for the artist who possesses this facility (of accurate and rigid declination) to guard against carelessness and commonplace invention is well known." How frequently we see this truth illustrated in Royal Academy pictures by the cleverest men. Then there is the

Non-traditional School

insisting that we should divest our minds of the forms of past work and invent our own. All these schools have originated in the gross neglect of training in draughtsmanship in some, the equally egregious want of practical knowledge or a slavish copying of ancient architecture in others. They are each emphasising all important truths, and wherever great truths are enunciated, be they only a fraction

of *the* VERITIES, we should receive them gladly. As a matter of experience it will be found that the full truth lies somewhere between these extremes, and that the best architect will be both a wise and experienced builder and a good draughtsman and designer. If he be great enough to add archæology and other subjects he may be a happier man but not necessarily a better architect.

It is not to be expected that many men should be equally strong on the scientific and artistic sides of our calling, nevertheless there is no excuse for the existence of two classes of architects which specially bring the profession into disrepute, on the one hand those who are grossly ignorant of structural work and confine themselves to the study of design from the artistic standpoint, and on the other hand the men who have technical knowledge but who ignore architecture as an art. It is difficult to say which of these classes does the most harm.

The keynote of the best work of our younger men is enthusiastic love of beauty in form and colour (irrespective of the amount of remuneration its pursuit may bring), thought as to the capacities of the material in hand, and individuality in feeling. It is fearful of the pedantic and the commonplace, faults so often associated with too academic a training. Can we wish for a better spirit? Personally I have no fear of the future of English architecture on the score of pedantry. Our lithic language savours perhaps *too* broadly of our national characteristic, individual freedom. We are apt to forget how much our literature and even our fine arts owe to exotic sources. We can surely afford to be as tolerant professionally as we are nationally and imperially.

The antidote of academic uniformity lies in the

Study of Nature.

The man who keeps his mind in harmony with Nature will have recorded, however unconsciously, the great principles underlying stability and composition everywhere observable in Nature. These principles, violated as they so often are in our buildings, will be instinctively detected and condemned by a true artist, to whatever branch of art he may belong. An architect imbued with these principles will not advise his clients to erect a severely classic style of house in a very rural spot. He will select a more picturesque type as more harmonious with its surroundings. It is the withdrawal of all Nature's conditions and restrictions which makes a more formal and dignified style more suitable to city architecture. Of course if your building approaches the scale of a palace and the interval between it and unfettered Nature can be disciplined by formal and architectural gardens it is another thing. So far our sense of fitness has been so true that English country houses are renowned for their appropriateness to their environment. It is this contact with Nature, moreover, which, with her infinite variety appealing to the equally diverse character of the human mind, will preserve our individuality of taste. I submit that it is the neglect of this study in France which has done so much harm to its rural architecture. The French architectural school is one of exclusively civic and monumental artists. It is at home among man's creations, it appears to have no sympathy with the works of Nature.

On the other hand, Mr. Warren in his paper read before the last annual convention of the American Institute of Architects, on the influence of the French school of design upon architecture in America, most justly commends this school for its insistence on composition, its excellence of proportion and mass, and its mastery of monumental planning. These points are admirably exemplified in the two new palaces in the Champs Elysées, and we shall do well to study them carefully.

A notable feature of our people has always been to preserve a

National Character

in all our institutions and in all our schools of art, while freely adopting such features of other systems as commended themselves to us. It has always been so with our architecture; it is so to-day; and this consideration warrants confidence that our architectural profession will not blindly follow any school, but evolve one of our own.

It is upon a wide basis that the A.A. curriculum has been founded and has worked so well. The better education of the profession is our mission. It is a mission which finds support and sympathy from every school of thought among us, and it may be safely said the A.A. has not an enemy, scarcely a critic. Our watchword has been, and will I hope ever be, *continuity of policy and progress with the times.* How are we fulfilling our mission? Our educational work is, as you know, conducted wholly in the evening, there are 200 students attending our courses, and about 200 more of our members may be said to be still in the student stage of their career.

The characteristic of our Architectural Association seems to be, to use the pithy expression of a popular past-President, *the power to enthuse.* But enthusiasm, like others among the best of of things, is a dangerous endowment unless well directed; it has led many a man to be impatient of that strenuous effort for the mastery of the prose of building which is so essential, but this patient and sometimes irksome work will alone give him a solid satisfaction, without which enthusiasm for art must wither and die in the failure of his practice. As to the need for the study of the history of design—a point much debated just now—I venture to reiterate the words of the reader of an able paper two sessions ago. Mr. Reginald Blomfield then said what I believe to be profoundly true, and I quote him because we all regard him as a good architect and because I cannot put the thought into better language: "In architecture, the oldest of the arts, we can only consider ourselves on safe ground so long as we keep in touch with what has actually been. The days of the craftsman working independently, yet in unconscious unison, ceased when the choice of styles arose. He tasted of the tree of knowledge, and henceforth to his knowledge of the craft had to be added the responsibility of conscious judgment if he were to undertake—I will not say architecture, as it might be thought to beg the question, but building of any sort. Because, in any building nowadays, a man has to use one method of expression in preference to another, and implicitly in this there is raised the whole question of selection. Now this responsibility proved too much for the simple craftsman, as you may see from the blunders in design which abound in more ambitious Jacobean works; and it was only a question of time how soon there should arise the man who had sufficient training and intellectual capacity to enable him to discriminate between good and bad, to enable him to grasp the

Logical Coherence in Expression

which is an essential element of architecture. As soon as such a man arose, the matter was settled for good or bad. The architect ceased to be a craftsman in the technical sense, and what might be lost in craftsmanship was assuredly gained in architecture. I think therefore that this critical function of an architect, this detachment from the actual details of craftsmanship which chafes the enthusiasm of some of by no means the least gifted of our younger men, is of the very essence of his work. His craftsmanship must be of a wider range; it must embrace full knowledge of the past; it must rest on a constant habit of analysis of the best methods of expression in building."

One thing on which all who are experienced in the training of the human mind are agreed is that a good *general* education must precede special knowledge. This is an axiom which guides your committee in their educational work. It finds expression in the large number of subjects we provide, all of which we consider important every architect should be acquainted with. It is essential that our curriculum should aim to be comprehensive, to lay a good foundation of general architectural education which will fit men to adapt themselves as readily as possible to the special line they may wish, or be compelled to adopt. If your foundation is not sufficiently deep and wide, you will sooner or later show signs of settlement.

So much for our successful past and hopeful present. I will now with your kind indulgence deal with what I am persuaded we ought at once to take in hand. I refer to the establishment of

Day Courses

of instruction, and I will give you reasons, which I think will commend themselves to you as indisputable. Not that I claim originality for this idea. It has, like almost every other subject which affects the profession, been discussed many times by your committee, but dismissed for the time being mainly on financial grounds.

In the first place, our system of pupilage, necessary and excellent as it is in principle, is still admittedly and radically faulty from the standpoint both of the master and of the apprentice. The former is too busy to undertake the pupil's education; it is as much as he can do to give him the run of his office, to allow him to spoil material and waste his paid assistants' time in gleaning what information he can. The latter finds himself irrevocably bound to serve at least three years, even if he discovers within the first few months that he has mistaken his vocation. A two years' full course of study in a *purely architectural college controlled entirely by experienced architects* would obviate both these objections to the present system without in the least endangering it, and I am sure that most architects in practice, and probably every Fellow of the R.I.B.A. would, as an encouragement to a movement which would secure useful servants from the first, not only agree to accept a rather smaller premium, but probably also to a lengthy apprenticeship. The pupil, on the other hand, would as a rule discover during his first two or three terms in such a school whether he were fitted for the work, and would be free to drop its further pursuit without loss of time or premium. It would be a truly advantageous arrangement to both parties.

New Premises.

Another cogent reason is that we already have the premises needed for a start, most of the apparatus and some of the staff, and that consequently we can run the school economically, and in about three years' time it ought to become a substantial source of revenue, enabling us to do what we have of late proved we cannot do on our present income—viz. build or rent premises to suit our ever-growing needs and in a neighbourhood worthy of our position. If we fail to seize this opportunity, others will certainly do the work which I believe to be the great mission of this Association. With the exception of the Victoria University at Liverpool King's College is, I believe, the only institution in this country which has an architectural day school, but King's College architectural course appears to be a department of what is really an engineering school. We should have no difficulty, I am sure, in obtaining guarantees of financial support for three or four years, during which we must expect to make a loss. This was the method pursued so successfully in 1891 in launching the present curriculum.

Our standard of training is far behind that of other countries. The paragraph in Messrs. Florence and Balfour's report of the drawings exhibited at the Paris Exhibition is not flattering to our English pride. It reads thus: "Your delegates could not help comparing the skilled design, the able execution, the artistic feeling and patient care displayed in these drawings, with the careless and slap-dash effects which seem to be sufficient for the student of the present day in England."

[The president here referred to and quoted at length Mr. Arthur Cates' article, in the June number of the "R.I.B.A. Journal," on "Architectural Education in the United States of America."]

Let the Architectural Association hope for some liberal benefaction to put the systematic professional

University Education

on a satisfactory and permanent footing. There are many very wealthy men in this country who sufficiently realise the immense importance of the art of architecture as the most important and permanent expression of civilisation and of national greatness to con-

tribute in a substantial manner to the establishment of a College for the education of the profession, if once they became aware of the urgency of the need. It is not generally realised how poorly paid the architectural profession is, and how, consequently, impossible it is adequately to endow its own teaching. A school such as I suggest this Association should open would be a fair start for the high training we so much need. It has probably occurred to many that the Association, as the principal architectural teaching body, should be officially recognised by the new London University. The committee will not lose sight of this important question, but, in view of the character and standard of technical training the University requires, I do not think we can just now expect to do more than obtain its official recognition for our teaching staff.

As Regards Examinations

the good old English proverb is true to human nature, "You cannot put an old head on young shoulders," and no man of common-sense expects more than a very small fraction of youths to be sufficiently enthusiastic (in the abstract) to put forth their best efforts to acquire skill and knowledge (for their own sake) before they know their joys and their value as a means of livelihood. It is therefore necessary to provide some incentive to work. Our system of studentship and of prizes is founded, of course, on this obvious truth. Experience proves that the best course of systematic training falls to the ground without some such stimulus. There is no prize so precious as the testimony of the leaders of one's profession that one has sought by long and well-directed study to make oneself proficient in one's calling.

I find that out of the total number of London candidates in the R.I.B.A. qualifying examination last year, 48 per cent. in the intermediate and 63 per cent. in the final were students of this Association. The possession of ability to design and to draw are comparatively rare gifts (in combination especially with business and constructive capacity), but they are absolutely necessary to an architect. Both can be sufficiently tested to exclude from the Institute men who are grossly deficient in these qualities. Can anything therefore contribute so greatly to the improvement of architecture, as an art, as an examination in these? Let it be borne in mind that the temptations to take up architecture as a business are as numerous as the opportunities are great as compared with those presented by painting or sculpture. Consequently we are bound to choose between retaining our present examinations in art (as well as science) as a qualification for membership of the Institute or of admitting builders equally with architects to a test of knowledge of construction *only*, with the certainty that this qualification would in the public estimation be equivalent to a complete architectural equipment. This *art* test is our only hope of purging the profession, as far as may be, from the commercial spirit, the

Worship of Mammon.

In the words of Louis Stevenson: "If you adopt an art to be your trade, weed your mind at the outset of all desire of money. What you may decently expect, if you have some talent and much industry, is such an income as a clerk will earn with a tenth or perhaps a twentieth of your nervous output. Nor have you the right to look for more; in the wages of the life, not in the wages of the trade, lies your reward; the work is here the wages."

On the still larger question of the legal protection of the title of architect I would call attention to the growing feeling abroad, as represented by the resolution by Monsieur Couran—carried, I understand, with unanimity—at the recent International Congress of Architects at Paris. It runs as follows: "That governments take measures to protect and ensure respect for the title of 'architect' by reserving it for the future, and without retroactive effect, to architects provided with a proper certificate, by forbidding others to use it, and by putting it within the reach of all by means of the diffusion of architectural education." The prospects before us were never so bright as to-day. Besides the ever-growing demands at home for all kinds of special public buildings, there lie beyond our shores immense and rapidly ripening fields for architectural skill. Few of our young men can have considered the growth of innumerable towns in Africa, India, and the more Eastern of our colonies, without its arousing the spirit of adventure and a certainty of occupation; and bear in mind that it is London-trained men who are mostly in demand for such situations.

When cities are being conceived and largely erected in two or three years (Khartoum, for instance), all designed by Royal Engineers, one asks oneself, What training in architecture do Woolwich and Coopers Hill and other colleges afford? I believe, *nil*! If art is not for ever to be ignored by English Governments, why should it not be made a rule that each young engineer who is appointed to government architectural work in the great cities of our dependencies should have a year in our leading architectural schools or offices?

A movement among us full of promise for the future of architecture, and one which was the key-note of this year's Congress of Architects convened by the Institute, is the alliance of the architect, sculptor, and painter as well as the artist-craftsman in the production of a building of any importance. Such brotherly counsel, combined with a clear conception in the mind of the architect of the effect required, ought to result in buildings of greatly increased beauty and interest. It would tend to this happy co-operation in the constructive and decorative arts if our studio could in some way be made preparatory to the Royal Academy School of Architecture, which naturally will take only advanced students. If this were found impracticable, possibly on the social side of the A.A. (a side we hope will ever be encouraged by all concerned) a rendezvous may be devised which will bring the students of all these arts into closer touch in their early days.

What age other than our own can claim to have supplied subjects for sculptors and artists so magnificent in their conception or fraught with greater hope for the immediate benefit of mankind in general? They may record in stone and colour in our buildings the vast truths of evolution, or celebrate the welding together of an empire whose arms exist alone for the defence of liberty. Can we as architects have a higher ideal before us than to dignify and beautify the Metropolis of such an empire? And this should be the ambition of every member of our Association; and then, when it is done,

"We shall rest, and—faith! we shall need it—lie down for an æon or two,
Till the Master of All Good Workmen shall put us to work anew!
And only the Master shall praise us, and only the Master shall blame;
And no one shall work for money, and no one shall work for fame,
But each for the joy of the working; and each, in his separate star,
Shall draw the Thing as he sees It for the God of Things as They are!"

DISCUSSION.

Mr. G. H. Fellowes Prynne, in proposing a vote of thanks to the President for his address, said he thought the falling-off in the attendance of students at the end of the session was due to the attempt to rush too quickly into the advanced class of design, where the students got discouraged. He thought they should be forced to go through the elementary class first. He thought the President should have mentioned with the other artists of the century Sir Edward Burne-Jones and Alfred Stevens. Architects at the beginning of the century ignored iron, but engineers had at once grasped its advantages, and their works were monuments to science. He could not agree with the suggestion that engineers should pass one year in architectural training, as he thought they would then think they knew all about architecture. What was wanted was combination of the architect and engineer. It would be an excellent thing if day-classes were started; but he was afraid, if the financial support had to come from architects, these classes would be a failure. They ought, however, to be able to find someone interested enough in their art to give financial aid, as had been done to other institutions. He sincerely hoped we should see the college system for architects.

Mr. E. W. Mountford, in seconding the vote, thought the falling-off in attendance at classes was due to students feeling they required a little recreation.—Mr. C. H. Strange drew attention to the merits of the Discussion Section of the Association.—The vote was then carried by acclamation, and in reply Mr. Seth-Smith said that with regard to Mr. Prynne's remarks upon the success of day-classes he had made careful calculations, and he did not think there would be a loss of more than £1,000. Towards this sum several of his friends had given promises of help to the extent of £500.

Surveying and Sanitary Notes.

New Members of the Institute of Sanitary Engineers.—At an examination in practical sanitary science held on September 21st and 22nd T. R. Atkinson, Penrith, passed qualifying for membership, and the following qualifying for associateship: J. Jenkins, Harlow; and H. J. Hammick, Stonehouse, Plymouth.

The Preservation of Hampstead Heath.—The annual report of the Hampstead Heath Protection Society records that through the instrumentality of the society a resident superintendent ranger has been appointed for Golder's Hill, Hampstead Heath and Parliament Hill Fields. Other matters on which influence has been brought to bear are the damage done to shrubs, &c., by the sheep which are allowed to graze on the Heath, the fencing-in of areas from which vegetation has disappeared, the shooting of cinders on the Heath, and the over-planting of trees, &c.

The Western Counties Cement and Flag Making Company have recently established new works in the Ormsgill district, Barrow. Mr. T. Oddy, the manager, has had the sole charge of the designing and laying-out of the whole of the works, buildings, engines, boilers, machinery and shafting. The engine-house is lofty, and gives plenty of light. The engines, of 300 h.p., are compound condensing with a belt fly-wheel 11ft. in diameter and 2ft. 6in. broad, weighing 11 tons. The engine-house stands in the middle of its own water reservoir, the basement of the engine-house wall on two sides forming the sides of the water tanks. These tanks are connected with extensive cooling culverts, 6ft. high and 3ft. broad, running through the base of the engine-house and to the extreme limits of the land on each side. The American grinders are fed from a massive wooden hopper in the room above, which holds two large railway trucks of prepared cement at one time. These two machines are each supposed to turn out five tons of finished cement per hour. The cement is fed, ground, elevated, and sacked, without being touched by hand, seven sacks being filled at one time. The slag dryer, a revolving cylinder 40ft. long, slowly revolves and keeps turning over and propelling the slag and drying it by a very hot furnace underneath, the heat from which is drawn through the slag and cylinder by a hot-air fan driven at high speed. This dryer will turn out five tons of slag per hour. The flag-making department has an ingenious flag-making machine which turns out a flag 3ft. by 2ft. 6in. by 2ft. in three minutes, and ready edged. The machine is so arranged that four moulds are in process of being filled, pressed and stamped at the same time. The pressure exerted by the hydraulic ram is 2,500 tons, or 2½ tons per square inch.

A New Fountain at New Brompton has been erected at the corner of the Lines, near the Post Office, from money collected at last year's "Carnival." The fountain is in salt-glazed Doulton ware, 8ft. in height. The base is square, the lower part relieved only by an inscription, which is repeated on opposite faces of the fountain. At the level of the basins the design becomes more ornamental, and each face is set back in the form of a niche filled with ornament and finished by a semicircular "shell-head." This portion ends in four curved pediments, from the central intersection of which rises a finial.

Law Cases.

Letting Uncertificated Houses.—At Birkenhead recently William Davies, of 27 Albert Road, was summoned for unlawfully letting seven dwelling-houses in Connaught Street without having been certified by the Borough Surveyor. It appeared that on June 29th Mr. Warwick, Corporation Inspector, inspected the houses, and found they were tenanted. On a further examination he found they were incomplete, for the drains were unable to stand the smoke test. They were all in a similar condition. In defence defendant said he had not capital enough to finish the houses. A fine of 10s. and costs in each case was imposed.

Adding a Storey without Authority.—A short time ago Emanuel Ellis, builder, Heswall, was summoned at the Neston Petty Sessions for contravening the by-laws of the Wirral Rural District Council. Mr. W. H. Mathison, who prosecuted, said there were three summonses against defendant for not submitting complete plans of a house he had erected in Liverpool Road, Heswall; not providing sufficient airspace in the yard at the back; and not making the external and party walls of the thickness required. Defendant had erected a three-storey cottage, and the space at the top he had made into bedrooms not shown on the plans. As the house was now of four storeys, the walls ought to have been thicker. A fine of £1 and costs in each case was imposed.

The Laying of Drains. — Thomas Kyne, builder, was recently summoned at the Sheffield Police Court for failing to specify the lines of drainage on plans submitted in respect to four houses he was building in Penistone Road, Sheffield. On October 28th last year the defendant sent in plans for the houses. The plans were passed; but when, on June 23rd, a Corporation inspector went to examine the drains, he found that the defendant had provided an entirely different system of drainage to that previously approved. It appeared that previous to the latter date the defendant had sent in an amended plan, but this was rejected. He nevertheless proceeded with the work. The Chairman said the defendant must take the consequences of having deliberately disobeyed the authorities. He would be fined £3 and costs.

Mortar Without Lime: Fine Imposed.—At the Sheffield Police Court recently Mr. T. H. Johnson, surveyor and builder, Priory Place, Doncaster, was summoned for using defective mortar in building some houses in Chippingham Street and Titterton Street, Attercliffe. The evidence of several building inspectors who had examined the work was that mortar which had been used over an area of about 150yds. was deficient in lime, and therefore useless. Mr. Neal, for the defence, admitted that inferior mortar had been used over a small part of the building, but said that the defendant was ready to remedy what was complained of. Mr. Johnson was away at the time, and in his absence his foreman had used the mortar without lime. He had built a large number of houses in Attercliffe without previous complaint. Mr. Johnson gave evidence in support of this statement. A fine of 40s. and costs was imposed.

The Art of Bricklaying.—At the Spelthorne Petty Sessions, held at Sunbury, Messrs. Lock Brothers, builders, of Ashford Common, were recently summoned by Herbert Blanchard to settle a dispute with reference to the terms of his apprenticeship. Complainant's case was that the defendants did not carry out their engagement, as they had not taught him the trade of a bricklayer, but had simply given him menial labourer's work to do. He had given the firm £14, and as they had broken their agreement he asked that some or all of this amount should be returned to him. In evidence he said that he was put to any work that came to hand, and only occasionally was he engaged in bricklaying. He had scarcely been taught sufficiently to build a wall. He did not say that he was not given bricklayer's work when there was any to do, but the firm had not sufficient work to teach the trade. The defence was that the art of bricklaying was not confined to the actual laying of bricks, as the complainant seemed to think. In answer to questions the complainant said he could build from foundations, and he could manage corners, but not much else. He did not expect to learn all the trade in two years, but he was not satisfied with what he had learnt. At the present rate he did not think he would learn the trade in five years, the length of time he had agreed to serve. He did not complain of his wages—17s. per week. A skilled bricklayer could earn 10½d. per hour, and at present witness could only earn 6d. per hour, the labourer's wage being 5½d. It was suggested for the defence that the reason the case was before the Court was not because the complainant had not been taught enough, but that he had been taught too much, for, finding that he could earn a larger wage outside, he was anxious to break his contract. There was nothing in the trade that the defendants were not ready and willing to teach the man. The Bench held that the indentures had not been broken, and dismissed the summons.

New Patents.

These patents are open to opposition until November 12th.

1899.—Artificial Granite.—17,966. R. Haddin, 18 Buckingham Street, Strand, W.C. (communicated by La Société Berthe et Cie., Paris). "Granatine" is the name given to the material made according to this invention. It consists essentially of cement-mortar to which different pulverised materials are added, particularly glass waste. The manufacture is entirely done in a cold state, and the resulting substance can be easily polished when it has set. (This takes a few days.)

Artificial Sandstone.—18,058. H. C. Meurer and F. T. Bormann-Zix; both of Stadelhoferstrasse 40, Zurich, Switzerland. The blocks are made of a hot and homogeneous mixture of sand and a saturated solution of pure hydrate of lime, and can be subjected, without any need for previously treating or protecting them, to the direct action of high-pressure steam for the purpose of hardening them.

Artificial Marble.—20,347. H. A. Pryor, 70 Chancery Lane, W.C. (communicated by J. E. Summers, Lynchburg, U.S.A.). This invention obviates the necessity for polishing and graining artificial marble, and it consists in mixing together lime water and silicate of soda, then adding Parian or similar cement in sufficient quantity, and finally adding pigments. The mass is then allowed to harden on a very smooth and polished surface.

1900. Pots for Paints, Stains, &c.—8,731. E. G. Hill, Holloway Street, Minehead, Somerset. The can tapers slightly upwards, and has a hinged lid and a clip on the inside of the body-part for holding a brush. The object of the invention is to do away with bottles with holes in their corks (as used by French-polishers) and similar trade appliances.

The following specifications were published on Saturday last, and are open to opposition until November 19th. A summary of the more important of them will be given next week. The name in italics within parentheses is that of a communicator of an invention.

1899.—12,760, Baker, brackets for supporting curtain poles, &c. 18,061, Scott-Moncrieff, bacterial purification of sewage. 18,442, Stanley, manufacture of bricks, tiles, &c. 19,868, Hill, apparatus for checking workmen's time. 19,860, Brady and Rittenhouse, street-sweeping machines. 19,902, Fleming, reservoir brush, especially applicable for spreading gum, paste, &c. 20,132, Flooks, apparatus for making mortices and slots in doors. 20,438, Barker, means for holding shades or globes for electric and other lights. 20,473, Allison (*Hubbard*), hot-water heaters. 20,681, Williams, container for automatically distributing liquids to flushing cisterns. 21,336, Hilton, metallic lathing. 22,413, Neville and Carpenter, means for preventing downdraught in chimneys, &c. 22,563, Alliott, filter presses. 22,655, Hall and Hall, self-acting loading and unloading hoists. 22,993, Cooper, tramway rails. 23,293, British Thomson-Houston Co., Ltd., and Samuelson, trolley stands for electric railways. 23,774, Joseph Place and Sons, Ltd., and Place, chequer brick for kiln bottoms. 23,995, Darby and Darby, baths. 24,459, Spong, self-igniting gas appliances. 25,138, Dorman, acetylene gas generators.

1900.—2, Enright, fastener for gates and doors. 4,745, Turner, apparatus for cleaning out pipes and tubes. 12,915, Sheppard, manufacture of glass. 13,052, Prüss, construction of partitions, walls, &c. 13,129, Jaeger, machines for moulding bricks. 14,320, Letcher, gas blow-pipes.

SHEFFIELD BUILDING TRADES' EXCHANGE.

THE erection of this exchange for the use of the master builders of Sheffield and their clients will be commenced this month, the necessary land having been purchased from the Corporation at the corner of Upper Charles Street and Cross Burgess Street. A small limited company, with a capital of £6,000, was formed a short time ago to carry out this work. The idea of the promoters is to provide a building which shall be used on Tuesdays as an exchange, where the local builders can meet and transact business with the numerous travellers of the stone, timber, hardware, iron construction merchants and others with whom they have dealings; as a sort of club throughout the week; and as the home of the Sheffield Master Builders' Association—now a large and powerful organisation. The entrance to the exchange will be in Cross Burgess Street, and lead direct into the large room to be devoted to the transaction of business. Under this room, abutting on Charles Street, several shops are to be built. The apartments include offices, billiard room, committee room, cooking kitchen, and three bedrooms for caretaker. A special feature will be the provision of all the trade journals, literature, and works of reference which are useful to members; and refreshments, including luncheons and teas, will be obtainable. The plans have been prepared by Messrs. Gibbs and Flockton.

Professional Practice.

Bootle.—The new Municipal School, which was opened recently, occupies an open site at the corner of Balliol Road and Pembroke Road, the principal frontage looking on to the former thoroughfare. Mr. Corkhill, of Liverpool, is the builder, and the cost has been about £20,000. The architects are Messrs. Best and Callon. The new school is grouped round a large quadrangular court, which is divided into two on the ground floor by the assembly hall, this, together with the workshops, enclosing the back of the quadrangle, being one storey only in height. The front and sides of the quadrangle are two storeys in height. Ground Floor:—The entrance is central in the main front to Balliol Road, and leads into a hall, round which are grouped the administrative offices, and from which lead the main corridors serving the whole school. The assembly hall for lecture and examination purposes is directly opposite the entrance. The west wing is occupied by the women's manual training department. The east wing, in addition to three ordinary class-rooms for thirty, forty, and thirty-six students respectively, contains the physical department. The latter consists of a laboratory accommodating about forty students, and lecture theatre for the same number, with preparation and dark room. The workshops occupy the north side, and include a carpenter's shop for twenty-seven students, a metal-working shop for thirty students, and a plumber's shop for thirty students, all being approached by a special corridor. A heating chamber is provided in the basement. First Floor:—Two wide stone staircases in the front or main corridor lead from the ground to the first floor. The main front in Balliol Road is

occupied by the Art School, and contains elementary and advanced rooms, modelling room, library or spare class-room, and art master's room. These rooms have large north lights arranged according to their requirements. The west wing is devoted to the chemical department, separated by a well-ventilated corridor shut off by swing doors. It consists of a laboratory accommodating thirty students, with balance-room attached, lecture theatre for forty students, and a preparation-room in direct communication with both theatre and laboratory. It may be noted, as an improvement upon the usual system, that in the laboratory short benches only are used, accommodating four students each. The east wing contains three class-rooms, accommodating respectively thirty, forty-two, and forty-eight students, and a large engineering drawing class-room for forty students. The heating of the school is effected with low-pressure hot water, with radiators constructed to supply warmed fresh air to the rooms. The ventilation is by mechanically admitting fresh air to the rooms through radiators and wall inlets. The vitiated air is extracted at the ceiling level, and is conveyed along ducts to the main upcast shafts, in which are fitted large electric exhaust fans. The building is lighted throughout with electric light, the installation having been effected by Messrs. Brook, Hirst & Co., of Chester. The main idea in the treatment of the exterior has been to produce a building suitable to the purposes for which it is used, and as simple in form and design as a public building of this size and character can be. The elevations are treated in a free classic style of Georgian type, and are executed in Ruabon and red bricks, with Knowsley stone dressings, the roof being covered with Westmoreland green slates. Four schools are to be accommodated in the building. First, the evening school, consisting of many science and commercial classes, and some trade or technological classes; second, a school of art, located in the upper rooms on the Balliol Road frontage; third, a school of domestic economy, placed in a special portion of the west wing; fourth, a day school for boys of twelve years of age and upwards. Messrs. Sloan and Lloyd-Barnes have acted as consulting engineers to the committee, in regard to the engineering workshop.

Burton-on-Trent.—The Primitive Methodist Chapel in Welmore Road is about to be enlarged and altered. The chapel will be increased in length, and at the back a new block of class-rooms, with vestry, copper-house, and lavatory accommodation for the schools, will be provided. The front will be entirely remodelled, and will have a new entrance porch with a large four-light window above and two two-light windows on either side. The walls to be faced with best red bricks, having window dressings, gable and coping of stone. The architect for the work is Mr. Thomas Jenkins, of 35 High Street, Burton-on-Trent.

Hull.—The Corporation of Hull, having determined upon extensive street improvements involving the clearing away of slum property, are commencing the erection of three blocks of working-class dwellings in Great Passage Street. The buildings (a perspective and a plan of which were given in last week's issue) are situated in close proximity to the docks in the centre of the city, on a site recently occupied by closely-packed tenements. Provision is made for forty families in self-contained flats of two, three and four rooms each. Mr. T. Goates, whose contract amounts to £9,750, is carrying out the work under the superintendence of the city architect, Mr. Joseph H. Hirst.

MOUNTAIN CHURCH DESIGN.

THE mountain church design shown on this page, and also as a centre plate, was awarded the prize at the recent Welsh National Eisteddfod held in Liverpool. The prize awarded was a gold medal and a sum of £10. The author of the design, Mr. R. Wynn Owen, says: "There is no doubt that, if it were more generally known the Welsh National Eisteddfod offered several prizes of this kind annually, more architectural students would send in designs for the various subjects. By making this fact known in your journal, a number of junior members of the profession may learn of a new field for competition which up to the present has been practically in the hands of a limited number of competitors."

The National Association of Master House-Painters of England and Wales held its seventh annual convention at Blackpool last week. The delegates numbered 506. Sir Matthew White Ridley, in declaring the convention open, said it was quite true that there had been an influence brought to bear upon decorative art in this country, and great improvement had taken place of late years. He could not imagine anything more backward than the decorative art of the earliest period of Victoria. But we had made progress, partly through the efforts of such associations as theirs, and partly perhaps through the technical education which had been carried on of late in the country. Meetings and conventions of this sort, he thought, were a most valuable means of exchanging ideas, and also of carrying on that kind of educational work which could be done much better by united effort than by individual exertion.



FIRST PRIZE DESIGN FOR A MOUNTAIN CHURCH, WELSH NATIONAL EISTEDDFOD, 1900. BY R. WYNN OWEN.

Enquiries Answered.

The services of a large staff of experts, including all those engaged on "Specification," are at the disposal of readers who require information on architectural, constructional, or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

R.I.B.A. Preliminary Examination.

COVENTRY.—STUDENT writes: "What are the best books for preparing Subject VII., Elementary Mechanics and Physics, of the R.I.B.A. Preliminary Examination?"

Any modern elementary text-books on the subject will be suitable—e.g., Glazebrook's Cambridge Natural Science Manuals—"Statics," 3s.; "Dynamics," 4s.; "Light," 3s.; "Heat," 3s. (Clay and Son, Ave Maria Lane, E.C.); or Besant's "Elementary Hydrostatics" (Bell and Sons, 4s. 6d.). HENRY ADAMS.

Planning of Schools.

LEICESTER.—C. H. F. writes: "Can you recommend a book on the planning of small boarding schools, say for 60 pupils?"

We know of no book dealing especially with boarding schools; we recommend the following books on school planning: "School Architecture," by Palliser, Palliser and Co., 4s. 6d. nett; "Technical School and College Buildings," by E. C. Robins, 18s. nett; and "Modern School Buildings," by W. R. Briggs, 17s. nett. These can be obtained from Mr. B. T. Batsford, of 94 High Holborn, W.C.

The Initials "C.E."

LONDON, S.W.—C. T. writes: "Is there an examination to pass before a person can write 'C.E.' after his name?"

Anyone can use "C.E.," meaning civil engineer, but not M.I.C.E.—Member of the Institution of Civil Engineers. The former is no guarantee of ability, but the latter is.

Scagliola.

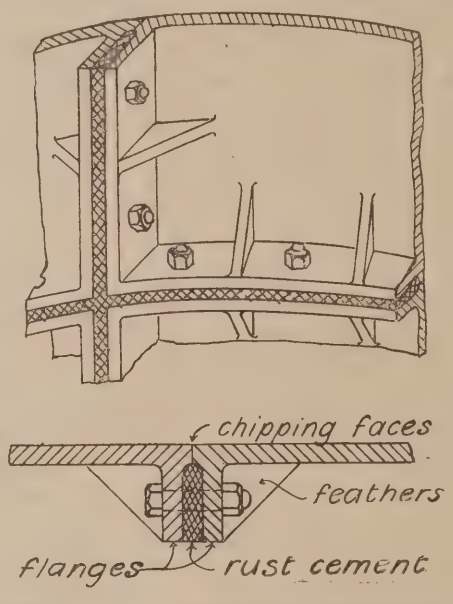
GLASGOW.—ANXIOUS writes: "Having some work in connection with scagliola, I am desirous of learning how it is made, and if plaster or cement is used in its manufacture. Can scagliola be used for the imitation of rare marbles?"

Scagliola is composed of superfine plaster which is mixed with various mineral colours, and then gauged with glue water. Keen's superfine cement is used for the manufacture of marezzo, the name given to a more recent plastic imitation of marbles; but with the exception of pressing the coloured cement on plate glass in order to save polishing, the method is similar to that used for scagliola. The colours and quantities used and the methods in the manufacture of scagliola vary for every kind of marble imitated, so that it is impossible to fully describe the numerous processes at command. The principal part in the manufacture of scagliola is the mixing of the various colours in due proportions with the plaster and strong water to suit the marble being imitated. Another important point is the chopping and slicing of the various coloured plastic lumps. The coloured slices and lumps are laid in position—taking care to keep the "figure" and veining similar to the natural marble—and the mass is allowed to set. When thoroughly set and hard it is planed and then stoned with snake stone; the surface is then washed with a sponge, and then any holes or crevices thoroughly stopped. It is then stoned and stopped again until the surface is smooth and solid, after which it is polished with putty powder. This operation is an embodiment of the principle of manufacturing scagliola. It can be made *in situ*, but it is generally made in slabs or blocks, as for columns, pilasters, &c., and then fixed in position. Many of the precious and rare marbles, such as jasper, verd-antique, porphyry, brocatello, giallo-antique, lapis lazuli, &c., have been imitated so minutely, and with such an astonishing degree of perfection, as to defy detection. Scagliola is one of the most beautiful parts of decorative plaster work, and the finest and truest imitation of any natural material used in the building trade. It has the look, colour, taste, touch, and polish of natural marble. Full practical instructions for the manufacture of scagliola are contained in "Plastering: Plain and Decorative," published by B. T. Batsford, 94 High Holborn, W.C.

W. MILLAR.

Foundations.

ILKLEY.—R. F. writes: "(1) Half of a public building, having a total area of 200 sq. ft. and a height of 60ft., is to stand on the site of an old quarry, filled in with rubbish to a depth of 35ft. The rest of the building will be on solid rock 4ft. below the ground level. Half of a tower, 40ft. square and 200ft. high, comes on the rock and half on the filled-in quarry. How would you construct the foundation over the quarry site? (2) What foundation would you adopt for a large church built entirely on sand or loose friable earth (no solid bottom procurable)? Would there be any special treatment for the foundation of the tower? (3) To what depth can wooden piles be driven, and are they always in one piece? (4) To what depth can brick piers be sunk? (5) To what depth can



JOINT OF IRON CYLINDERS FOR FOUNDATIONS.

iron cylinders be sunk, and how are they jointed? (6) Are the foundations shown on the accompanying sketches (not reproduced) ever used by architects; and, if so, on what occasions? (7) Is there any special book on foundations of the above kind?"

(1) The foundations must go down to the solid rock, either by building on brick walls and girders or concrete piers and arches. To build half on solid rock and half on made ground would mean certain failure, however much the footings of the latter were spread. (2) A "raft" of concrete with old rails embedded would give a suitable support if the earth were shut in by sheet piling round the site. (3) Wooden piles can be driven 30ft. to 40ft. in some soils; they are usually in one piece for driving, and frequently scarfed just above the ground or water-level. (4) Brick piers can be sunk to any required depth, but anything over 30ft. would be excessive. (5) Iron cylinders can be sunk to any required depth, but 60ft. below high-water mark is about the limit in practice. They are jointed by inside flanges with rust cement between, as shown on the accompanying sketch. (6) The writer has never seen foundations like those marked A on querist's sketch put in, but, if properly designed, there is no reason why they should not answer. The tie rod would only be required at the end arches. In arrangement B the timbers should be bolted together, and, as a rule, all notching should be avoided. (7) Piled foundations are treated very fully in Adams's "Timber Piling in Foundations and Other Works" (60 Queen Victoria Street, 1s.).

HENRY ADAMS.

Graphic Statics.

REDDITCH.—REX writes: "Is it necessary for me to obtain a book on applied mechanics before studying a book on graphic statics? Also, which is the best book on the latter subject? If I *must* take up applied mechanics, which is the best book?"

Graphic statics, as generally studied, is a subject by itself, and does not need a previous study of applied mechanics. It is one section of the larger subject of mechanics. Such a book as Adams's "Strains in Ironwork" (Spon, 5s.) takes in all that the average student requires to know on the subjects of parallelogram of forces, reciprocal diagrams, stresses and strains, as applied to girders and roof trusses, and is recommended by the R.I.B.A. examiner.

HENRY ADAMS.

Size and Number of Rainwater Pipes.

LEEDS.—J. D. S. writes: "A roof gutter capable of carrying a 6in. depth of water is 1,000ft. long and drains a surface of 30,000 super. ft. horizontal measure. How many outlets of 3in. diameter should there be, assuming a rainfall of 0·0216in. per minute?"

Rainwater gutters and pipes are not usually calculated, but this seems to be a case where some calculation is necessary. Generally 4in. gutters and 3in. down pipes are fixed for private houses, and 4in. to 6in. gutters with 4in. down pipes for public buildings. The down pipes are generally placed in convenient angles or about 20ft. to 40ft. apart, and the gutters laid with a fall towards them of 1in. in 10ft. Under a rainfall of 1in. per hour, 50 times the diameter of pipe in inches squared would give the approximate area of roof in square feet which that pipe would serve—e.g., 4in. pipe, $4^2 \times 50 = 800$ sq. ft.; but in the present case the rainfall would be about $1\frac{3}{10}$in. per hour, so that it would be wise to limit one 4in. pipe to 600 sq. ft. and $\frac{30,000}{600} = 50$ down pipes, $\frac{1\,000}{50}$ = say 20ft. apart. Unless the locality is subject to very concentrated storms of rain 0·0216in. per minute seems rather high.

HENRY ADAMS.

Forming Entry under House.

BIRMINGHAM.—R. L. writes: "It is proposed to provide an entry, 3ft. wide, to go under a house. Kindly say which is best and cheapest method of carrying the party wall, &c.: please also state sizes of girders necessary. The builder who is instructing me proposes to carry the wall on concrete between girders; latter placed at about 2ft. 6in. centres across entry walls. The party wall is about 33ft. from ground-floor level to apex of roof. How can I determine what amount of material is to be calculated as the load coming on certain girders, &c.? Rivington does not show this."

The greatest weight upon any single joist would be brought upon that under one or other of the chimney stacks. Even this, with the construction suggested (which is about the best possible), would be only $6\frac{1}{2}$ tons—assuming a load of brickwork 1ft. 6in. by 2ft. 6in. by 33ft. high at 1cwt. per cubic foot—and this may be taken to be evenly distributed. On consulting Messrs. Dorman, Long & Co.'s table of steel joists, we find that their *light* 4in. by 3in. section will readily take this; and no smaller joists would be structurally sufficient to carry the concrete. In small works which do not involve the use of riveted girders it is generally more satisfactory to consult a manufacturer's handbook of sections and weights than to calculate for oneself. G. A. T. M.

Book on Gothic Architecture.

GLASGOW.—J. W. B. writes: "Can you give me the name of a good book on Gothic—mostly illustrations, with little or no reading matter—the book to give illustrations of all styles, and not be confined to one particular period?"

"Details of Gothic Architecture," measured and drawn by J. K. Colling. This can be obtained from Mr. B. T. Batsford, of 94 High Holborn, W.C., for £2 2s. nett.

Cleaning Pictures and Picture Frames.

GLASGOW.—ARTIST writes: "Please state how to clean and regild picture frames, also how to clean old oil paintings. Would it be advisable to varnish them? If so, kindly state kind of varnish to use."

Cleaning an oil painting is best accomplished by a judicious application of soap and warm water, the picture having been removed from its frame, and care being taken to keep the back of the canvas dry. Most oil paintings are varnished for the sake of protecting the colours; and whilst an extra coat of varnish may do no harm, it may, on the other hand, effect little or no improvement. This matter must be judged by individual circumstances. A painting which has blackened with age, or in which the colours have become dull and indistinct, will stand rather in need of "restoration" as distinct from mere cleaning—the removal of dirt—and this may necessitate the removal of the old varnish and, possibly, several coats of it. If the picture is of any value, it would be advisable to entrust it to an expert in the art. Before the varnish is removed its character must be determined. Mastic is generally used for good pictures, but copal is sometimes employed. The latter can only be removed by an alkali, and extreme care will have to be employed in order that the painting may not also be removed. Further, every trace of the alkali (caustic potash) would have to be got rid of before it would be safe to apply a fresh coat of varnish. Mastic is removed by the aid of rectified spirits of wine, three or four parts of this being reduced by the addition of one part of turpentine, the mixture being thoroughly agitated, and applied by means of small pads of cotton wool. Here, again, great care has to be exercised to prevent damage to the painting after the varnish has been dissolved away; and directly the paint is reached, the spirit should be wiped away with a clean pad of cotton wool moistened with turpentine only. One or more coats of new varnish may be applied—mastic varnish thinned with turps being used—and each coat must be put on as thinly as possible. Hydroxyl is sometimes employed in picture-restoring. This is a compound of hydrogen and oxygen, and it acts upon the blackened picture by converting the lead sulphide into lead sulphate. For cleaning a gilt picture-frame previous to regilding, soap and water applied with a soft brush will be found efficacious. The frame is then to be thinly coated with gold size, evenly applied; and when it is dry, but still tacky, gold leaf can be laid on in the same manner as in ordinary gilding, or the frame may be dusted over with bronze powder. The latter, however, will soon discolour unless protected by a coat of spirit varnish or lacquer.

Air-Pump Ventilators.

TUNSTALL, STAFFS.—TROUBLED writes:—"Great annoyance is caused to a congregation of a chapel owing to the roaring noise of the roof ventilator in times of high wind. Can you suggest a remedy? The ventilator is connected with two ceiling gratings by 12in. metal pipes."

We are of opinion that the noise attributed to the ventilator is the result of the accelerated up-current produced in the shafts leading to the ventilator during high winds. It could be obviated by fixing a regulating valve in the *main* shaft of the ventilator so that the increased velocity of the air-currents produced in the upcast shafts might, under those circumstances, be controlled. The valve would be operated from below by means of pulleys and cords.

ROBERT BOYLE AND SON., LTD.

Price Books.

BOLTON, LANCS.—J. F. C. writes: "Which is the most suitable and reliable builder's price book for this part of the country (London prices are, of course, higher than here)? Also, will you name a good book tabulating the breaking and safe loads of different sizes and strengths of cast-iron and steel columns, stanchions, girders, beams, &c.?"

There is no book giving prices for Lancashire; builders' price books are only approximate, and either "Specification," Lockwood's or Laxton's, will serve equally well as a basis for calculation. Most of the firms supplying structural ironwork publish particulars of the loads their girders will stand. Molesworth's "Pocket Book of Engineering Formulæ," published by E. and F. N. Spon, Limited, 125 Strand, W.C., is a very useful book.

Local Government Plans.

LONDON, W.C.—BUSWING writes: "I should be glad to know if there is any periodical record published giving the plans submitted to local governing bodies in Great Britain for their approval."

We do not know of any such publication: nor do we believe it exists.

Views and Reviews.

Mitchell's Building Construction.

The fifth edition of the elementary course of this well-known text-book has just been published, making its twenty-third thousand. The present edition is almost a new book, fifty pages having been added and the whole completely revised. The illustrations have almost all been re-drawn, and 250 additional ones are included, all of them being now most clear. One of the new features is a useful series of illustrations of the tools used by the excavator, bricklayer, mason, carpenter, joiner, and slater. As an elementary text-book in building construction the book fulfils all requirements, but we would call attention to a few matters which we think might be improved. It would be an improvement if, in the first few opening chapters, almost all the present definite statements were explained slightly, so that students having little or no previous acquaintance with the subject might learn the reason for such and such a procedure. Of course the statements can be explained by consulting other text-books, but we assume that Part I. is intended to be complete in itself. For instance, on page 13 we are told that a wall is protected from damp rising from the ground by a horizontal course of damp-resisting material laid at a distance of 6in., or not more than 1ft. above the ground level. These measurements should be explained; the book is not a specification. The same thing occurs with regard to bonding brickwork on page 18, and with the statement (on page 24) that bricks in footings should be laid as headers as far as possible. Why not state that the reason for using headers is because an offset over a stretcher allows a bearing of only 2¼in. for the top brick? Also, if the reasons were stated why 2¼in. offsets for the bottom course of footings in a two-brick wall are needed to be four bricks wide, and why it is necessary to double the bottom courses of footings, the student would understand these matters better. We are glad to see that only "essential" dimensions are given on the diagrams. A new chapter has been added upon "Building Quantities," with some general memoranda on the various trades. We would point out that on page 5 the lettering in the text is not the same as that on the illustration; also that the first line on page 24 requires the word "or" between "two" and "more"; also that "bye-laws" should be spelled "by-laws." But, after all, these are slight inaccuracies. The book as a whole is very carefully and lucidly written; students could not obtain a better work on elementary building construction.

"Building Construction and Drawing: First Stage or Elementary Course." By Charles F. Mitchell. Fifth Edition. Price 3s. London: B. T. Batsford, 94 High Holborn.

A Dunfermline Competition.—The joint committee in charge of the erection of the new Carnegie Baths and Gymnasium at Dunfermline have invited competitive plans from local architects and from Mr. J. M. Brydon (London), Mr. David Barclay (Glasgow), Messrs. Ross and Macbeth (Inverness), Mr. H. I. Blanc (Edinburgh), and Mr. William Williamson (Kirkcaldy). The total cost is expected to be £17,000.

Builders' Notes.

Building at Blackpool.—There were thirty-two plans, as compared with forty-two for the same period last year, submitted at a meeting of the Building Plans Committee of the Blackpool Town Council. Of this number the following were approved:—Two houses in Banks Street; eleven houses and stables in Whitegate Lane and Palatine Road; two houses and shop, Benson's Lane; six houses, Palatine Road; house and stable, Cow Gap Lane; two houses, Palatine Road; six houses, Manchester Road; new school, Devonshire Road, Blackpool School Board; lock-up shop, Coronation Street.

Breaches of Building By-laws.—Mr. H. Howarth was charged at the Blackpool Police Court recently with three offences against the Borough building by-laws, in respect of premises in Church Street, South Shore. One shop had been converted into two, and the place had been let to a London firm, who had carried out the alterations regardless of expense. Mr. Howarth said he did not know until he heard from the authorities that there had been any infringement. He sent in plans as soon as he knew, but they were disapproved. The Bench decided that defendant had not had sufficient knowledge of the by-laws, and only imposed a penalty of £1 and costs.

A Heswall Builder Fined.—Mr. Emmanuel Ellis, a Heswall builder, was summoned recently for violations of the Wirral District Council's by-laws. It appeared that the defendant had not given notice of his intention to erect a cottage in Liverpool Road, Heswall; the thickness of the external and party walls was but 9 inches instead of 13½ inches; and the air-space at the back, which the by-laws stipulated should extend laterally for 20 feet in the case of a building such as the defendant was erecting, was only 15 feet. The Building Surveyor said the defendant had defied the Council in the matter. Defendant was fined £1 with 8s. 6d. costs in each of the three cases.

Dissolutions of Partnership.—The partnership heretofore subsisting between Messrs. John Mason, of 40 King Street, Egremont, in the county of Chester, and Arthur Mason, of 8 Ferndale Avenue, Liscard, Chester, builders and contractors, carrying on business at 2 Union Street, Egremont, Chester, under the style or firm of J. Mason and Son, was on the first day of September, 1900, dissolved by mutual consent. All debts due to and owing by the late firm will be received and paid by Mr. John Mason.—The partnership heretofore subsisting between Messrs. John Groves and Charles Edward Smith, carrying on business as joiners, builders and contractors, at West Hartlepool, under the style or firm of Groves and Smith, has been dissolved by mutual consent as and from the 19th day of September, 1900. All debts due to and owing by the late firm will be received and paid by Mr. Charles Edward Smith.

The Building Trade of Newquay seems not to be so bad as would appear from the note in our last week's issue. Although things are a little quieter than has been the case for some time (because there are so many "builders" putting up terraces on terraces), there is still a good amount of work going on. The two houses of Mr. Tippetts are nearing completion, as are also a new Claremont Sunday School, a Devon and Cornwall bank, and three houses on the Island Estate. The contract has been let for a large house for Dr. Hardwick on the latter estate, and a new drill hall is to be built for the local volunteers. Mr. John Ennor, jun., has three large houses in hand on the Penhre Estate, is completing a terrace at Springfield, and has also prepared plans for two large shops in Bank Street, the site of which is now being excavated. With the proposed new hotel, for which the licence is granted, and with what we have mentioned above, things in the building line are fairly brisk.

Change of Address.—Mr. Ernest T. Marriott has removed from 3 Clifford's Inn, Temple, E.C., to 10 Great College Street, Westminster.

Keystones.

A New Infirmary at Shifnal is to be erected at a cost of about £2,200.

Two Stained-Glass Windows have been placed in the apse of St. David's Church, Neath.

Plans for a New Theatre at Aston, in the Lozells Road, have been passed by the District Council.

Little Portland Street Chapel has been re-opened, after extensive renovation and improvement.

A New Academy at Linlithgow has been erected on a prominent site adjacent to the Palace Grounds by Messrs. R. and W. Philip, contractors, of Linlithgow.

Anwick Church, near Sleaford, has been re-opened after considerable restoration and improvement. The chancel has been raised to its original height, and the east end considerably altered.

A Screen at St. Thomas's Church, Newcastle, has been erected to commemorate the Novocastrians and Northumbrians who have died in South Africa. A new reredos has also been placed in the church.

The Girls' Recreation Club at Exeter has been extended by the addition of a new wing, which was opened by Lady Audrey Buller on September 29th. The builder was Mr. William Brealy and the architect Mr. Harbottle Reed, both of Exeter.

A new Baptist Church at Newcastle-on-Tyne is being erected by Mr. A. Bruce, builder, of Newcastle, whose tender is £4,383 3s. 6d. The architects are Messrs. George Baines and Reginald Palmer Baines, of 5 Clement's Inn, Strand, London, W.C.

A Joint Isolation Hospital for Nantwich is proposed to be erected by the Rural District and Urban District Councils. The scheme provides for the erection of a hospital and the provision of sixteen beds, twelve for the rural and four for the urban district.

In Memory of Ruskin.—A Society of Arts tablet has been affixed to the front of the house in Hunter Street, Brunswick Square (No. 54), in which John Ruskin was born. The house is three doors from the junction of Great Coram Street with Hunter Street.

The New Workhouse at Grove Park.—Mr. Thomas Rowbotham, of Small Heath, Birmingham, has recently commenced the erection of a new workhouse for the Greenwich Union at Grove Park, Kent, at a contract cost of £175,020. The selected plans of this building were chosen by the Local Government Board for exhibition at the Paris Exposition, as representing one of the most modern institutions of its kind in the United Kingdom.

A New Chapel at Penmaenmawr.—As soon as the plans which have been submitted to the Urban District Council have been passed, the erection of a new Welsh Calvinistic Methodist chapel will be commenced at Penmaenmawr, at a cost of £5,000. The site adjoins that of the English Congregational Church, and the building will accommodate 750 worshippers, and will be fully provided with schoolrooms, vestry-room, library, classroom, cloakroom, &c. Mr. J. S. Coverley, chairman of the Urban Council, is the architect.

The L.C.C. Shoreditch Technical Institute commenced its second annual session last week. During last session 830 students took advantage of the various classes. The evening classes afford instruction for men and boys in brick-cutting, builders' quantities, building construction, carpentry and joinery, drawing and design, electrical wiring and fitting, French polishing, plasterers' work, tailors' cutting, upholstery and woodcarving; also in inorganic chemistry, heat and electricity, practical mechanics, workshop geometry and mensuration. Full particulars may be obtained from the Secretary of the Institute, Pitfield Street, N.; or from the Secretary of the Technical Education Board, 116 St. Martin's Lane, W.C.

St. Andrew's Church, Ham Common, Surrey, is having a chancel added.

A New Church at York is to be erected in the Foundry district at a cost of about £3,500.

All Saints' Church, Eastworth, Chertsey, is being erected in the Gothic style by Messrs. Goddard and Sons, of Farnham, from plans by Mr. J. Henry Christian, and when completed will seat 500 persons. The cost will be about £6,000.

Public Baths for Wandsworth.—The Lord Mayor of London (Sir A. J. Newton) on Saturday laid the foundation-stone of the public baths to be erected by the Vestry. The baths are on a commanding site facing High Street, and very near the Town Hall. The cost of the building and freehold will be £29,291.

A bronze statue to Admiral Blake has been erected on the Cornhill, Bridgwater. The statue has been executed by Mr. F. W. Pomeroy. There are appropriate panels on the pedestal, representing the taking of Santa Cruz and the bringing home of Blake's body to Plymouth Sound. The cost of the statue has been £1,200.

A new London Restaurant.—After some two years have been occupied in the process of construction, the Throgmorton Restaurant of Messrs. J. Lyons and Co. has been completed. An excavation to the depth of 50ft. has enabled the builders to provide a number of spacious saloons on two floors below the street level, while under these again is another floor devoted to cooking, service requirements, and cellarage.

A memorial to John Ruskin at Friars' Crag, Keswick, was unveiled by Mrs. Arthur Severn last Saturday. The monument consists of a simple monolithic block of Borrowdale stone, rough and unhewn as it came from the quarry. It is of the type of the standing stones of Galloway, which are the earliest Christian monuments of the Celtic people now extant. Upon one side is incised a simple Chi-Rho enclosed in a circle after the fashion of these earliest crosses. On the other side of the monolith, facing the lake and the scene which Ruskin once described "as one of three most beautiful scenes in Europe," is a medallion in bronze, the work of Signor Lucchesi, representing Ruskin as he was in his prime, in the early seventies.

The Birkbeck School of Art commenced its new session last week with an exhibition of students' work, under the direction of Mr. Alfred Mason. Mr. W. E. Tanner takes three prizes for drawing and painting from life. A Queen's Prize for design, chiefly for stained glass, went to Mr. W. Sidey; and a South Kensington prize for silver and enamel designs, patterns for book covers, &c., to Miss May W. Ware. Miss Clarice Carter exhibited silversmithery; and a fresco by Miss Dora Matthews, founded on "A Winter's Tale," aims at the adornment of a proscenium. Panel ornamentation for stained wood and gesso was represented by Miss Elsie Knight, and architecture by Mr. F. Schofield. The number of names on the school register for the past year reached nearly three hundred, the majority belonging to the evening classes.

Church Decoration.—Sir W. B. Richmond, R.A., addressing a meeting last week of the parishioners of St. Peter's, Hammersmith, convened to consider the question of the internal decoration of their church, said he would not advise them to cover the whole church with designs. He would suggest that it should be made lively instead of dead, and for a church that was not to be profusely decorated with colour nothing would be more effective than white. His proposal was white and gold for the body of the church, as good a piece of tapestry for the east end as could be got, and a painting by himself at the top. Beauty and religion had always gone hand in hand, but in these days a party was endeavouring to draw back the mind of man from the contemplation of the beautiful. It was the educational progress of the people which made them desire more beauty. But they must have nothing but what was pure and chaste, and avoid mere cheapness. In addition to the proposed decoration, the vestries at the back of the church are to be enlarged and a parish room formed, the cost being estimated at £800.

Correspondence.

House Planned Like the Ace of Clubs.

To the Editor of THE BUILDERS' JOURNAL.

ILKLEY, YORKSHIRE.

SIR,—I notice a question asked in your issue for last week about a house built like the ace of clubs. Midford Castle, near Bath, was built by Roebuck in 1680, with money won by gambling, and is planned like the ace of clubs, the lucky card on that occasion. The castle was lately in the possession of the Marchesa de San Agneta Conoly, who left her estate to the Roman Catholic Church, appointing the Catholic Bishop of Clifton as trustee; but of these arrangements I am by no means certain. Unfortunately I am unacquainted with the earlier history of the Castle. Your correspondent could now, no doubt, make further enquiries himself.—Yours faithfully,

RUPERT FORD.

Engineering Notes.

Additions to the Union Infirmary, Keighley, are being warmed and ventilated by means of Shorland's patent Manchester stoves, supplied by Messrs. E. H. Shorland and Brother, of Manchester.

County Court, Oldham.—Messrs. John King, Ltd., engineers, of Liverpool, have in hand the warming of this building by means of their "small-tube" hot-water heating apparatus, employing their well-known economical coil boilers.

Change of Address.—The Lilleshall Company, Limited, has changed its address from 12 Lime Street, E.C., to 71 Finsbury Pavement (Electric Railway Station Buildings), Moorgate Street, London, E.C. Its new telephone number is 1691 London Wall.

Projected Engineering Works at Seaham Harbour.—It is proposed to form a company for the establishment of new engineering works at Seaham Harbour, and to take over all or part of the plant and the business connection of the Londonderry Works.

Proposed new Electricity Station for Worcester.—The Electricity Committee of the Worcester City Council, having resolved that it is inexpedient to extend the Powick generating station, recommend that the city architect shall be employed to prepare plans for a new station on a site in Hylton Road and Tybridge Street, which site it is proposed to acquire for £3,750.

Electric Trams in Surrey.—The Kingston Corporation have resolved to oppose a Bill proposed to be promoted by the London United Tramway Company for powers to construct and work electric trams in the borough and in other parts of Surrey. By this scheme the London United Tramway Company propose to lay down trams over about sixty miles of roadway, commencing at Hammersmith and going as far as Esher. There are to be six lines: (1) from Hammersmith, through Fulham, Putney, and Kingston, to Hampton Wick; (2) from New Maldon to Kingston; (3) from the Kingston Gate of Richmond Park to Tolworth; (4) from Surbiton to Esher; (5) from Thames Ditton to Hampton Court; and (6) from Surbiton to Hook. Some of these lines pass through Kingston; and as the Kingston Corporation have a scheme of their own, their opposition is to be "determined and unqualified."

British Institute of Certified Carpenters.—At the meeting held in Carpenters' Hall last Saturday, Mr. J. Clark, vice-president, in the chair, the following gentlemen holding the necessary qualifications were elected members: *As Fellows*: J. F. Maskill (Sheffield), J. Sandham (London), E. W. F. Martin (Tunbridge Wells). *As Associates*: W. W. Taylor (London), A. Elston (Sheffield), H. Bolton (London), D. Grant (London), H. Hay (London), D. W. Thomas (London), and W. Humphries (London).

COMPLETE LIST OF CONTRACTS OPEN.

DATE OF DELIVERY.		WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
		BUILDING.		
Oct.	12	Carlisle—Houses		H. H. Hodgkinson, 9 Lowther Street, Carlisle.
„	12	Great Yarmouth—Houses	H. R. Atkins	Chas. G. Baker, architect, Town Hall Chambers, Great Yarmouth.
„	12	Lancaster—Furniture Stores	J. W. Whittaker	J. Parkinson, 67 Church Street, Lancaster.
„	12	Morecambe—Extension	Urban District Council	C. F. Parkinson, Engineer, Woodhill Lane, Morecambe.
„	12	Siddick—Foundations	St. Helens Colliery Company	J. S. Moffatt, 53 Church Street, Whitehaven.
„	13	Lichfield—School	Governors of Grammar School	H. H. Brown, Clerk to Governors, Lichfield.
„	13	Middleton, Lancs.—Greenhouse	Corporation	Borough Surveyor, Middleton, Lancs.
„	13	Cheltenham—Renovation	Corporation	Borough Surveyor, Municipal Offices, Cheltenham.
„	13	Ashby-de-la-Zouch—Sanitary Annex	Guardians	Everard and Pick, 6 Millstone Lane, Leicester.
„	13	Londonderry—House	S. Elder	J. C. Ferguson and Son, 20 Pump Street, Londonderry.
„	13	Plymouth—Shop		F. A. Clark, Architect, New Town Chambers, Plymouth.
„	15	Barkisland, Yorks.—Footbridge	Urban District Council	Clerk, Council Office, Barkisland, Yorks.
„	15	Birkenhead—Mortuary	Corporation	C. Brownridge, Town Hall, Birkenhead.
„	15	Dumfries—Library		J. Grierson, 57 Buccleuch Street, Dumfries.
„	15	Glounthane, Ireland—School House		Parochial House, Glounthane, Ireland.
„	15	Halesowen—Altering	Rural District Council	W. Whitworth, Surveyor, Halesowen.
„	15	Pontefract—Houses	Mrs. J. H. Smith and Mr. W. Hurst	W. Hurst, Architect, Pontefract.
„	16	Luton—School Buildings	School Board	J. R. Brown and Son, Castle Street, Luton.
„	16	Barnet—Board Room	Guardians	W. H. Mansbridge, 40 High Street, Barnet.
„	16	Crook, Durham—Classrooms	Primitive Methodist Society	F. H. Livesay, 107 Newgate Street, Bishop Auckland.
„	16	London, E.—Chimney Shaft	Whitechapel District Board of Works	W. M. Jameson, Board of Works Office, Whitechapel.
„	17	Manchester—Ambulance Station and Stables	Watch Committee	City Surveyor, Town Hall, Manchester.
„	18	Saltley, near Birmingham—Fire Station	Watch Committee	J. Price, Council House, Birmingham.
„	20	Dartford—Electric Light Station	Urban District Council	Hesketh and Stokes, 110 Cheapside, E.C.
„	20	Springfield, Essex—Constabulary Headquarters	Standing Joint Committee	Clare and Ross, 66 Duke Street, Chelmsford.
„	20	Banbury—Shed	Town Council	N. H. Dawson, Town Hall, Banbury.
„	23	Bootle—Offices	Corporation	H. Hartley, 8 Harrington Street, Liverpool.
„	24	Croydon—Shops		F. and W. Stocker, Architects, Queen Street, Cheapside, E.C.
„	24	Staveley, near Chesterfield—Lock-up	Derbyshire County Council	J. S. Storey, County Offices, St. Mary's Gate, Derby.
„	26	Elswick, near Preston—Hospital	Hospital Committee	E. C. H. Maidman, 13 South Charlotte Street, Edinburgh.
„	31	Middlesbrough—Offices	North Eastern Railway Company	W. Bell, Architect, York.
Nov.	1	Lisnaskea, Ireland—School	Board of Public Works	B. L. Winslow, Solicitor, Lisnaskea.
„	3	Dirk Cove, Cork—Coastguard Station	Board of Public Works	Carpenter-in-Charge, Queen's College, Cork.
„	30	Port of Recife—Works	Federal Government	Commercial Department, Foreign Office, S.W.
		ENGINEERING.		
Oct.	12	Glasgow—Waterworks	Western District Committee of the County Council of Stirlingshire	Kyle and Frew, 140 West George Street, Glasgow.
„	13	Whitehaven—Switchboard	Water and Lighting Committee	E. W. Dunton, Electrical Engineer, Whitehaven.
„	13	Leicester—Pumping Engine	Water Committee	F. Griffiths, Waterworks Office, Bowling Green Street, Leicester.
„	13	Cheltenham—Heating	Corporation	Borough Surveyor, Municipal Offices, Cheltenham.
„	13	Bootle, Lancashire—Dynamo	Corporation	Electrical Engineer, Electric Light Station, Bootle, Lancs.
„	13	Godalming—Filter Beds	Corporation	J. H. Norris, Municipal Offices, Bridge Street, Godalming.
„	13	Nottingham—Cleaning Out	Stoke Farm Committee	A. Brown, Guildhall, Nottingham.
„	13	Tirphil—Widening Bridge	Bedwellty Urban District Council	J. H. Lewis, Surveyor, Blackwood, Mon.
„	15	London, S.E.—Steampipes	Bermondsey Vestry	F. Ryall, Town Hall, Spa Road, Bermondsey, S.E.
„	15	Sunderland—Tramcars	Corporation	J. F. C. Snell, Dunning Street, Sunderland.
„	16	India Office, S.W.—Electrical Installation	Secretary of State for India	Director-General of Stores, India Office, Whitehall, S.W.
„	16	Bury, Lancs.—Condensers	Gas Committee	H. Simmonds, Gasworks, Elton, Bury, Lancs.
„	16	Maidstone—Surface Condenser	Corporation	Stevens and Barker, St. Peter Street, Maidstone.
„	16	Wilby, Wellingborough—Reservoir	Parish Council	G. F. Bearn, Surveyor, Market Square, Wellingborough.
„	17	Gainsborough—Pumping Machinery	Urban District Council	P. Griffith, 54 Parliament Street, London, S.W.
„	17	Aberdeen—Tramcars	Tramways Committee	J. A. Bell, Electrical Engineer, Cotton Street, Aberdeen.
„	17	Londonderry—Heating		M. A. Robinson, Richmond Street, Londonderry.
„	17	Wembley—Sewage Works	Urban District Council	W. Bagshaw, Public Offices, Wembley.
„	18	Axbridge, Somerset—Waterworks	Rural District Council	A. Powell, 3 Unity Street, College Green, Bristol.
„	22	Saffron Walden—Pump	Corporation	A. H. Forbes, Hill Street, Saffron Walden.
„	22	Glasgow—Widening Railway	Caledonian Railway Co.	Engineer, Buchanan Street Station, Glasgow.
„	31	Kendal—Gasholder Tank	Gas, Water and Electricity Committee	T. N. Ritson, Gasworks, Kendal.
Nov.	1	Dundrum Bay, co. Down—Harbour Works	County Council	County Surveyor, Court House, Downpatrick, co. Down.
„	14	Lahore, India—Tramway Materials	Municipal Committee	Secretary Municipal Committee, Lahore.
„	15	Newcastle-upon-Tyne—Widening Bridge	Corporation	Town Clerk, Town Hall, Newcastle-upon-Tyne.
		IRON AND STEEL.		
Oct.	12	Ayr—Rails	Magistrates and Council	J. Young, Town Surveyor, Town Buildings, Ayr.
„	12	Dundee—Steel Tanks	Gas Commissioners	W. H. Tittensore, Dudhope Crescent Road, Dundee.
„	23	Glasgow—Rails	Corporation	J. Young, 88 Renfield Street, Glasgow.
		PAINTING AND PLUMBING.		
Oct.	15	Morley—Painting	Corporation	W. E. Putman, Town Hall, Morley,
		ROADS AND CARTAGE.		
Oct.	13	Staines—Granite	Urban District Council	E. J. Barrett, Town Hall, Staines.
„	15	Beckenham—Making-up	Urban District Council	Surveyor, Council Offices, Beckenham, Kent.
„	15	Guildford—Granite	Town Council	C. G. Mason, Borough Surveyor, Tuns Gate, Guildford.
„	15	Hanwell—Broken granite	Urban District Council	Clerk, Council Offices, Hanwell.
„	15	Tredegar—Road Metal	Urban District Council	W. C. Widdowson, Surveyor, Tredegar.
„	15	Berkhampstead, Herts—Kerbing	County Council	County Surveyor, 41 Parliament Street, Westminster, S.W.
„	16	Bishop's Stortford—Materials	Urban District Council	T. Swatheridge, Council Offices, North Street, Bishop's Stortford.
„	16	Carshalton—Materials	Urban District Council	W. W. Gale, Council Offices, High Street, Carshalton.
„	16	Lewisham—Kerbing, Tar Paving, &c.	Board of Works	Surveyor, Town Hall, Catford, S.E.
„	16	Sydenham—Kerbing, Tar Paving, &c.	Lewisham Board of Works	Surveyor, Town Hall, Catford, S.E.
„	17	Alltwen, near Pontardawe, Wales—Road Diversion	Glamorgan County Council	County Surveyor, Town Hall, Bridgend.
„	17	Watford—Street Works	Urban Council	Engineer, 14 High Street, Watford.
„	17	Chiswick—Making Up	Urban District Council	Surveyor, Council Offices, Chiswick, W.
„	18	Rugby—Road Work	Freehold Land Society	J. T. Franklin, Bridget Street, Rugby.
„	29	London, N.—Road Works	Hornsey Urban District Council	E. J. Lovegrove, Southwood Lane, Highgate, N.
„	29	Windsor—Roadmaking	Rural District Council	Mr. Menzies, Surveyor, Englefield Green, Surrey.
		SANITARY.		
Oct.	12	St. Helens, Cumberland—Sewerage Works		J. S. Moffatt, 53 Church Street, Whitehaven.
„	15	Rowley Regis—Sewer	Urban District Council	Clerk, Council Offices, Old Hill, Staffordshire.
„	16	Acton—Sewerage Works	Urban District Council	D. J. Ebbetts, 242 High Street, Acton.
„	17	London, S.W.—Sewer Work	Fulham Vestry	Surveyor, Town Hall, Walham Green, S.W.
„	17	Wimbledon—Sanitary Fittings	Urban District Council	C. H. Cooper, The Broadway, Wimbledon.
„	19	Bristol—Sewers	Waterworks Co.	Waterworks Company, Small Street, Bristol.
„	22	Luton—Scavenging	Rural District Council	W. Austin, 7 George Street West, Luton.
„	27	Aughnacloy, Ireland—Drainage		G. P. Hatton, Church Street, Dungannon.
„	29	Guildford—Sewerage Works	Rural District Council	J. Anstee, Commercial Road, Guildford.
„	29	Long Crendon, Thame—Sewers	Rural District Council	Taylor, Sons and Crimp, 27 Great George Street, London, S.W.
		TIMBER.		
Oct.	22	General Post Office—Telegraph Poles	Postmaster-General	Chas. E. Stuart, G.P.O., London, E.C.

COMPETITIONS OPEN.

DATE OF DELIVERY.		DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	BY WHOM ADVERTISED.
Oct.	20	Sevenoaks—Hospital	£10 10s.	Surveyor, Council Offices, Sevenoaks.
„	22	Swindon—Laying-out Grounds	£50	E. T. Jones, 42 Cricklade Street, Swindon.
„	30	Devizes—Hospital	£20, £10	O. Sheppard, Clerk to Joint Committee, Devizes.
„	30	Musselburgh—Town Hall	£26 5s. and £15 15s.	Town Clerk, Council Offices, Musselburgh.
„	30	South Shields—Municipal Buildings	£200, £100, £50	J. M. Hayton, Town Clerk, Court Buildings, South Shields.
Nov.	15	Newcastle-upon-Tyne—Bridge		H. Motum, Town Clerk, Town Hall, Newcastle-upon-Tyne.
Nov.	30	Swansea—Harbour Offices	£100, £50	T. Strick, Harbour Offices, Swansea.
Dec.	1	Bridlington—Parade Extension	£36 5s., £15 15s.	A. E. Matthewman, Town Hall, Bridlington.
March	25	Basford—Sewerage Scheme		C. J. Spencer, Clerk, Public Offices, Basford.

TENDERS.

Information from accredited sources should be sent to "The Editor." Results of tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the Work.

BURTON-ON-TRENT.—Accepted for the erection of shop premises in Balfour Street, for the Burton-on-Trent Artisans' Dwellings Co., Lim. Mr. Thomas Jenkins, architect, 85 High Street, Burton-on-Trent:—

No. 4 Contract.

Henry Edwards £745

BURTON-ON-TRENT.—For the erection of new premises in High Street, for the Young Men's Christian Association. Mr. Thomas Jenkins, architect, 85 High Street, Burton-on-Trent. Quantities by the architect:—

J. T. Varlow ...	£4,753 13 2	G. Hodges	£3,880 0
Henry Edwards ...	4,275 0 0	R. Kershaw*	3,775 0 0
T. Lowe & Sons ...	3,963 0 0		

* Accepted.

BURTON-ON-TRENT.—For providing new dining-room at the White Hart Hotel, High Street, for Messrs. Bass, Ratcliffe & Gretton, Lim. Mr. Thomas Jenkins, architect, 85 High Street, Burton-on-Trent. Quantities by the architect:—

J. Hunter	£950	Geo. Hodges...	£820
T. Lowe & Sons	826	Henry Edwards*	788

* Accepted.

QUARRY BANK.—Accepted for the erection of six houses for Mr. Alfred Jones. Mr. Frank C. Lewis, architect, Cradley Heath:—

Ratcliffe & Co. £1,635

PENSNETT.—Accepted for the erection of house on the Bird's Meadow Estate for Dr. Griffiths, M.D. Mr. Frank C. Lewis, architect, Cradley Heath:—

E. Leckerson £500

NETHERTON, Dudley.—For the erection of two houses, Bell Road, for Mr. John Golding. Mr. Frank C. Lewis, architect, Cradley Heath:—

Henry Golding & Son ...	£436	Joseph Turner*	£415
M. Turner	420		

* Accepted.

NETHERTON.—Accepted for the erection of a house in riffin Street, for Mr. Joseph Griffiths. Mr. Frank C. Lewis, architect, Cradley Heath:—

Grove & Hill £305

KIRBY, Essex.—For the erection of schools to accommodate 250 children, for the School Board of Kirby, near Colchester. Mr. C. E. Butcher, architect, Queen Street, Colchester:—

A. Coe, Ipswich	£2,751
C. Oxley, Walton-on-the-Naze	2,691
H. W. Gladwell, Walton-on-the-Naze	2,664
F. J. Ward, Colchester	2,600
A. Diss, Colchester	2,495
H. J. Linzell, Newmarket	2,315
Dupont & Co., Colchester	2,279
Saunders & Sons, Dedham, Colchester	2,275
E. West, Chelmsford	2,225
J. McKay, Clacton-on-Sea	2,130

LEICESTER.—For the construction of sewers, &c., for the Corporation. Mr. E. G. Mawbey, C.E., Town Hall, Leicester:—

Barnes & Co. ...	£14,550 0 0	T. Philbrick ...	£10,199 16 2
E. Tempest	11,130 14 4	Johnson & Lang.	
Bentley & Loch	10,625 3 0	ley, Leicester*	9,991 5 11

* Accepted.

LONDON.—For the erection of five shops, High Street, Lewisham, S.E., for Messrs Belcham. Mr. Alfred Roberts, architect, 18 Nelson Street, Greenwich:—

W. Mills	£5,425	H. L. Holloway	£5,000
H. Groves	5,398	T. D. Leng	4,880
W. Martin	5,381	Kennard Bros.	4,158
Jerrard & Son	5,233	J. Watt*	4,130

* Accepted.

NORTHFLEET, Kent.—For the erection of six cottages, Springfield Estate, for the Kent and Essex House Investment Company, Limited. Mr. G. W. Cobham, Surveyor, 1 Edwin Street, Gravesend:—

J. M. Dering	£1,670 0	S. Horwood...	£1,260 0
Beal & Hubbard ...	1,396 0	W. E. Thomas	1,174 0
W. H. Black	1,300 10	A. E. Tong, Graves-	
W. Andrews	1,290 0	end*	1,160 0
J. Wilford	1,290		

* Acc pted.

TUNBRIDGE WELLS.—For the erection of technical institute and school of art, for the Corporation. Mr. H. T. Hare, architect, 18 Hart Street, Bloomsbury, W.C. Quantities by Messrs. Fleetwood, Son & Eversden, and Mr. Norton:—

Martin & Co. ...	£13,475 0 0	J. Jarvis	£11,795 0 0
Cook & Sons ...	12,558 5 1	Crates & Son ...	11,600 0 0
Willcock & Co. ...	12,458 0 0	Davis & Leaney,	
Strange & Sons...	11,837 0 0	Goudhurst* ...	11,434 0 0

* Accepted.

CURRENT PRICES.

OILS AND PAINTS.

		£ s. d	£ s. d.
Castor Oil, French ..	per cwt.	1 11 6	1 12 8
Colza Oil, English ..	do.	1 12 0	—
Copperas	per ton	2 0 0	—
Lard Oil	per cwt.	1 19 0	—
Lead, white, ground, carbonate	do.	1 4 10	—
Do. red	do.	1 0 4½	—
Linseed Oil, barrels ..	do.	1 13 9	—
Petroleum, American ..	per gal.	0 0 6	0 0 6½
Do. Russian ..	do.	0 0 5½	—
Pitch	per barrel	0 8 6	—
Shellac, orange	per cwt.	2 18 0	—
Soda crystals	per ton	3 2 6	3 5 0
Tallow, Town	per cwt.	1 5 0	1 8 0
Tar, Stockholm	per barrel	1 8 6	—
Turpentine	per cwt.	1 9 0	—

METALS.

Copper, sheet, strong ..	per ton	86 0 0	—
Iron, Staffs., bar	do.	9 15 0	11 10 0
Do Galvanised Corrugated sheet ..	do.	12 10 0	13 0 0
Lead, pig, Spanish ..	do.	17 17 6	17 18 9
Do. do. English common brands	do.	18 5 0	—
Do. sheet, English, 3lb. per sq. ft. and upwards	do.	21 0 0	22 0 0
Do. pipe	do.	23 0 0	—
Nails, cut clasp, 3in. to 6in.	do.	12 0 0	13 0 0
Do. floor brads ..	do.	11 15 0	12 15
Steel, Staffs., Girders and Angles	do.	8 5 0	9 0 0
Do. Mild Bars	do.	9 2 6	9 10 0
Tin, Foreign	do.	134 0 0	134 10 0
Do. English ingots ..	do.	138 0 0	139 0 0
Zinc, sheets, Silesian ..	do.	23 10 0	—
Do. do. Vieille Montaigne	do.	24 5 0	—
Do. Spelter	do.	18 15 0	18 17 6

TIMBER.

HARD WOODS

Ash, Quebec	per load	3 17 6	4 10 0
Birch, Quebec	do.	3 12 6	3 17 6
Box, Turkey	per ton	7 0 0	15 0 0
Cedar, lin., Cuba ..	per ft. sup.	0 0 3	0 0 3½
Do. Honduras ..	do.	0 0 3½	—
Do. Tobasco	do.	0 0 3½	—
Elm, Quebec	per load	0 12 6	5 10 0
Mahogany, Average Price for Cargo, Honduras ..	per ft. sup.	0 0 5	—
Do. African ..	do.	0 0 3½	—
Do. St. Domingo	do.	0 0 6	—
Do. Tobasco ..	do.	0 0 4	—
Do. Cuba ..	do.	0 0 4½	—
Oak, Dantzic and Memel	per load	3 15 0	5 7 6
Do. Quebec	do.	4 12 6	5 0 0
Teak, Rangoon, planks ..	do.	9 0 0	21 0 0
Wainscot, Riga (Baulk)	do.	3 15 0	5 15 0
Do. Odessa Crown	do.	3 15 0	5 15 0
Walnut, American ..	per cub. ft.	0 1 9	0 3 4

SOFT WOODS.

Fir, Dantzic and Memel ..	per load	3 0 0	4 0 0
Pine, Quebec Yellow ..	do.	4 7 6	6 0 0
Do. Pitch	do.	2 14 0	3 6 0
Laths, log, Dantzic ..	per fath.	4 10 0	5 10 0
Do. Petersburg ..	per bundle	0 1 1½	—
Deals, Archangel 2nd & 1st	per P. Std.	12 15 0	18 0 0
Do. do. 4th & 3rd	do.	13 0 0	14 10 0
Do. do. unsorted	do.	11 0 0	12 10 0
Do. Riga	do.	6 15 0	8 10 0
Do. Petersburg 1st Yellow	do.	18 15 0	—
Do. do. 2nd „	do.	10 15 0	13 15 0
Do. do. Unsorted „	do.	5 5 0	13 0 0
Do. do. White	do.	8 5 0	11 15 0
Do. Swedish	do.	10 10 0	22 10 0
Do. White Sea ..	do.	11 5 0	18 0 0
Do. Quebec Pine, 1st ..	do.	13 15 0	23 15 0
Do. do. 2nd	do.	18 15 0	—
Do. do. 3rd &c.	do.	9 0 0	9 15 0
Do. Canadian Spruce, 1st	do.	10 10 0	11 15 0
Do. do. 3rd & 2nd	do.	8 10 0	10 0 0
Do. New Brunswick ..	do.	7 5 0	8 0 0
Battens, all kinds ..	do.	8 0 0	14 0 0
Flooring Boards, 1in. prepared, 1st ..	per square	0 13 9	—
Do. 2nd ..	do.	0 11 9	—
Do. 3rd &c. ..	do.	0 7 0	—

COMING EVENTS.

Wednesday, October 10.

INSTITUTE OF SANITARY ENGINEERS.—Meetings of Examination and Literary Committee at 2.30 p.m.; General Purposes and Finance Committee at 3.30 p.m.; Election Committee at 5 p.m.; and Members' Sessional Meeting at 7 p.m.

SANITARY INSTITUTE.—Lectures and Demonstrations for Sanitary Officers: Part I. Mr. J. Priestley on "The Duties of a Sanitary Inspector—Offensive Trades and Trade Nuisances," 8 p.m. Inspection and Demonstration at John Knight and Sons' Soap Works, Silvertown, at 3 p.m.

Thursday, October 11.

THE WORSHIPFUL COMPANY OF CARPENTERS, CARPENTERS' HALL.—Lectures on Sanitary Building Construction. Mr. A. Wynter Blyth on "Sanitary Appliances," at 7.30 p.m.

SANITARY INSTITUTE.—Lectures and Demonstrations for Sanitary Officers: Part I. Demonstration of Bookkeeping as carried out in a Sanitary Inspector's Office, at 8 p.m., by Mr. Albert Taylor.

RUSKIN SOCIETY OF BIRMINGHAM.—Presidential Address by the Very Rev. Francis Paget, D.D.

Friday, October 12.

ARCHITECTURAL ASSOCIATION (Discussion Section).—Mr. Geoffrey Lucas on "Logical Building and its Influence on Design," 7 p.m.

SANITARY INSTITUTE.—Lectures and Demonstrations for a Sanitary Officer: Part I. Mr. Henry R. Kenwood on "Infectious Diseases," 8 p.m.

GLASGOW AND WEST OF SCOTLAND TECHNICAL COLLEGE ARCHITECTURAL CRAFTSMEN'S SOCIETY.—Presidential Address by Alex. Davie.

Saturday, October 13.

NORTH OF ENGLAND INSTITUTE OF MINING AND MECHANICAL ENGINEERS, NEWCASTLE-UPON-TYNE.—Council Meeting at 1.30 p.m. General Meeting at 2 p.m.

SANITARY INSTITUTE.—Lectures and Demonstrations for Sanitary Officers: Part I. Inspection and Demonstration at Southwark and Vauxhall Waterworks, Hampton, at 3 p.m.

Monday, October 15.

SANITARY INSTITUTE.—Lectures and Demonstrations for Sanitary Officers: Part I. Mr. Henry R. Kenwood on "Methods of Disinfection," 8 p.m.

Tuesday, October 16.

GLASGOW INSTITUTE OF ARCHITECTS.—Annual General Meeting at 2 p.m.

Wednesday, October 17.

SANITARY INSTITUTE.—Lectures and Demonstrations for Sanitary Officers: Part I. Mr. Henry R. Kenwood on "Water: Composition, Pollution and Purification," 8 p.m. Inspection and Demonstration at Common Lodging House.

Thursday, October 18.

WORSHIPFUL COMPANY OF CARPENTERS.—Mr. A. Buchanan on "Plumbers' Work Connected with Dwelling-houses," 7.30 p.m.

Friday, October 19.

ARCHITECTURAL ASSOCIATION.—Conversazione.

SANITARY INSTITUTE.—Lectures and Demonstrations for Sanitary Officers: Part I. Mr. Henry R. Kenwood on "Elementary Statistics," 8 p.m.

INSTITUTION OF MECHANICAL ENGINEERS.—Mr. Bryan Donkin on "Observations on an improved Glass Revealer, for studying Condensation in Steam-Engine Cylinders and rendering the effects visible." 8 p.m.

Saturday, October 20.

SANITARY INSTITUTE.—Lectures and Demonstrations for Sanitary Officers: Part I. Inspection and Demonstration at Leyton Sewage and Destructor Works at 3 p.m., conducted by William Dawson, M.I.C.E.

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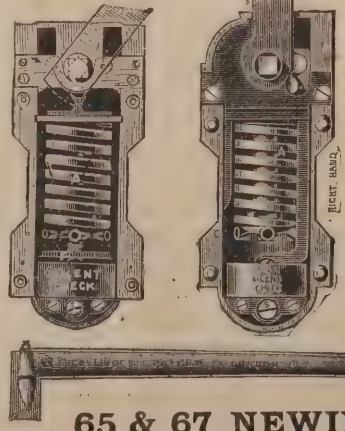
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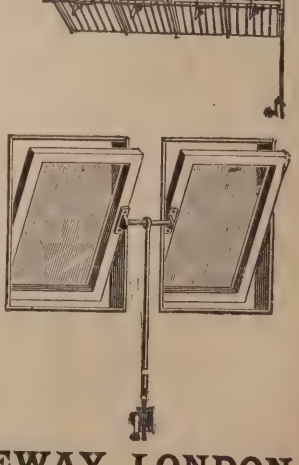
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THE BUILDERS' JOURNAL & ARCHITECTURAL RECORD

October 17, 1900. No. CCXCVII.

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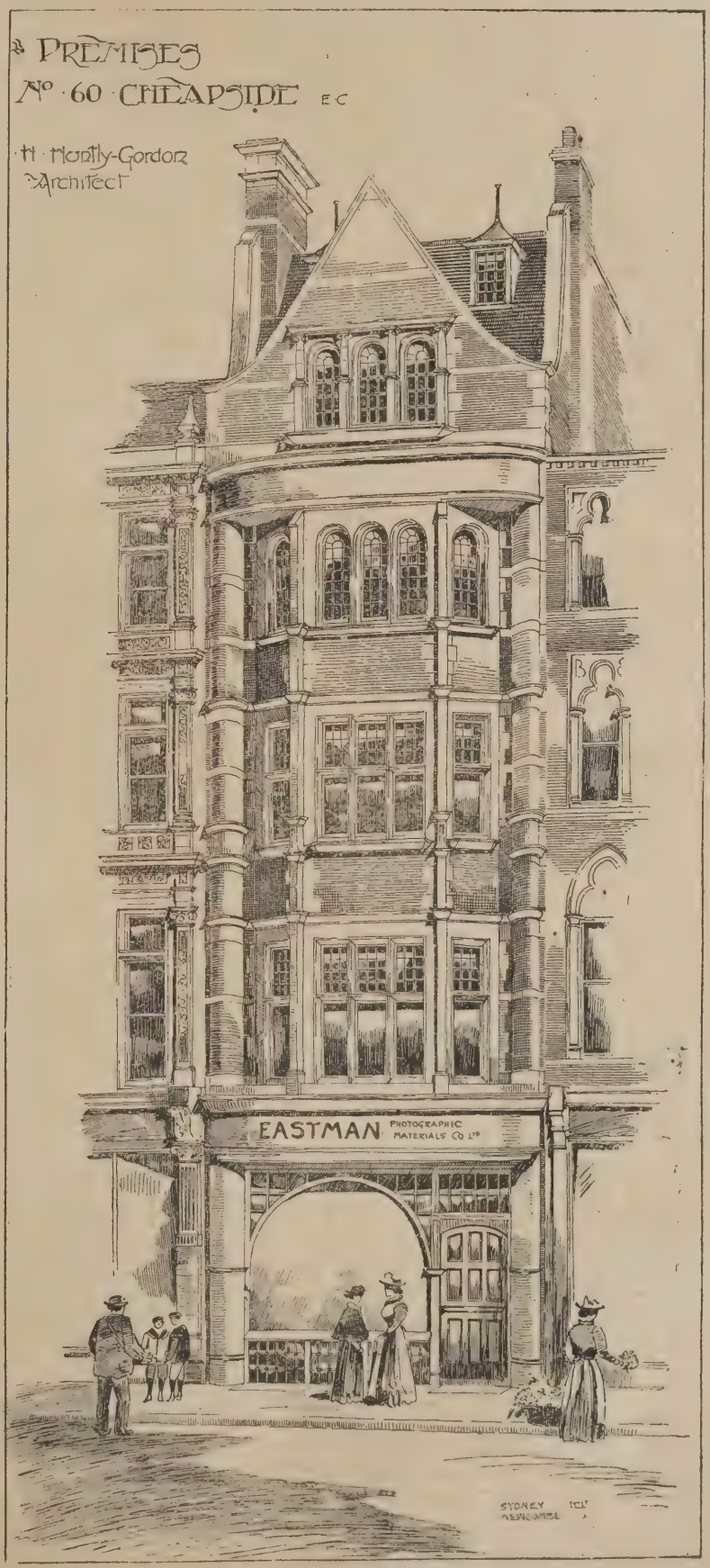
An Architectural Causerie.

Inn Signs by Painters.

In these days of the revival of arts and crafts, of the strenuous revolt against the commonplace, and against the infinite repetition of outworn themes, the cult of the specially-designed inn sign has become greatly honoured. We have recently seen how Mr. Walter Crane has enriched the little Hampshire village of Grayshott with his decorative sign for the "Fox and Pelican" inn, and about two or three years ago the Marchioness of Lorne designed a pictorial sign for the "Ferry" inn at Rosneath. These are only isolated instances, but there are not a few remarkably good signs executed by well-known painters in different parts of the country serving to give an abiding interest to the villages and hamlets where they may be found. Of course, the classical instance is that of the "Royal Oak" sign, painted for the inn of that name at Bettwys-y-Coed by David Cox, and long since removed to a private collection; but there have been many others. J. F. Herring, coachman first and painter afterwards, was the author of many pictorial signs at Doncaster, which have, almost without exception, been purchased and removed by connoisseurs. Millais, too, in his younger days, painted a sign for an inn on Keston Common, which may now be sought in vain. The list of vanished artists' signs might be extended, but more to the purpose is some account of those which still exist to carry on the pleasing custom. Goring-on-Thames rejoices in the pictorial sign of the "Miller of Mansfield," painted by Marcus Stone, R.A.; and Wargrave-on-Thames has an elaborate one by G. D. Leslie, R.A. In a gossippy book of reminiscences Mr. Leslie tells how this sign came to be painted. "It was during our stay at Wargrave," he says, "that my friend Mr. Hodgson and I painted Mrs. Wyatt's signboard for her—the George and Dragon. I painted my side first, a regular orthodox St. George on a white horse, spearing the dragon. Hodgson was so taken with the idea of painting a signboard that he asked me to be allowed to do the other side, to which I of course consented, and, as he could only stop at Wargrave one day, he managed to do it on that day—indeed, it occupied him little more than a couple of hours. The idea of his composition was suggested by Signor Pellegrini, the well-known artist of 'Vanity Fair.' The picture represented St. George, having vanquished the dragon and dismounted from his horse, quenching his thirst in a large beaker of ale. These pictures were duly hung up soon after, and very much admired. They have since had a coat of boat varnish, and look already very Old Masterly. Hodgson's, which gets the sun on it, is a little faded; but mine, which faces the north, towards Henley, still looks pretty fresh."

The Thames-side villages are especially favoured, for the "Row Barge" at Wallingford also has a sign painted by Mr. Leslie. That inn is a very modest and a very ancient house of entertainment. A document is still extant which sets forth how the license was renewed in 1650, when, owing to the puritanical ways of the age, many other houses in the same town had to forfeit theirs and discontinue business. Once the property of the Corporation of Wallingford, it seems to have obtained its unusual name from having been the starting point of the Mayor's State barge. With these facts in mind, the artist painted an imaginary State barge, pulled by six sturdy watermen, and containing the Mayor and Council of Wallingford, accompanied by the mace-bearer, who occupies a prominent position in the prow. This does not quite exhaust the list of riverside places thus distinguished, for "Ye Olde Swan," Preston Crowmarsh, has a sign painted by Mr. Wildridge. It overlooks one of the prettiest ferries on the river.

Two modern artistic signs owe their existence to a lady. These are the elegant devices



LONDON STREET ARCHITECTURE.

of the "Smoker Inn" at Plumbley and the "Windmill" at Tabley, both in Cheshire. They are from the brush of Miss Leighton, a niece of the late Lord de Tabley. The "Smoker" by no means indicates a place devoted with more than usual thoroughness to the use of the fragrant weed, but it is named after a once-famous racehorse belonging to the family over eighty years ago, whose portrait is seen on the sign. The reverse side of the board displays the arms of the De Tableys, supported by two ferocious-looking cockatrices. From every point of view the spread of this fashion is to be encouraged, for it not only creates an interest in the different localities, but serves to perpetuate local history and legend, and affords the decorative artist an opportunity.

C. G. H.

Bohemianism in Architecture.

IF Bohemianism merely suggests lazy carelessness and luxury, we shall find it strikingly indicated in the porticoes and balconies, verandahs and awnings, flat roofs and sun-blinds, of the wealthy Italian nobleman: from the days of ancient Rome and Pompeii to the present day. The delightful plans of the Pompeian houses (in which the interior quadrangle idea is fully developed) suggest the height of Bohemianism in the sense just indicated, and they are probably the most luxurious types of habitation the Roman nobles were accustomed to: types of a house indicating a life of ease and sensuality which the Romans above all took to so readily. But this is all Italy. How voluptuous, how florid! Surely we can step a little higher in the scale and find a truer Bohemianism, developed from that great and glorious "Northern Energy" which has resulted in the Gothic of Northern Europe. A wild disregard of rules, a cunning playfulness, and a rare spirit for the grotesque are what we find in the great works of Mediæval Europe. And all resulting from the essence of Bohemianism—disregard of convention, comfort before beauty and uniformity, and a total absence of hesitation. So the errors that could not help being perpetrated in work done on such a principle as this we forgive with delight. To come down to our own days; Bohemianism is assuming a more artistic and respectable garb—at least what we call Bohemianism, but it is really time that a new definition should be given to the phrase. It is too delightful a word to be given over to the life of the Quartier Latin or the various doubtful phases of literary life: it deserves to be the appellation of those persons who manage to combine work with pleasure, art with comfort, and beauty with simplicity; and in such a way our homes are surely developing and the spirit of Bohemianism being made manifest. How far are we in actual life from Queen Anne, and yet how short in history! We have actually begun to learn that it is useless and barbaric to adorn our exterior walls with a mass of ornament, and slowly but surely our exteriors are beginning to show to the stranger the comfort that he will meet with inside. It is easy, with a plain grey wall, simple cornice, rugged chimney stack and buttress, modest windows and doors, to represent the most delightful of "sanctums" inside, with cosy corners and hospitable quarters. And this is the true Bohemianism we find in evidence in the new homes of a rising artistic civilisation.

M. J.

On Reflection.

The Knowledge of Materials.

To find architects who know surprisingly little about the practical handling of the materials they employ is not difficult nowadays, and the scheme of Mr. Frederick Batchelor, F.R.I.B.A., President of the Architectural Association of Ireland, is therefore most commendable. He intends to organise in Dublin a regular series of technical demonstrations in order that the architectural student may have the chance of acquiring a personal knowledge of the building trades. Occasional visits to yards and workshops have of course been made for years past, but, though even these are capable of effecting much improvement, the fact that they are unsystematical renders them of less value than a course of visits such as that referred to. The method of specifying certain materials for use in a building simply according to precedent is sadly in need of reform: and we therefore welcome all schemes like the one under notice.

After Six Hundred Years.

DESPITE the hue and cry which has been raised during recent years, there are still among us in surprising numbers men who follow in the steps of that Teutonic race by which Rome was pillaged in the fifth century, and many of its literary and artistic treasures destroyed. The mark of the beast is not gone yet, and the vandal—now man of commerce, now corporation, and, alas! now architect—never fails to seize a chance for accomplishing his work, with a total disregard for the value of the past. Sometimes the vandalism is committed under the impression that a material improvement or a work of necessity is being effected, for proof of which one has only to turn to the "Book of Restorations." At another time a body of men, whose duty it may be to govern the affairs of their town or city, carries on the time-honoured neglect of what the past has left us; and then we find, as at Newport in Monmouthshire, a Norman castle used as a brewery, with (though this has now been removed) a huge board stretching across the top of the old tower displaying in 5ft. letters the title of a music-hall. At other times the vandal does his work in ignorance, though he is not the less culpable on this account: again he may be one who actually sees nothing admirable in the old building which puts his new shop premises to shame: but the list is a long one, and there is now no need to extend it further. For the foregoing is written prefatory to some particulars of an act of vandalism to which our attention has been drawn by a correspondent, and by which Warwickshire has lost an object of historical and archæological interest and value. Until recently there stood near the south side of Great Woolford Church an old house, which, so far as the thick covering of ivy would enable one to judge, appeared to be of the thirteenth century. Unfortunately a large part of the exterior was, because of the ivy, hidden from sight, and one gable end was blocked by a cow-house. It had, nevertheless, an unmistakable air of antiquity, even if a window of the thirteenth century had not been conspicuously present to confirm the first impression. Of that house only one gable remains: from within it is seen to contain a remarkably fine Norman window of two lights under an enclosing moulded arch which rests on shafted jambs with carved capitals. But it is obvious that this gable has only so far been spared because it forms the end to the cow-house. It is difficult to believe that anybody could deliberately destroy a house of the thirteenth century which remained in generally substantial condition, but it is too late now to do more than protest against such neglect and vandalism. Warwickshire has lost a rare and most interesting relic of early domestic architecture. "I was told," says our correspondent, "that the thick walls had served usefully as a quarry for some time past, but the site is still strewn with fragments of mullions, transoms, sills, &c., from windows of the fourteenth or fifteenth centuries, and with many other details in freestone." Such facts speak for themselves: nothing else needs to be said, except to express astonishment that someone in the neighbourhood, archæologist or architect—and there is no lack of either in Warwickshire—should not have been able to prevent a fine specimen of a house built six hundred years ago being demolished on account of the claims of a modern cow-house.

The L.C.C.

IT took Mr. Dickinson an hour and a half last week to tell his colleagues on the London County Council what work had been accomplished and what was to be done in the future: the address, which will be found on another page, is an instructive one. The most paramount matter is of course that of housing the working classes, the necessity for which has been urged by every politician during the present election. The members of the respective parties have called one another nasty names, and have thrown a lot of mud; but it is a universal conviction that some really effective and extensive measure must be passed to thoroughly deal with the problem which, as yet, the statutes have only capered with, patching here and mending there and muddling elsewhere; but they have brought things to a climax, and the future offers much hope. Being the governing body of such a city as London, the Council's housing problem has necessarily been the most complex. The difficulties have been stupendous, the expenditure enormous; that, however, all belongs to the past. The Council, by determining on a strong progressive policy, has a new era opened to it—an era of ever-brightening improvement. The amount of money spent on working-class buildings completed within the past twelve months was £370,000 (which is three times as much as that for any previous year); then allow £350,000 for buildings ordered but not yet out on contract, and £1,500,000 for other building schemes not finally approved, but more or less in a forward state; and this gives us a total of nearly two and a quarter millions of money, which is a good start on the new road. To show how decidedly more comprehensive are the schemes completed during the past year, or about to be begun, it may be pointed out that these alone provide for the rehousing of 50,000 persons, whereas all the previous housing schemes since the inception of the Council eleven years ago have only provided for about 10,000 persons. Under the present strong policy, aided by wise legislation, we may expect really great improvements in the housing of the poor. Another matter of importance which came before the Council last week was the scheme for widening Piccadilly to about 170ft. between Hyde Park Corner and Walsingham House. This will be done by taking a strip off the Green Park, land which will cost the Council nothing. A good comparison is offered by the Hôtel Cecil widening of the Strand in 1896; though it only embraced a strip of vacant land 225ft. long, the cost was £30,000, and this was considered cheap. For the same amount Piccadilly can be widened for half a mile. If the widening were effected on the northern side instead of on the southern, it is estimated that the cost would be a million and a half! But, after all (as we pointed out some time ago), the advantage of this widening is more apparent than real, and we doubt very much whether it will prove such a blessing as the Improvements Committee thinks.



A COTTAGE, OMBERSLEY.

SOME OLD WORCESTERSHIRE HOUSES.

THE county of Worcester affords examples of some of the best half-timber work in England. It has quite a character of its own; there is a quiet charm about it which is perhaps more pleasing than the considerably more ornate work to be found in Cheshire, where the contrast between the dead black of the oak and the pure white of the filling is, to say the least, somewhat harsh.

It is, indeed, open to question whether at the time most of the half-timber work was executed it was invariably the custom to distinguish the wood and plaster by this very violent contrast; on the contrary, there is reason to believe that various tints were used, and that the woodwork was not blackened until rendered necessary by the decay which took place in subsequent ages. There is in existence an order by the Common Council of Worcester, on the occasion of one of Queen Elizabeth's public progresses, to the effect "That every inhabitant within the liberties of the citie shall forthwith whitlyme and colour their houses with comely colours. . . . The fower gates shall be sett in some decent colour, namely, in an ashe colour." In humbler buildings it was not unusual to cover the whole of the wall surface, both plaster and timber, with a uniform yellow wash.

Arriving at Tewkesbury, one has not far to search for half-timber houses, which are mostly to be found in the three principal streets. The many examples of domestic work strikingly illustrate the commercial successes of the town in the fifteenth and sixteenth centuries, which only gave way to the supremacy of Bristol in the seventeenth century.

Within a few miles of Tewkesbury there existed until a few years ago one of the most perfect examples of late Elizabethan half-timber work to be met with in England—Severn End, the seat of Sir Edmund Lechmere, Bart. This old house, which consisted of an extensive group of buildings forming roughly three sides of a quadrangle, was burnt down in October, 1896, together with its ancient furniture, pictures, manuscripts, and books.

Another interesting example is Eastington Court, about three miles from Upton-on-Severn, formerly the manor house, but now a farm. The building has unfortunately been allowed to get out of repair. It dates problably from about the time of Henry the Seventh, and is thus one of the oldest examples of a timber-built manor house to be found in the county. With the exception of sundry coats of paint and whitewash, it has undergone little change. The general design of the principal front is particularly pleasing; the assortment of gables—some carved with a vine pattern—together with a huge ivy-covered chimney, forms a charming group. Within the house many changes have taken place, but the hall still remains, with the oak screen in its original position.

We now cross the Malvern Hills to Ledbury, a place of pilgrimage for all readers of the poetry of Elizabeth Barrett Browning, who, at Hope End, not far from here, spent many years of the early part of her life. Ledbury to-day is an old-fashioned agricultural town which has seen few of the changes that have so altered the appearance of some of its neighbours. Its curious half-timbered market hall, restored in 1866 and elevated on sixteen oak pillars, its wonderfully fine old church, which exhibits various stages of architecture, from Romanesque to Perpendicular, and its excellent old houses are not only interesting in themselves, but the general aspect of the whole place is particularly pleasing. A narrow lane, lined with half-timbered houses, leads up to the church, and forms in itself a charming picture of mediæval England. History tells us that Ledbury was the centre of many military engagements during the Civil Wars. Prince Rupert made it his headquarters, and resided in one of the old half-timbered houses belonging to the family of Skynner.

The road from Ledbury to Worcester crosses the Malvern Hills by Herefordshire Beacon, and, skirting the foot of the hills, soon brings us to Madresfield Court, an interesting half-timber house lying about a mile to the right of the high road. The original parts of this Elizabethan house have been restored and additions made to blend as well as possible with the old work, The long gallery has been rebuilt in its original position, and the dining-hall, which is the full height of the house, occupies the place and retains the position of the old hall. The most interesting part of the city lies between the market cross and the cathedral. The Worcester of mediæval days was largely constructed of oak and plaster work, and, judging by the remains still left to us, there were many good buildings to be seen. The business instincts of the people have, however, had much to do with ridding the city of these fine old houses, and even such a delightful old building as the Commandery is partly used now for business purposes. This Commandery is one of the numerous hospitals for the poor of which Worcester has been possessed. It was in 1524 suppressed by Wolsey, its revenues being used to supplement the resources of his colleges at Ipswich and Oxford. The Commander's House and Great Hall, rebuilt in Henry the Eighth's reign, are all that remain to us now, but the fine hammer-beam roof, with its beautiful carving, and the Minstrels' Gallery are sufficiently interesting to warrant a visit.

There are several good examples of half-timber construction to be seen in Friar Street and the Trinity.

A walk of about six miles, through charmingly wooded country, brings us to the quaint little village of Ombersley. The centre of interest is perhaps the old-fashioned inn, where one has an opportunity of discovering what good Worcestershire cider is.

We are now in a district which within a radius of a few miles contains many old examples of domestic work, foremost among which is Westwood House, built by Sir John Packington at the end of the sixteenth century. The mansion was occupied by the descendants of the Packingtons until about eighty years ago, when the male line became extinct. The present owner of the property is Sir A. F. Godson, M.P.

The design of the entrance lodge, of which there is an illustration in "Gotch," is pleasing. It consists of two buildings, between which are a pair of wrought-iron gates, with an Elizabethan timber screen and canopy over. The



OLD TOWN HALL, WORCESTER.

mansion is a large quadrangular red-brick building of four storeys. A curious feature of the design are the four wings, which, projecting diagonally from the corners, are terminated in square towers: they are said to have been added as an afterthought, although if their date (1592) be correct, they must have been built within a few years of the erection of the main fabric. Of the interior one notices the saloon, which occupies the entire width of the first floor towards the south-east. The elaborately-carved oak fireplaces are of the Elizabethan period, but the ceiling, a specimen of florid plaster-work, is of later date. The hall, which is immediately under the saloon, is of the same size, but not so lofty. A fine oak staircase attracts attention, with its massive balusters, supporting at intervals Corinthian columns surmounted by globes.

A little to the south of Westwood lies Salwarpe, on the river Salwarpe, which joins the main stream of the Severn at Hawford Bridge, about 14 miles below the village. An old half-timbered farmhouse here is very well worth a visit. Continuing our way through the ancient town of Droitwich, we arrive at Mere Hall, one of the most important of the Worcestershire half-timber houses. Access is gained to the elaborate wrought-iron entrance gates by a noble avenue of ancient elms. On each side of the gateway is a quaint Queen Anne summer house. The hall possesses quite a peculiar character of its own. The front elevation is, on a whole, symmetrical, though Mr. Niven, in his excellent work on Worcestershire houses, does not think the present house is as originally planned. The long uninterrupted line of windows in the upper storey of the central part, with the fine small gables above and the deep unpierced space below, is good in design, and gives much character to the place. It is to be regretted that Mr. Habershon (who one would suppose, from his knowledge of half-timber work, would have had more regard for so interesting an example) should have added, in 1823, the turret and sash windows, which detract so much from an otherwise charming building.

Elmley Lovet Lodge is another very fine specimen of half-timber construction. It was held in the reign of Henry the Third by Sir Thomas Lovet, and remained in the possession of the same family for several generations. According to Habershon, the present house stands on a site formerly occupied by the park keeper's lodge. The house was built by the Townshends; the date 1635, together with the common seventeenth century "Nisi Dominus" in the centre gable of the principal front, probably indicates about the time when the whole of the structure as we now see it was erected. Nearly all the lower windows have lost their mullions and been fitted with sashes, but with this exception the place has undergone little change since it was built. An avenue leads from the church to the principal front of the house, which consists of three large gables, the centre one having the before-mentioned inscription; the other two, one of which is in a very dilapidated condition, are fitted with trefoil work, making a very effective design. The other side of the house overlooks the gardens and a bowling green. On the first floor the principal room or gallery has a moulded plaster ceiling of good design, but with this exception and some delicately moulded panelling of the usual type, there remain few of the original fittings.

We now wend our way south to Pirton Court, halfway between Worcester and Pershore. In the reign of James the First it belonged to Sir William Corteyn, who is perhaps best known as the founder of the colony of Barbados. Internally, there is not much of the original character of the house retained, except perhaps some of the panelling remaining in the hall. The most distinctive feature of the exterior is a long low building, largely consisting of upright timber work: the back has a long bay window, ending in a gable in the roof, with half-timber quadrants; the panels immediately under the windows are filled in with modelled plaster work, though this may not be contemporaneous with the remainder of the building.



Photograph by *H. E. Hemsworth.*

OLD HOUSE, ST. JOHN'S, WORCESTER, LOCALLY CALLED "THE ABBEY."

Leaving Pirton Court, after a walk of about four miles, one comes within sight of Pershore tower. The abbey, almost as interesting as its larger and better preserved neighbour of Tewkesbury, was formerly built of wood, and both church and convent have been thrice destroyed by fire—first about the year 1000, then in 1223, and again in 1288. The fire consumed not only the abbey church, but the greater part of the town as well. Pershore bears all the marks of a quietly prosperous old market town. Its wide street is lined with respectable red-brick houses faced with stone, many of them having their windows blocked up—relics of the days of the window tax. We quit Pershore, and, calling at Evesham—where are many old houses, especially in Bridge Street—pass on to Rouse Lench Court, and finish our tour by arriving at Broadway, so coming back once more to the land of stone buildings.

A New Board School has been opened in Addison Gardens, Shepherd's Bush, which has accommodation for more than 700 children.

ARCHITECTURAL CONDITIONS IN THE XIXth CENTURY.*

By F. M. SIMPSON, Professor of Architecture, Victoria University, Liverpool.

THERE is no pleasure without alloy; no honour without its drawback. The prologue and epilogue of the session form the drawback to the honour you have done me in electing me as your president, and destroy the pleasure I should otherwise feel at the distinction you have conferred upon me.

For not only is the honour a great one, to be president of the oldest provincial architectural society in the kingdom—a society which is only second in age to the Royal Institute of London—but it is rendered still greater by the eminence of the previous occupants of the Chair. My knowledge of the Society is of recent date, and of presidents prior to the date of my appointment at University College I cannot speak; but I had the good fortune to come to Liverpool when this chair was occupied by one who has worked long and zealously for the welfare of the Society—Mr. Henry Hartley. For the first time for many years his name is not on the list of the council of the Society; a fact we all deplore, and nobody more so than myself. Since then Mr. Bradbury and Mr. Culshaw, and my immediate predecessors, Mr. Willink and Mr. Ould, by their energy and devotion have raised the value of these meetings, and have greatly helped to extend the influence of the Society and make its power felt in all matters affecting our profession and the welfare and beauty of this city.

In occupying this chair, therefore, I am conscious of the difficulties of my position and of the comparisons which may be instituted, to my disadvantage, between my predecessors and myself. I only ask for your kind indulgence in the mistakes which I am certain to make, and for your friendly support in any difficulties which may be encountered during my year of office. Upon this I feel certain I may rely.

Although it is not in your power to help me in some of my difficulties, of which this opening address is not the least, I am glad to be able to say that, as regards this address, I have received assistance elsewhere and from a quarter least to be expected. There has lately come into my possession a lecture delivered by a professor of architecture in the year 2000 A.D., in which he reviews the architectural work of the century previous to his own, or, in other words, the work of the present time. How I obtained this paper would take too long to explain, but I can assure you that it would be an interesting story to tell if only time permitted. As this is not possible, I will only say that you can imagine the relief I experienced at not being called upon to produce anything of my own after the two able addresses of last year which all of us, I feel certain, have recently been reading with so much pleasure.

The address by this unknown author which I have the honour to present to you to-night is entitled "Architectural Conditions in the Nineteenth Century." The paper it is printed on is much like what we use now, and the type is very similar. It would indeed take a clever expert to detect any differences. It is addressed to the students of ——; here, unfortunately, the name has been torn off. I may mention that here and there words are illegible; which is particularly unfortunate, as they are generally the names of architects or of buildings which the author selects for praise or blame. In some cases, therefore, I have been obliged to slightly vary the wording of some of the sentences, for which I ask your forgiveness.

The address commences, "Ladies and Gentlemen," and this is particularly interesting as showing that at that period architects were not exclusively of the male sex. In fact, I gather from fragments of other papers in my possession that in some branches of architectural work, and especially in the decoration of buildings, female practitioners were in a majority. But that is by the way. Here is the paper.

* Presidential Address to the Liverpool Architectural Society delivered on October 8th, 1900.

The state of architecture in the nineteenth century is difficult to define. The revivals at the end of the previous century had destroyed the last vestiges of traditional art remaining in England, and the architectural world for many years afterwards was divided into two camps, one containing the exponents of the Gothic style, the other of the Greek. This latter revival need not occupy our attention. It was merely an interlude, and had no subsequent effect on architecture. But the revival of Gothic had different results. This is not to be wondered at when we remember that Gothic was an indigenous style, and that the influence of the old mediæval traditions of building had lingered in England almost until the commencement of the century. In the early days of the revival the most English of all the phases of Gothic, that which was practised in the fifteenth century, was the one universally followed. Foreign idioms, so to speak, crept in later, and copies of earlier work were not attempted until the century was half over. It is not my intention to give you a history of the revival, or to describe or refer to the many churches and buildings, beautiful though many of them were, erected in that style during the fifty years when it reigned supreme. That would mean a paper in itself. But one result of this revived interest in Gothic art requires special mention. The middle of the century was the great age of "restorations." For five-and-twenty years, that is to say from about 1850 onwards, the restoring architect carried everything before him. It is difficult for us to realise now the intense fervour with which the work proceeded. The ancient cathedrals were scraped, re-chiselled, re-carved, practically rebuilt. A clean sweep was made of everything that was not Gothic. Even Gothic work itself was not sacred. Portions of buildings of later date than the original erections were in many cases destroyed in order to give place to nineteenth-century versions of what might have been. The parish churches were treated in the same way as the cathedrals. For a clergyman to have an unrestored church was considered as great a disgrace as to have a son who was a convicted felon, or a daughter who bicycled in rational costume. By the end of the century no such thing was to be found in the length and breadth of the land. The enthusiasm for restoration which undoubtedly existed, and which seems almost inexplicable to us now, was not due so much to a love for architecture as to a mixed feeling, partly sentimental, partly religious. The cathedrals appeal to us now merely as fine works of architecture; but 150 years ago they possessed an additional interest. They were then not only architectural creations, they were also historical monuments. Injured as many of them were, through various causes, they were still full of memories of the multitudes which had worshipped within their walls, and of the craftsmen who had laboured to add beauty to them.

Every stone could tell a story. In every bit of carving you could still see the marks of the chisel of the original artificer. The carving was mutilated perhaps, but enough of its beauty remained to recall its original splendour, and in spite of, perhaps partly because of, this mutilation it aroused more enthusiasm and admiration than if it had been unbroken. In those days the churches were full of the work of all ages. Windows which had been altered in order to give more light, or else increased in size to frame the splendour of the painted glass, still stood sandwiched between others of earlier date. Oak benches and screens with crude but interesting carvings by Elizabethan or Jacobean men showed that the churches had not been so neglected after the Reformation as the restorers wished people to believe and strove to make apparent. Pews of the time of Queen Anne or the first George still remained where the squire had sat and slept through the sermon, his gouty leg propped on a fat and comfortable hassock. The old "three-decker" pulpit was still to be seen proclaiming the Protestant trinity of rector, curate, and clerk. The history of England was written in and about these old buildings. It was this history which the "restorers" of the nineteenth century ruthlessly destroyed. Not only this; they also destroyed the glamour which hung around them, making it impossible for future generations ever to experience the same sensations. We owe the restorers a debt of gratitude for preserving these *structures* for us as monuments of architecture, but we can never forgive them for destroying what was to a great extent the principal charm of this old work. If the architects of the time had been less skilful or more self-assertive, we should probably have been more thankful to them. But their knowledge of the art they loved was in most cases too great, their self-renunciation too complete. The latter was worthy of the old monks in whose architectural footsteps they strove to follow. But their very correctness was the cause of the decay of interest in Gothic art which set in even before the end of the century. The more correct their work, the more exact their carvings, traceries and mouldings, the surer was the revival doomed. It was a case of killing through kindness. The problem confronting these restorers was no doubt a very difficult one. To have allowed these old buildings to fall would have been an act of vandalism, and the wane of Gothic enthusiasm was too strong for half-measures. In the case of the cathedrals and large churches it is difficult to see how they could have acted otherwise than they did. But some of the parish churches might surely have been left undisturbed to act as sweet resting-places to sit and dream in, away from the rush of the matter-of-fact prosaic age in which we live. This could easily have been done. These buildings could undoubtedly have been preserved without the elaborate scheme of restoration and refitting to which they were subjected. The money which was spent on them, the thousands of pounds, if not millions, would have been better expended in building new churches alongside them, and allowing the old ones to remain as historical monuments, a little judicious attention preventing their further decay. But the clergy and laity alike would have regarded this as an attack on the esta-



Photograph by *H. R. Hemsworth.*

OLD HOUSE, ST. JOHN'S, WORCESTER (SOUTH SIDE, FROM ROAD).

blished religion, and subscriptions would not have been forthcoming. One consolation we have, and that is, that certain buildings were already in ruins before the restoration mania set in. Fountains, Tintern, Glastonbury, still remain to us, as perfect and as beautiful as they were then. In those ruins we can picture the abbeys as they were once, and admire such carving and detail as remain without an unpleasant feeling at the back of our minds that we may be gazing at clever copies and not at the originals. Thank God, they did not attempt to restore these.

In one other respect we have cause to be grateful to the restorers. Their love of archæological correctness destroyed archæology. Our delight in those old buildings is now purely an architectural one. Disputes as to the date of the structure, as to whether a bit of carving is thirteenth or fifteenth century, are no longer possible. The nineteenth century is responsible for all. The old test as to the age of any part—the state of the stone—no longer holds good, unless it be urged that the more decayed the stone the more recent the work. The old materials had become seasoned through centuries of more or less pure atmosphere, before coal was worked and when the population was less numerous, and were consequently able to stand the vitiated air of the later periods to which the newly-worked stone soon succumbed. But this test is by no means infallible, and even if it were, few have the curiosity or leisure to investigate the matter.

To the age of revivals and restorations succeeded an era of experiments. The period between 1875 and 1900 was marked by most interesting work, ecclesiastical and domestic, but a recognised architectural style seemed more than ever an impossibility. Not only did different architects work on totally different lines, but individual architects often jumped from one style to another with surprising alacrity. It was no unusual thing to find men designing in Gothic one day, in Classic the next, or indulging in their odd moments in a delectable compound called "Queen Anne." They were like children who, with several sweetmeats before them, nibble a bit first from one and then from the other. This architectural jumble was due as much as anything to the changed conditions of the times. The introduction of steam had revolutionised all things—amongst others the methods of architectural study. The old days of the "grand tour" and severe examination of ancient buildings were things of the past. With quickened means of transit came feverish haste in study. Men discovered that they could go to Paris from Saturday to Monday, and to Rome and back in a week. They no longer sat down before a building and laid siege to it with callipers, measuring rod, and tape, mastering every detail and studying every stone, but, sketch-book in hand, were content to jot down "bits" as they hurried along, which might be useful to them afterwards. Sketch-book architecture became for a short time the rage. Flemish gables, German doorways, French windows, and Spanish ironwork crossed the Channel and united to form original architectural designs. It was resurrection pie "à la Continental." It tickled the palate but did not fill the stomach. The phase was shortlived; like all fashions it ran its course, met with its meed of approbation, and then died out. Men, sated with Continental fragments, like truants returned home. Some to their credit had remained staunch to their own country. The Queen Anne movement, which had effected so vast a change in domestic work, reasserted itself, but in a more subdued and chastened spirit. The high priest of the movement, Mr. Norman Shaw, had at the end of the century retired from active practice, crowned with well-earned laurels. But there were many others to carry on the work who, with one accord, united to try and revive the old traditions of English building which had been so completely destroyed by the revivals of one hundred years before. This was the most important movement of the century, and the one that had the most lasting results. It was not universal. There were still those who clung to archæological Gothic and picturesque Elizabethan, and there were others who went to the other extreme and said, "We will have nothing to do with traditional work; we will absolutely ignore precedent; we will return to materials and materials alone, and create our designs out of these and nothing else"—all of which sounded very pretty in a paper, and was received with much applause when enunciated at meetings, but which landed the authors in serious difficulties as soon as they attempted architectural design. The successful architects were those who neither ignored old work nor slavishly copied it; who understood and respected their materials, but who were not above learning from the masterpieces of bygone times.

The many new and different problems the architects had to solve formed one of the great difficulties of the age. In the first half of the century only churches and public buildings were considered worthy of architectural effort. Utilitarian buildings were left to the builder. But with the growth of the æsthetic movement in other branches of art grew the desire for architectural expression in all buildings, irrespective of the uses to which they were to be put. This meant a severe tax on the architects' powers of designing. Without a recognised style, with no tradition to assist them, with an absolutely uneducated set of workmen to carry out their ideas, hampered by work foreign to architecture (such as surveying, valuing, questions of dilapidations, ancient lights, and other semi-legal business, which has long since passed into the hands of a separate class) it is no wonder that they did not always succeed. We flatter ourselves that we can do better now; but then we have their successes and failures to guide us. What the old Gothic and the Renaissance of the "teens" was to them, their work is to us; and in one respect we have the advantage, as the problems we have to solve are not very different from those which exercised them. Some things they did are difficult to understand. To give one single instance only. In the International Exhibition held at Paris in the year 1900 a large building



PARISH CHURCH OF ST. NICHOLAS, DORMSTON.

represented England officially. When one considers that science was represented by its latest inventions, and that the workers in all other branches of art contributed their best and most original work, one would have thought that this building would have been a typical example of English architecture of the end of the century. One would have expected an original design to show what English architects could do. Nothing of the sort was attempted. An old house erected about 300 years previously was carefully copied detail for detail, an exact replica as far as the outside was concerned, and this was the English official architectural contribution. No doubt it was well done; it was the kind of thing they could do then uncommonly well; but I wonder what would be said now if it were proposed to reproduce a building of the nineteenth century as our representative contribution to an exhibition whose object was to advance the arts, sciences, and industries. I do not envy the man bold enough to make such a suggestion. We might not be able to produce anything better, but at all events we could present something of greater interest because it would be an example of the art movement of the day.

The greatest crime of the nineteenth century—but for this the architects were hardly responsible—was the erection of acres of small houses which surrounded all the great cities. Crime is perhaps too strong a word to use when one considers the difficulties which existed. The working man and the city clerk had to be housed, and tenement blocks were few and far between. The English artisan still insisted on regarding his house as his castle, even though the walls would hardly stand an assault from a pop-gun. Two storeys high, and the rooms so low that a popular writer of the day said that the people looking out of the first-floor windows appeared to have their feet on the ground floor, these cottages sprawled over the immediate outskirts of a town, house after house, street after street, a dead level of degrading ugliness. There were thousands of front doors all alike and all equally atrocious, and millions of chimney pots, vents for the polluting smoke from the coal fires then in general use for both cooking and warming purposes. London was entirely spoilt before the century was half over, and the once pleasant old villages which had stood sentinel round it for ages were reached and then engulfed by the stream of "homes for human beings." Other big towns fared no better. Aigburn and Wavertree, round Liverpool, fell into the clutches of the speculative builder. It is sometimes asked why the people were so mad as to allow such things. Why did not the municipalities step in and, by buying up the land round the city, prevent this spreading of their boundaries? If they had done so, our difficulties would not have been so great. The task of forming a zone a quarter of a mile broad round each city, according to its size, such as is now universal—a zone laid out as a park for the recreation of the people—could have been done at a tithe of the present expense if it had been undertaken when the land was still country, or but sparsely built over. But there were difficulties in the way. The money of the corporations was needed for other things. The sanitary conditions of houses in the towns, and of the towns themselves, were in some cases disgraceful. The absence of adequate laws in former years had allowed over-building and overcrowding to a degree hardly credible. To clear out the rookeries was the first object of every corporation, and that engaged much of its attention and most of its money. Another reason was the dislike of the people for tenement houses. Until this was overcome—and it took some time to do it—the law which prohibited buildings being erected within the town itself, and for a certain distance beyond the zone, less than four storeys high, or covering less than a certain superficial area, could never have been passed. A third and most important reason which rendered the "zone" impracticable was the difficulty of communication between town and suburb. In those days there was only the crawling omnibus drawn by horses and the cumbersome train, with its heavy steam-engine and tender for coals, guard's van, and other accessories. Electricity was in its infancy. But as soon as the application of that power became understood and in general use this objection to the zone disappeared. One minute or two minutes longer in a car night and morning was a small price to pay for fresh air and sunlight for a healthy city and a healthy people. This they might have realised sooner than they did.

The extent of a city now is once again defined within lines as clear as those which surrounded the towns of the Middle Ages, but instead of a wall and fortifications there is a park; and beyond the park the suburbs, where in some parts the houses are all detached, the private residences of the merchants and well-to-do middle classes, and in others the tenement buildings of the poorer classes lining wide avenues, housing double the number on half the space possible in the nineteenth century.

With greater height of buildings came of course wider streets. Many more buildings would have come down to us if it had not been for this. It is amusing to read the instructions of 100 years ago: streets had to be at least 40ft. wide, important streets 60ft. wide; and everybody thought that a great triumph had been effected when a new thoroughfare in London from Holborn to the Strand was, after many years' discussion, projected with a total width of actually 100ft. It makes a good street even now, I admit, but we should no longer regard it as an "important thoroughfare."

The difficulties of architects have been already mentioned; but the difficulties of the workmen were still greater. The complaint of the day that the average artisan took no interest in his work, and that it was quite impossible to leave any little detail to him to carry out without a full-size drawing, was a very true one, but it was not the fault of the workman. An architect had opportunities for study denied to him. In the eighteenth century his path had been an easy one. All men designed then much on the same lines—the lines on



THE MOAT, DORMSTON.

which their fathers and forefathers had worked—and it was easy for the workman to keep in touch with the minor modifications which were introduced from time to time. Even for the first half of the century confusion was not so rampant. It is true the styles favoured then were not traditional, but in the Gothic movement at least architects were only too anxious to train workmen in what they believed to be the only possible style. That they succeeded in many cases is proved by the excellence of much of the carving and mouldings still to be seen on such buildings as the Houses of Parliament and the Law Courts, London. But as soon as a number of workmen were beginning to understand and appreciate the feeling of this work, round went the architectural weathercock, and from due Gothic veered to due Classic. Then came the mixture at the end of the century, and it is no wonder that the workman, finding it impossible to understand all the styles, lost touch with his work and ceased to take interest in any. The intelligent foreman who thought for himself, and who would sit, note-book in hand, after working hours puzzling out the solution of a difficulty—the class of man so admirably portrayed by George Eliot in the charming story of "Adam Bede"—gradually became a thing of the past. The old traditions which had been passed on from father to son had disappeared. The apprenticeship system was dead, and nothing existed which could take its place. The technical schools were in their infancy, and although increasing daily and beginning to make their influence felt, had to struggle against difficulties which no longer exist. Fathers had not learnt the value of a preliminary training for their boys. Employers had not realised how much more valuable to them were boys who had received such a training. The trades unions which might have been a good influence were in some cases apathetic, in others unfriendly. Many of the boys, it is true, attended classes; but these were only in the evenings, when the boys were tired after a day's work. Besides, the time spent in these classes was so small that it gave neither teachers nor students a chance.

The situation was well summed up by a leading architect of the day, who, in describing some work carried out in France from his design, said, "The interest displayed by the local workmen in the decorative details was such as may be looked for in vain from the British workmen." It was not that the French workman was more intelligent than the English. It was because the vernacular traditions had not been destroyed there so much as here, and because their technical education was far in advance of that existing in England.

The education of the architects was as defective as that of the workmen. A few years before the end of the century it was publicly stated that there was no architectural education in England, and that in order to meet this deficiency the Institute had started a scheme of examinations. This is probably the most glaring instance on record of putting the cart before the horse. It could only be equalled by a nation declaring war in order to teach its generals tactics and its soldiers how to shoot. There were architectural classes, it is true, sometimes attached to universities, sometimes to art schools, and sometimes under the control of architectural societies. But a preliminary systematic training for students was by no means universal. Schools in which all art students, students of architecture, students in the arts of painting and sculpture and design, and in the crafts allied to architecture, and students whose future would lie in the more humble paths of building, could work side by side and get into touch with one another were few and far between. The pupilage system was still the most common means of entering the architectural profession, although its drawbacks were almost universally recognised. Advertisements were still common in the building papers: "An Architect in practice has a vacancy for a pupil; must be fond of drawing and willing. Premium required." Heaven help the boy who stumbled into such an office. He probably learnt nothing, and his duties were those of an office boy and tracing clerk without the salary of either. Such advertisements ought only to have been printed with the warning signal "Danger" before them.

Many other points might be referred to if only time permitted. We are better off than our forefathers in some respects, worse, perhaps, in others. A good deal of work was done then with which we are now out of sympathy; but on the other hand we must admit that, whether we consider the enthusiasm of the Gothic revival, or follow the history of the Queen Anne movement, or take the last phase of all, the return to purer English Classic, much work was accomplished that commands our respect and admiration. There was plenty of enthusiasm, plenty of originality, and the two combined to make the work of the century, especially towards its close, an extremely interesting link, although rather a twisted one, in the history of architectural progression.

Here endeth the lecture, and I can only add my thanks to its unknown author for the trouble he has saved me, and express the satisfaction I feel that I have been able to place his views before you to-night instead of my own. It is a paper which I hope will lead to a good discussion, although I believe it has not been customary to discuss presidential addresses; still, none of you need hesitate about saying what you think, because your remarks, I am afraid, are never likely to reach the author; and even if they did, you need have no fear of retaliation, as by the time he is able to reply few, if any of you, will be in existence.

A.A. SCHOOL OF DESIGN.

PRELIMINARY MEETING.

ADDRESSES were delivered by Mr. Beresford Pite and Mr. Aston Webb, A.R.A., at the preliminary meeting of the Architectural Association School of Design on Tuesday, the 9th inst., at 56 Great Marlborough Street, W. Mr. W. H. Seth-Smith, President of the Association, was in the chair. Mr. Beresford Pite chose as his subject the study of materials. An acquaintance, he said, with the nature and use of materials for which the architect had to prepare designs—or, more properly, in which he had to design—was of fundamental importance. This acquaintance should extend to a certain knowledge of all those conditions and qualities which appertained to each material that was useful in building work. Such definite comprehension would ally itself to the intention and purpose of the designer, and would procure that harmony between the means used and the end to be obtained which was a proper element of beauty in man's work. A satisfactory architecture could not be produced with unsatisfactory materials, and ignorance of them could not be compensated by any study of the æsthetic forms or details of past architecture. Sound and ingenious construction was an element in beautiful building as important as the right use of material. There should be no confusion of thought as to that art which selected and placed material usefully and beautifully in a building, and the science which attained a constructive end regardless of the means employed. Without constructive science building was impossible, and, unless exercised in suitable materials and with a knowledge of them, good architecture was equally unattainable. As æsthetic design could not exist by itself in architecture apart from building, both of these qualities must be in harmony. Materials, construction, use, æsthetics were progressive in order of study, but each in relation to the other, and beauty in architecture consisted in the harmonious relation of these elements. The effect on the mind in the achieved building was realised in the reverse order. First, the pleasure of the æsthetic quality of form; then satisfaction with its usefulness and dignity; thirdly, its security, fitness and economy of construction; and, lastly, material substance to the whole. Material was constructive unless it was purely decorative, but it was also æsthetic; the quality of texture was little understood in England, though French architects were often capable of giving texture to architecture. This æsthetic element in the workmanship of each building material was of great value to fine architecture, and the neglect of it would be fatal to real beauty. The excellence of material did not enter into this consideration at all. Until the combined expression of form, plan, construction and texture was mastered by the student the decorative use of materials should be dismissed. Closely allied with the utilisation of any material was the workmanship of it, for a design must not only be capable of being expressed fitly in the intended material, but it should be such that the kind of workmanship employed with it should be emphasised and used so as to exhibit its own type of craftsmanship to the best advantage. The workmanship of material should most fitly express the quality of the material, and *vice versâ*. Architecture had for a century been under the spell of an archæological pedantry as unnatural as onerous. Architectural forms had been used because they had been used in the past, not because they were specially applicable to the material. Cleverness in design was the common ideal; it was superficial cleverness, and dangerous to the student and inimical to the progress of national art. The student should begin with a new tradition, and devote practical investigation to the qualities of the materials of buildings and to the craftsmanship of their application to the whole and the parts; and the whole world of constructed buildings lay before him for consideration and study. He would then discern that ancient buildings might contain examples of beautiful treatment of material and of delightful craftsmanship. All the materials in use would yield their different and distinct characteristics to the thoughtful designer. To the student who would sympathetically study and employ them, suggestions for design would be offered which might issue in living character and vitally national buildings.

Mr. Aston Webb said his remarks were only intended for young students. Alertness of mind and preoccupation of subject were qualities which architects had to encourage, and they should carry their powers of observation wherever they went, and not keep them merely for office hours. There was a well-known axiom, that the first thing was to draw, the second to draw, and also the third to draw. That idea had been rather exploded of late; and if the word "design" were substituted for "drawing" it would probably be better. Sketching, beyond a certain point, was almost a dangerous art. Sketching was apt to deceive. The President of the Royal Academy, when addressing the students last Gold Medal day, pointed out that a man's reputation depended finally on his completed work, not upon his sketches. If this was true of painters, to whom the President chiefly referred, how much more true was it of architects! He knew buildings which had been studied too much from the point of view of elevations, and the returns and the general effect suffered. The would find it a great help if from the very beginning they thought in three dimensions. Many persons troubled themselves a great deal as to whether the plan should precede the elevation. He ventured to think that was all twaddle; plan, elevation and sections should be thought of together. Each part of a design should be worked together gradually up towards completion. In addition to that, to make a satisfactory building, that much-abused and much-neglected specification must of course be brought in, as in that were the materials. More than that, such a matter-of-fact thing as the foundation had to be considered; for with a bad foundation the architect would not introduce tall towers but keep his building flat and low, and so his whole design was affected. Mr. F. T. Baggallay had pointed out in a paper read before the Association how often all the features of a building were on the same plane in front. The features of a building when placed on different planes moved differently as one went towards them, and in that way different effects were got. One could not think too much about, or visit too often, a site when making a design for a building. A sketch was too frequently made from a particular point of view, and it was forgotten that the building would be seen from all sides. With regard to simplicity in design, the word as sometimes understood was apt to lead one

astray, and he knew men who prided themselves on the baldness of their designs. He thought what was meant by simplicity was restfulness and repose, for that was the quality wanted in buildings; and that was obtained by a quiet outline, more than by the omission of detail. As to the rectification of optical defects, these were often exaggerated; the entasis of a column was generally too much emphasised, and the stilting of a dome overdone.

Correspondence.

Low Side Windows.

To the Editor of THE BUILDERS' JOURNAL.

LONDON, S.E.

SIR,—I do not often see your admirable paper, but a friend handed to me a copy of your issue for October 3rd, containing an illustrated article, by Mr. J. Russell Larkby, on Warlingham Church, in which that gentleman discusses my much-controverted views upon "low side windows" in churches.

To go at any length into this vexed question would be to tax your space unduly, but some reply to Mr. Larkby's remarks seems necessary.

When I restored Warlingham Church a few years ago I discovered the peculiar cill-niche on the inside of the tiny low side window shown in one of Mr. Larkby's illustrations, and this very unusual adjunct induced me to devote a good deal of time to investigating the unsolved problem of the origin and use of these peculiar openings in churches.

Of ancient documentary evidence as to these, strange to say—although they seem to have been the rule rather than the exception in the churches of most of our English counties—there is little of a direct character. But what there is favours the confessional theory. For instance, there is the well-known letter of Bedyll, one of Henry the Eighth's Commissioners for the Suppression of Religious Houses, who, writing to Cromwell of the twin foundation of monks and nuns at Zion, Middlesex, takes occasion to advise that "the place wher thes frires have been wont to hire [hear] uttward confessions of al commers at certen tymes of the yere *be walled up*, and that use to be fordoen for ever," &c. These outward confessionals were something quite distinct from the grate or grille in an internal parclose screen, whereat the Sisters made their confessions to some of the monks appointed for that purpose; and the obvious construction to be placed upon this passage is that in parochial churches, and probably in some of the monastic and friars' churches, an opening or openings existed in the external wall to which "all comers" might resort "at certain times of the year" to be shriven. This would be from the nature of it an *irregular use*, and as such, specially consistent with the "free lance" character of the friars' missionary methods. They—the Franciscans or Grey Friars especially—received large general powers for the hearing of confessions from the popes and archbishops on their coming to this country in 1224, and as their mission was essentially an itinerant one, they would wander up and down, generally *in couples* (in imitation of our Lord's sending forth of the "Seventy"), resorting to the parish churches and wheresoever else they might meet with the common people. They thus became their confessors *par excellence*, and often, no doubt, came into collision with the jurisdiction of the parish priest, although in some districts, as in Lincolnshire, through Bishop Grosseteste's influence (himself a friar), the two seem to have worked together in harmony.

The real precedent, as I maintain, for these low side windows in churches is to be found in the yet older (in origin) barred and shattered openings in the *external* wall of an anchorite's cell, often built on, like our modern vestries, as a lean-to erection against the north or other wall of a village church. There is irrefutable documentary evidence of such openings having been used by kings and lesser fry who resorted to the recluse, immured for life in his narrow cell, for ghostly counsel, and to make confession and receive absolution. King Stephen, Richard the Second, and Henry the Fifth *we know* (on the authority of Roger de Wendover, Richard of Elmham, and Stow respectively) thus resorted to the anchorite's only medium of communication with the outside world—*a low side window* in all but this its modern name.

And with this earlier irregular use before them, I venture to assert that the friars' powerful influence was sufficiently strong to enable them, "with or without the consent of the parochial clergy" (as the Papal Bull empowering them to hear confessions phrases it), to cause similar confessional windows to be made in the south-west corner of the chancel or other wall of the church. The fact that two low side windows, often of the same date and character, exist in opposite walls of the chancel, or sometimes in the wall of an aisle, seems to me to agree very well with *the fact* that two friars would go about together.

These openings, once made, would naturally come to be used for, and even in process of time specially *made* to serve, other purposes, *e.g.*, communicating lepers, displaying relics to pilgrimages (when the pilgrims were too numerous to come into the church), and *possibly* in some cases to receive a light, or for ringing the sanctus-bell. But their typical narrowness, coupled with the network of iron bars and the wooden shutter with which they were commonly closed, does not favour the two latter explanations; while such features are entirely consistent with the secrecy of the confessional.

The irregularity of the use is quite sufficient reason for our not finding this mode of making confessions represented in ancient drawings and illuminations, whereas illustrations of the normal practice of the parish priest shriving members of his flock while seated in a chair or stall in the chancel are commonly to be met with. A difference of method would naturally distinguish the regular from the irregular usuage.

Confession *at a narrow grated window* is laid down in so many words as the particular mode in the Rule of the Nuns of St. Saviour. And if for them, why not for lay folk in parish churches under certain peculiar conditions? The burden of disproof rests with my opponents, rather than the burden of proof with me.

The sanctus-bell theory (which, by the way, Mr. Ponting did *not* originate; it is a far older heresy) as the normal or originating use of low side windows is absurd, if only from the fact that coeval sanctus-bell cots and low side windows exist together in the same church in many instances.

Doubtless confession would be made kneeling, and for this a bench or stool, placed beneath the low opening, would in some cases be used.

Allow me, in conclusion, to thank Mr. Larkby for the appreciative character of his remarks on the restoration of Warlingham Church, and to invite his consideration of another explanation of the quoins in the north and south walls of the chancel. These slope from top to bottom in a *westerly* direction, proving conclusively that the chancel was built first (by the prior and monks of Bermondsey), and the nave, without any break in its walls, added at a slightly later date. The interesting fact that, besides the usual piscina and sedile in the chancel, there are in the south wall of the nave a plain piscina and sedile, and a similar piscina in the north wall, opposite—all of thirteenth-century date—only proves that when the nave was added to the chancel two chantries were endowed in the nave; or else that the chancel was separated by the screen (of which I found the beam-holes) from the nave and used by a cell of monks, while the piscina and sedile in the nave mark the place of the parochial altar.

Yours truly,
PHILIP M. JOHNSTON.

Manufacture of Portland Cement.

To the Editor of THE BUILDERS' JOURNAL.

MANSFIELD.

SIR,—The answer given on page 159 of your issue for September 26th last to a query in respect of the manufacture of Portland cement is insufficient. It is a well-known fact among cement experts that there are several American patents for the manufacture of Portland cement. Roman cement is used by many plasterers to hasten the setting of Portland cement, especially for running moulding and cast work for ornamental purposes.

Yours truly,
ANGLICE.

Two Specification Clauses.

To the Editor of THE BUILDERS' JOURNAL.

ST. ALBANS.

SIR,—The two following specification clauses may be of use to your readers:—*Slate Cisterns.*—Note: Thoroughly wet the slates before finally fixing together, to prevent the cistern bursting through "too tight" bolting. *Fireclay Sinks.*—Note: Care should be taken in fixing plug-waste connections to prevent the sinks cracking through the union nut being screwed up too tight.

I have found, from personal experience, that a fracture has nearly always occurred through the inexperience or thoughtlessness of the workman, and I think this might often have been obviated had a note been made in the specification, calling the foreman's attention to the matter.

Yours truly,
T. W. FISHER.

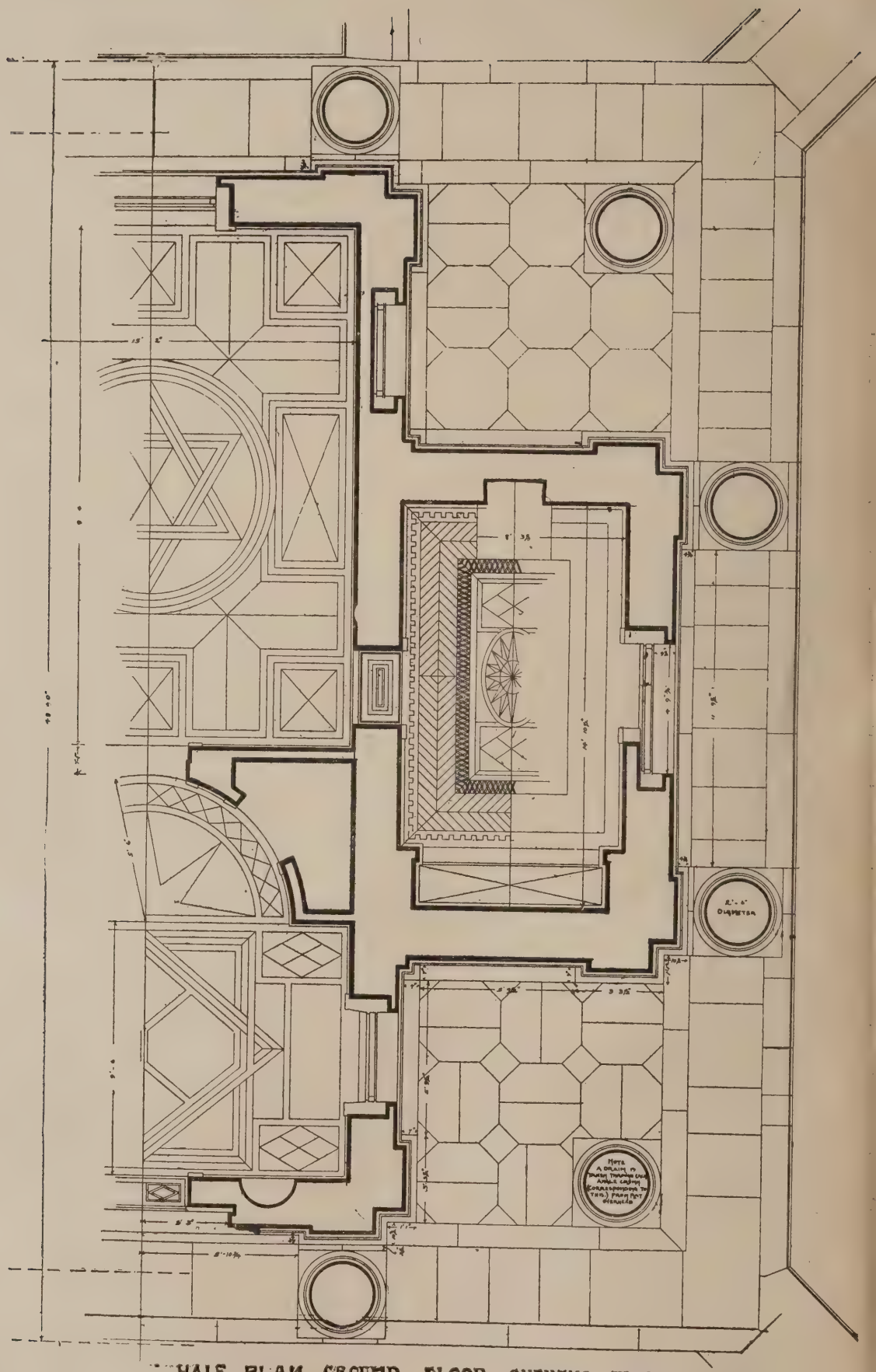
Builders' Notes.

Scarborough's New Building By-laws have been adopted by the Town Council.

The late Mr. Richard Davie, of Codrington Street, Exeter, who last Monday week attained the age of 100 years and was said to be the oldest voter who had been to poll in the present election, died last week. Mr. Davie was born at Crediton, and at first worked as a mason's labourer. After some years he started business as a builder.

An Apprentice and His Indentures.—On October 3rd, before the Stipendiary at Dale Street, Liverpool, a summons was heard which was taken out by William Gerard against Messrs. J. B. Johnson and Co., of 85 and 87 Crown Street, Liverpool, for non-performance by the defendants of the covenants contained in indentures of apprenticeship by which the defendants agreed to teach the plaintiff the business of a slater and plasterer. It appeared that, having been three years an apprentice, Gerard was dismissed in consequence of continued idleness, disobedience and wilful damage done by him to his employers' property. The plaintiff sought to be reinstated, and asked for a declaration that the indentures were to be carried out. The Stipendiary held that, the plaintiff having by his misconduct rendered it impossible for the defendants to teach him his business, the defendants were entitled to dismiss him, and he thereupon cancelled the indentures.

Dissolutions of Partnerships.—The partnership subsisting between Messrs. Joseph Henry Cashmore and Thomas Cashmore, carrying on business as brickmakers, builders, and contractors, under the style or firm of "J. H. and T. Cashmore," was dissolved by mutual consent as from September 29th, 1900. Mr. Joseph Henry Cashmore will carry on business at the above premises on his own account. All persons owing any moneys to the late firm are required to pay the same to Messrs. Handley, Brown, and Ledbrook, solicitors, 1 Church Street, Warwick, on behalf of the late firm, and all persons to whom any moneys are owing by the late firm are hereby required to send particulars in writing to Messrs. Handley, Brown, and Ledbrook.—The partnership subsisting between Messrs. Frederick Gostelow Lockhart and William Lockhart, carrying on business as coal and builders' merchants under the style or firm of F. G. Lockhart and Co., has been dissolved by mutual consent as and from October 4th, 1900. All debts due to and owing by the late firm will be received and paid by Mr. Frederick Gostelow Lockhart.—The partnership subsisting between Messrs. George Alfred Lewcock and Henry Leonard Clark, carrying on business under the style or firm of H. L. Clark & Co., was dissolved as and from October 1st, 1900, by mutual consent.

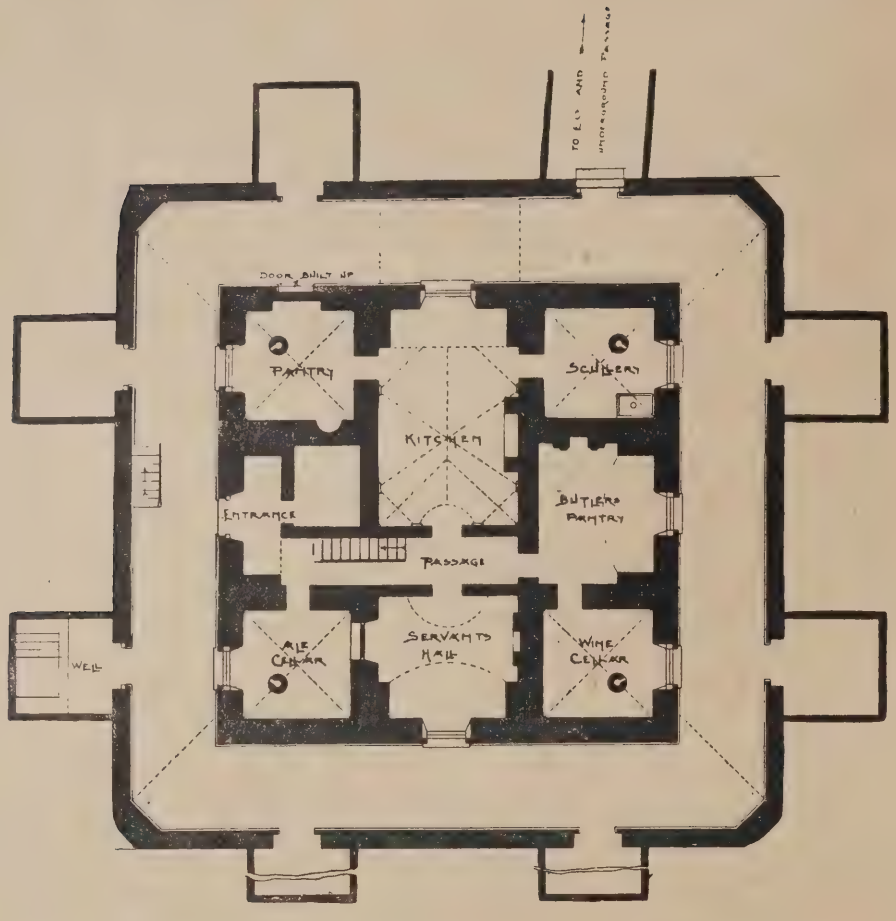


HALF PLAN GROUND FLOOR SHEWING WOOD FLOORS

CASINE, CLONTARF, DUBLIN. (SIR WILLIAM

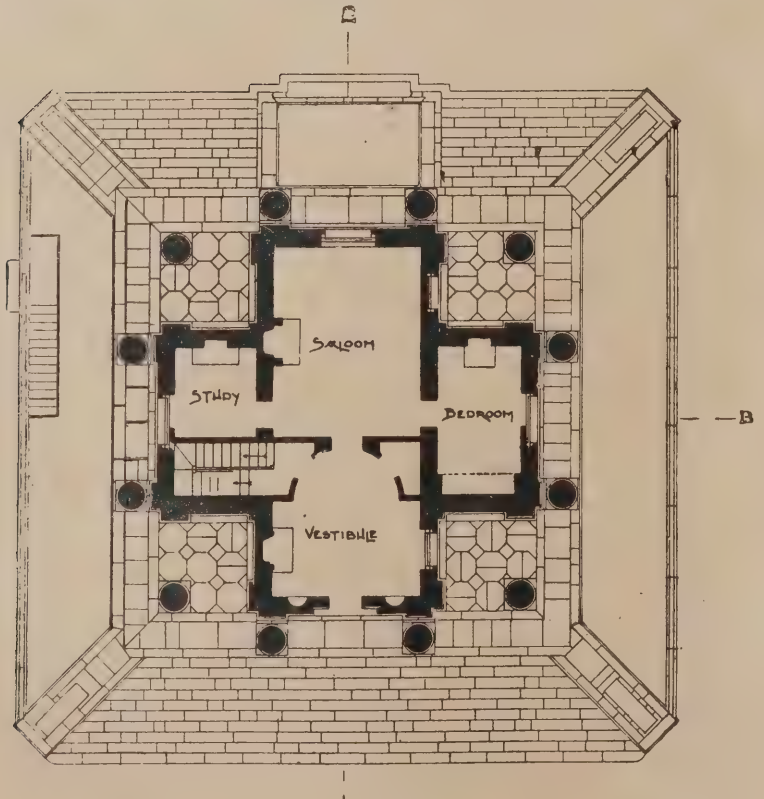
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Supplement to
THE BUILDERS' JOURNAL AND ARCHITECTURAL RECORD,
Wednesday, October 17th, 1900.



BASEMENT PLAN





GROUND FLOOR PLAN







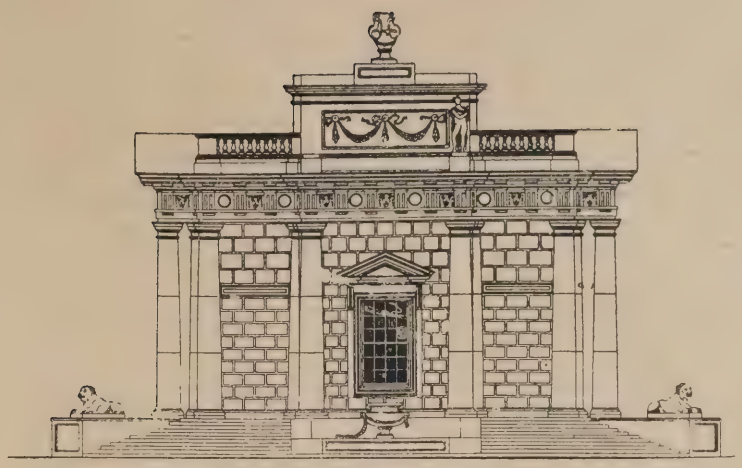
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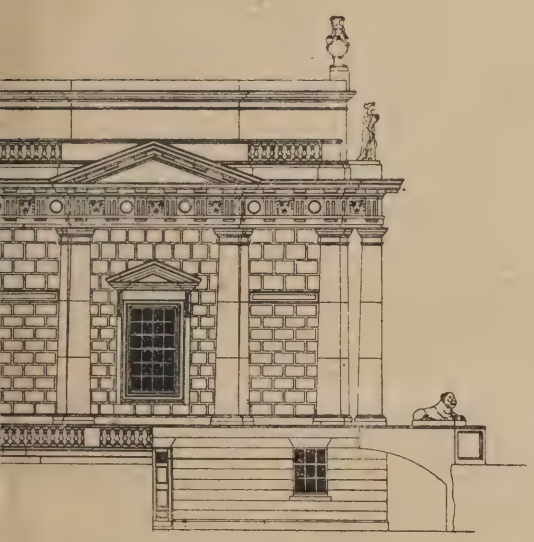
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HTRANCE ELEVATION (NORTH)



SOUTH ELEVATION



EAST ELEVATION SHEWING
HALF ELEVATION BASEMENT



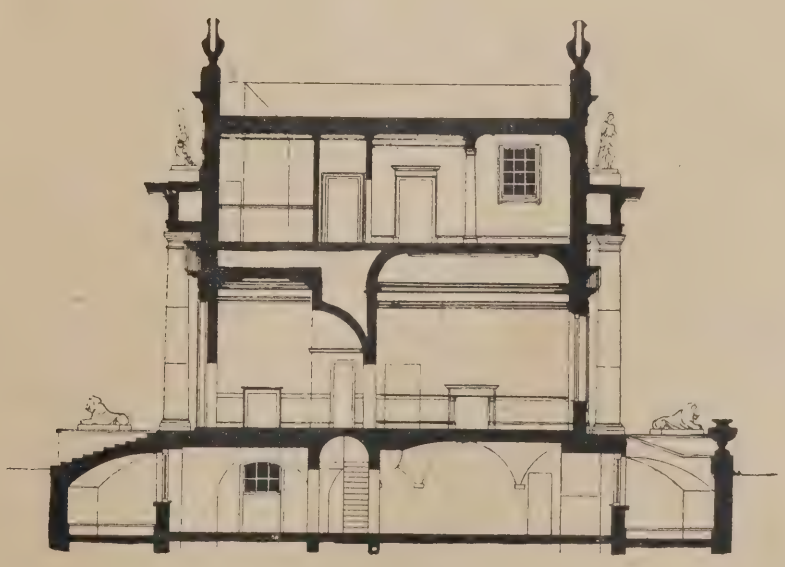
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I PLAN

OF FEET



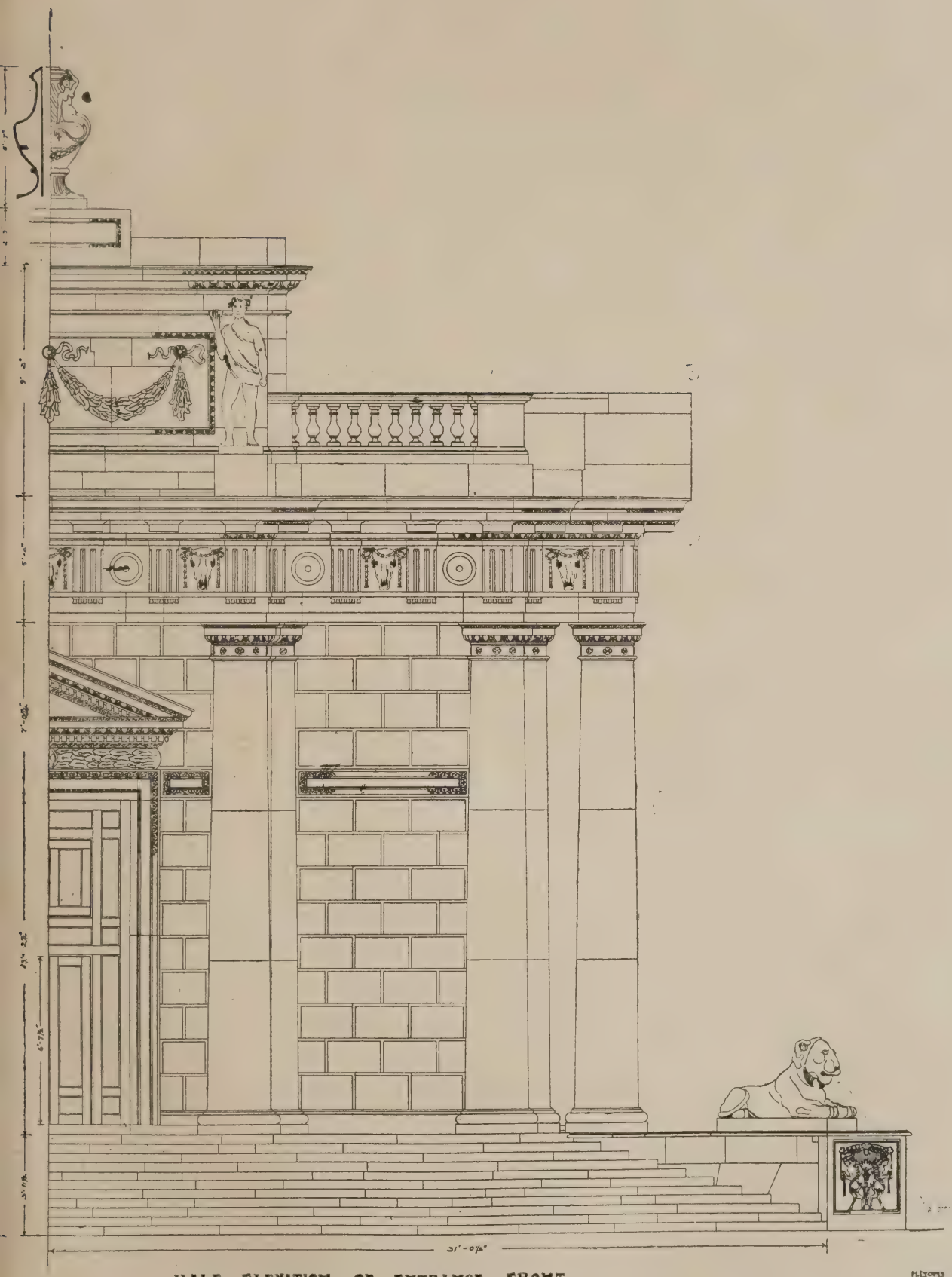


SECTION ON LINE C.D.

H.J. Lyons

ERS, Architect.) Measured and Drawn by H. J. LYONS.

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HALF ELEVATION OF ENTRANCE FRONT

TAMBERS, Architect) Measured and Drawn by H. J. LYONS,

Enquiries Answered.

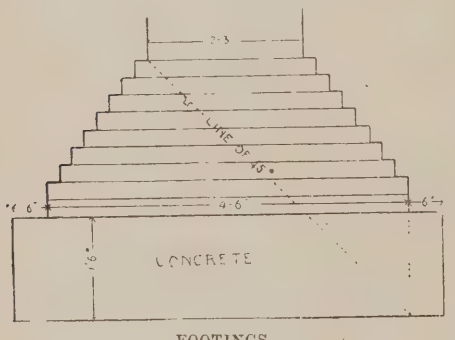
The services of a large staff of experts, including all those engaged on "Specification," are at the disposal of readers who require information on architectural, constructional, or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

R.I.B.A. Intermediate Examination.

NEWCASTLE-ON-TYNE. — B. P. writes: "I should be much obliged if you could give me answers to the following questions, set in the last R.I.B.A. Intermediate Examination:—

(1) 'Describe the proper foundation for the walls of a warehouse 40ft. wide, 70ft. long, and five storeys of 10ft. high each, on four different soils—viz., chalk, gravel, sand, and clay.' Are there any easy and quickly applied rules for determining the width and depth of footings to walls?

(2) 'The formula for calculating the weight which a timber beam will carry is $w = \frac{c\,b\,d^2}{l}$. What do you understand by this? And why does the strength of a beam vary as the breadth while it varies as the square of the depth?"



FOOTINGS.

(1) *Proper* foundations would in any case consist of brickwork in footings upon a concrete base, the bottom of the trench being rammed and consolidated. For chalk the site should, if possible, be kept dry, so that the chalk remains solid, in which case the footings may be laid direct upon the levelled chalk; but concrete would be better, especially as the building is a large one. For gravel and clay, as above. For sand—if kept dry and not a "running" sand, in which case sheet piling would be required—the same conditions apply. The easily applied rule for footings is as follows:—Bottom course of footings to be double the width of the thickness of the wall, and each course of footings to project 2½in. beyond the course above. Concrete to project 6in. on each side of bottom course, and to be of such a depth that lines at 45deg. from the junction of base of wall with top course of footings will meet outside line of footings projected vertically downwards in the base line of concrete. (See accompanying sketch.) The bottom course of footings has been doubled, but if this had not been done the concrete would have been 3in. thicker.

(2) It is understood that w = breaking weight; c = constant, the breaking weight of beams $12'' \times 1'' \times 1''$; b = breadth of beam in inches; d = depth of beam in inches; l = length of beam in feet. To show that strength varies as breadth,

Bending moment $= T\frac{bd^2}{6}$, where T = modulus of rupture per sq. in.

Compare four beams, respectively $8'' \times 2''$, $8'' \times 3''$, $8'' \times 4''$ and $8'' \times 6''$, and let T = 3 tons.

Then, from formula $T\frac{bd^2}{6}$

$$(a)\ \text{Beam } 8'' \times 2'' = 3 \times \frac{2 \times 8 \times 8}{6} = 64$$

$$(b)\ \text{Beam } 8'' \times 3'' = 3 \times \frac{3 \times 8 \times 8}{6} = 96$$

$$(c)\ \text{Beam } 8'' \times 4'' = 3 \times \frac{4 \times 8 \times 8}{6} = 128$$

$$(d)\ \text{Beam } 8'' \times 6'' = 3 \times \frac{6 \times 8 \times 8}{6} = 192$$

hence 64 : 96 : 128 : 192 :: 2 : 3 : 4 : 6

or the strength of each is proportionate to the breadth, the depth being constant. To show that strength varies as d^2, compare three beams respectively $4'' \times 2''$, $6'' \times 2''$, and $8'' \times 2''$, and let T, as before, = 3 tons.

Then, from formula $T\frac{bd^2}{6}$

$$(e)\ \text{Beam } 4'' \times 2'' = 3 \times \frac{2 \times 4 \times 4}{6} = 16$$

$$(f)\ \text{Beam } 6'' \times 2'' = 3 \times \frac{2 \times 6 \times 6}{6} = 36$$

$$(g)\ \text{Beam } 8'' \times 2'' = 3 \times \frac{2 \times 8 \times 8}{6} = 64$$

hence 16 : 36 : 64 :: 4^2 : 6^2 : 8^2

or the strength of each is proportionate to the square of the depth, the breadth being constant.

R. W. C.

Work in Borough Surveyor's Office.

SOUTH SHIELDS.—A. B. writes: "I should be glad if you would tell me what are the duties of a junior in a borough surveyor's office. Would six years' experience in an architect's office qualify one for the post?"

The work of a borough surveyor's office relates to the construction of roads and sewers and occasionally of buildings, with the supervision of sanitary works. An assistant should be a neat draughtsman with some knowledge of land surveying and levelling, and as much practical acquaintance with building materials as possible. Six years' experience in an architect's office might qualify a man for such a post in proportion as his experience had led him into the kind of work mentioned.

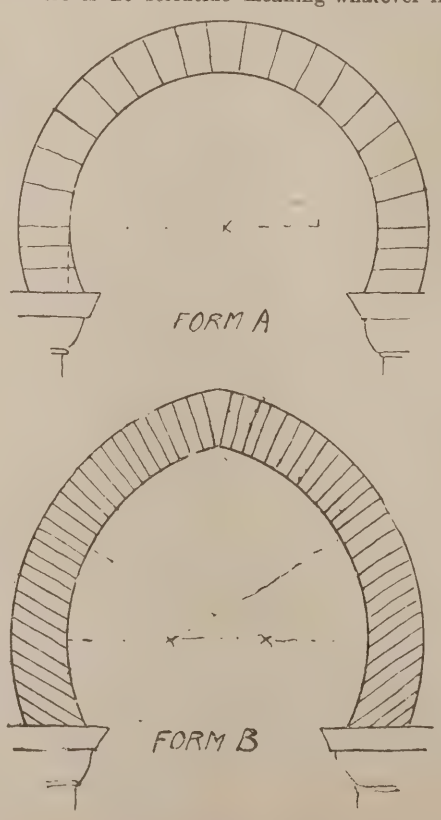
G. H. B.

The Horse-shoe Arch.

NEWCASTLE-ON-TYNE. — STUDENT writes: "From a scientific point of view, what is the meaning of the horse-shoe arch in Moorish architecture—that is, in the continuation inwards of the semicircular form, below the centre, from which the arch is struck? For example, the semicircular arch is required to carry a weight at the haunch, the pointed arch at the apex: what office does the lower part of the horse-shoe arch perform, or is it an arbitrary, fancy, or symbolic form? The derivation of this arch does not appear to be in the 'Encyclopædia Britannica.'"

There is no scientific meaning whatever in the horse-shoe arch, whether pointed or semicircular, and in many examples where it has been employed by the Moors in Spain its voussoirs are so arranged as to be as unstable as it is possible for an arch to be. In form A the voussoirs below the line from which the arch is struck are horizontal, and thus with a good abutment the arch does not differ from a semicircular or stilted one so far as its static properties are concerned. In form B the voussoirs radiate from the apex down to a line forming an angle of about 30deg. with the horizontal line, and from this point down to the support they are all cut parallel, and are therefore free to slide outwards or "vise" at the haunches, at the same time depressing the apex.

R. W. C.



THE HORSE-SHOE ARCH.

Overhanging First Floors.

LONDON, W.—ANOTHER CONSTANT READER writes: "In the erection of a pair of cottages on clay soil it is proposed to carry the overhanging front by the first-floor joists, with a small joist under supported at each end and in the middle by piers. Would it be better to carry the front entirely by a rolled steel joist, the floor joists on the first floor being laid at right-angles to it? The walls are 9in. thick, ground and first floor. Could I use something lighter than brickwork and yet satisfy the local by-laws?"

If the local by-laws permit, the first-floor front may be of open timber work, lath and plastered inside and rough cast outside. The floor joists should run through from back to front, and may be reckoned upon to carry not more than one-half the weight of the wall. The rolled joist will carry the other half—or, say, 5 tons—and should be $6 \times 5 \times 25$lbs., or $8 \times 4 \times 19$lbs.

HENRY ADAMS.

The Enfield Post Office, now about to be disestablished, was Queen Elizabeth's palace. A portion of the centre and the south wing of the Tudor building still remains, and within there are richly ornamented ceilings, oak-panelled walls, and a massive chimney-piece on which are inscribed the letters "E R.," with the arms of England and France quartered.

Building By-laws in Crewe.—The "Lancet" states that a more or less acrimonious newspaper correspondence has lately been passing between an alderman of the borough of Crewe and the former medical officer of health. In his last annual report upon the sanitary condition of Crewe Dr. Meredith Young referred to the unsatisfactory manner in which some of the building by-laws were being carried out, upon which Alderman Briggs questioned the desirability of the medical officer of health interfering with the erection of new buildings or with the enforcement of the building by-laws. The particular by-law which Dr. Young was anxious to have more rigidly enforced referred to the concreting of the sites of dwelling-houses, and as Crewe is situated upon a bed of stiff clay it is surprising that any person should object to his recommendation. That a medical officer of health does not exceed his duty in calling attention to breaches of building by-laws is made clear in a communication to Dr. Young from Dr. Franklin Parsons, assistant medical officer to the Local Government Board, in which he says that By-law No. 10 in Model Series 4, requiring a concrete layer under floors of houses, is made under the powers of Section 157 (2) Public Health Act, 1875, as one "with respect to the foundations of new buildings for the purposes of health." Article 18 (5) of the Local Government Board General Order of March, 1891, with respect to the duties of the medical officer of health, prescribes that "he shall advise the sanitary authority on any question relating to health involved in the framing and subsequent working of such by-laws and regulations as they may have power to make." Clearly, therefore, says Dr. Parsons, a medical officer of health has the right to call attention (of course in temperate and judicious language) to conditions injurious or dangerous to health which are allowed to come into existence owing to failure to carry out the by-laws.

Bricks and Mortar.

APHORISM FOR THE WEEK.

He who builds clears his purse.—ITALIAN PROVERB.

Our Plates. THE Casine, Clontarf, Dublin, was erected on an excellent site towards the latter part of the last century as a residence for Lord Charlemont. Its proportions and beautiful enrichments stamp it at once as a prominent example of the style with which the name of Sir William Chambers is indelibly connected. It is perfectly symmetrical on plan, and the effect of its general grouping becomes more pleasing by the simplicity employed in its construction. The detail of the particular order employed is somewhat richer than any example given by Chambers in his work on the five orders, and the details generally, from the principal entablature to the handles on the doors, bear strong evidence of the work of a skilful and clever designer. The measured drawings of the building which we publish gained for Mr. Henry J. Lyons this year the Travelling Studentship (value £10) of the Architectural Association of Ireland.

Professor Legros. PROFESSOR ALPHONSE LEGROS, the famous ex-Slade Professor of Fine Art at University College, is at present making a large fountain for the Duke of Portland. Professor Legros remains what he was when he first came to London, nearly forty years ago—a Frenchman pure and simple. Although his children speak English like natives, and without a trace of foreign accent—for they were born in London—he himself resolutely declines to use any other than his native language. At the time when he was Professor at University College all his criticism and teaching were done in French, with his assistant as interpreter. Although he is now sixty-three years of age, and his beard is quite grey, M. Legros has the vivacity of a young man.

A Famous House for Sale. THE sale is announced of the Charmettes at Annecy, a house famous in the annals of literature. It was here, as every reader of the "Confessions" knows, that Jean-Jacques Rousseau came as a youth after escaping from the harsh and tyrannical apprenticeship of M. Ducommun. It was here, says the "Daily Chronicle," that he met with Mme. de Warens, under whose roof he lived, and who, as he says, affected the whole course of his life. The Charmettes remain almost exactly in the same state as when Rousseau lodged there. At Ferney the relics of Voltaire are carefully preserved. In Chelsea the home of our own great philosopher has become a public possession. It may be hoped that the same respect will be shown for the little house to which Rousseau, in the course of his strange and chequered life, always looked back with fond recollection.

Truro Cathedral. IN a letter to the "Times" with reference to this Cathedral Mr. Mount-Edgcumbe says: "After the death of Archbishop Benson a movement was set on foot to complete the nave of the Cathedral which, as first Bishop of Truro, he had founded; and in 1898, having nearly £30,000 in hand, the committee, after much consideration, determined to remove the great temporary wall which closed in the western end of the previous work and to build the nave and west front. The work has progressed with almost unexpected rapidity, and is being admirably done; but how far it can be completed has to be determined almost immediately. Two alternative contracts were entered into—one carrying the western towers up to the eaves of the aisles, the other up to the eaves of the nave. The difference of cost between the two is £3,200, and we still require £2,500 to complete the lesser scheme, including all charges, or £5,700 to complete the whole. But the difference between the two schemes themselves is very great. If the committee is obliged to abandon the larger one (and, as I have said, the question demands an almost immediate decision), there will have to be more temporary walling, involving a waste of £400 or £500, and rendering the exterior unsightly for many years to come. On the resumption of work new scaffolding will also have to be erected at further cost within the building. If, however, we can now obtain sufficient promises of help to justify us in going on with the larger contract, not only will that waste of money be avoided and the external appearance much improved, but, what is more important, the interior will be thoroughly and finally completed."

The Home of the South Sea Bubble. THE historic South Sea House in Threadneedle Street (which dates back to 1773) is being pulled down to make way for a block of new buildings. Readers of Charles Lamb will remember the essayist's description of the place with "its magnificent portals ever gaping wide and disclosing to view a grave court with cloisters and pillars, with few or no traces of goers-in or comers-out—a desolation something like Balclutha's." The great house, however, has changed since Charles Lamb's time. He could speak of oaken wainscots hung with pictures of deceased governors and subgovernors, Queen Anne, and the two first monarchs of the Brunswick dynasty, of huge charts which subsequent discoveries had antiquated, dusty maps of Mexico "dim as dreams," soundings of the Bay of Panama, and pieces-of-eight long since dissipated or scattered into air "at the blast of the breaking of that famous bubble." Not only the pieces-of-eight, but most of the other relics, had vanished long before this last scene in the eventful career of the South Sea House. There was a sale of the furniture and fittings the other day, but most of the articles were quite modern and useful.

Lighthouse Building. A SPLENDID piece of work has been completed at the Foreland, in the Bristol Channel, near Lynmouth, in the erection by the Trinity Board of a much-needed substantial lighthouse, whose beneficent light will be appreciated by all whose duty it is to navigate the Channel. The contractors were Messrs. Jones Brothers, of Lynton, and both they and the engineer-in-chief (Mr. T. Matthews, C.E.) have had extraordinary difficulties in erecting the lighthouse and in making access to it, owing to the almost inaccessible position and the nature of the ground on which to build. The lighthouse buildings consist of dwellings for the principal keeper and assistant keeper, each of whom has a kitchen, parlour, three bedrooms, besides wash-house, &c., and an inspector's living room and bedroom, which will be used occasionally.

Walsall Municipal Buildings Competition. ON page 180 of our issue for October 3rd the recommendations of the assessor (Mr. J. Macvicar Anderson, F.R.I.B.A.) and the General Purposes Committee were published. At the meeting of the Walsall Town Council on October 8th the Committee brought forward their recommendation of Mr. J. Glenn Gibson's design, subject to its being found possible to carry out the work for a sum not exceeding the estimate of £55 000 by more than 5 per cent. They had directed, as agreed, that a premium of £100 should be paid to the five competitors placed highest in order of merit. The Mayor, in proposing this, said the Council had now reached a stage when a most important step in regard to the provision of municipal buildings had to be taken. The competition had been taken part in by ninety-four architects, and both the Special Sub-Committee and the General Purposes Committee were unanimous in approving the design now recommended. In addition to a town hall, there would be municipal offices, which it was hoped would meet the needs of the future, and which were no more than was necessary to enable the borough officials to cope with their ever-increasing work. The new buildings were only such as befitted the size and importance of the town, to which they would add dignity. Alderman Clare seconded the resolution, and Mr. Hughes, in supporting, expressed the opinion that the needs of the town would be met for the next fifty years. The recommendation was agreed to *nem. con.*



L'EGLISE STE. PIERRE, LOUVAIN. DRAWN BY A. M. PEART.

Ste Pierre, Louvain. THE drawing of the Church of Ste. Pierre which we print on this page was made by Mr. A. M. Peart whilst on Mr. Middleton's tour in Belgium last Easter. The date of the erection of the building is 1433.

THE PRACTICAL EDUCATION OF THE ARCHITECT.*

By Frederick Batchelor, F.R.I.B.A.

When Mr. Charles Darwin published his "Origin of Species" he was probably unaware of the extent of the debt under which he had laid us. The "unco' guid" then, as now, held up their hands. Like the Tories of a couple of thousand years ago, they had their doubts as to whether any good thing could come out of Nazareth.

The gift was accepted in principle, if not in fullest application, and apologists as far apart as the poles have adopted the methods which would derive the ape from the amœba, if not the local "A.A." from the nebula of Laplace. That about three years ago the "A.A." microcosm was in a nebulous condition, and that in some mysterious manner tides and eddies arose amidst the chaos and differentiated the nucleus of our little asteroid is already a matter of



London Street Architecture.

Irish history, and indeed our Presidential Addresses have followed a very similar course of development. Far be it from me even to hint that the opening address, *par excellence*, was at all of a chaotic character. Rather would I describe it as a brilliant *pot-pourri*, of necessity discursive, but pregnant of suggestion, as became the environment. A year later, when we were beginning to feel our feet under us, a pæan was sounded, a polemic on centralisation and registration which dragged the coat-tails of business and common-sense before the embryonic architects. This was duly followed by a panegyric which piped pleasantly of deeds, aims, and intentions—what might be termed, in publishers' journalese, a valuable Monograph on the Morphology of the Association.

Having in three successive sessions had the privilege of listening to a *pot-pourri*, a polemic and a panegyric, we are now ripe, if not for a pandect on decentralisation, for some measure of it at least in a plea for an improved general and technical education which will exploit its bearing on the survival of the fittest in the profession in which we all would excel.

The advantages of general education and culture are called in question only by those who are wanting in them, but their influence on professional success is not perhaps so universally or so fully appreciated as one could wish.

The advantages of a general education to an architect are intensified by two things: namely, the more technical character that is gradually being given to it, and the catholicity of an architect's profession.

Wherever civilised man is found, be he Christian, "Jew, Turk, Infidel, or Heretick," he loves to make his homes, institutions, palaces, and temples, not only cunning in contrivance, but each in its own way a little world of his aims and aspirations, a very Walhalla of all that is precious in art past and present, and to have impressed on each, and by a master hand, those individual, tribal and national characteristics which find more lasting if less vivid expression in architecture than the other fine arts. The designer has simultaneously to contrive, adorn and to find material expression in his work for the innermost habits and needs of every kind of client. The past may perhaps be peerless in monumental art, but I venture to think that nowhere has the range of a designer's sympathy had to be more catholic and encyclopædic than in the beautiful and loving domestic work which has marked this half-century's renaissance of architecture and its allied arts and crafts. When the tendency to the introduction of hand-and-eye training into most schemes of general education since the principles of Froebel and Slöjd have been abroad is considered, it will be abundantly evident that not only has the architect's need for general education and culture advanced, but that the theory of the latter has developed on lines perhaps more akin to the calling of the architect than any other, except those of the sculptor and painter.

There can be no doubt that a sound course of general education must precede any special departure, but how soon that departure is to be introduced into the home, school, or university is a misleading question. It assumes that there is but one answer, whereas there are as many answers as there are characters and callings. The Association has already done much, but I propose with your help to organise in the coming session a

Regular Series of Technical Demonstrations,

both at works in progress and also in the workshop. A pupil may know the four volumes of Rivington's "Building Construction" by heart, and have visited all the works on which the staff in his office are engaged, and yet be unfit to supervise, for three reasons: firstly, that every class of work does not necessarily find a place in the practice of even a very busy architect during the pupil's *quinquennium*; secondly, that a set of contractors has occasionally been known to do such good work as to deprive the pupils of their legitimate experience through rejection; and, thirdly, that visits to workshops and manufactories are quite as important as those to works in progress. I propose to meet the first want by arrangements such as have already been made with various architects and, occasionally, engineers to visit works in progress under their supervision. I do not anticipate insuperable difficulty in meeting the second want, but what we have yet to provide is a systematic series of demonstrations of good and bad materials and workmanship, and the means of distinguishing and appraising them, at sight and by applied test, taken, say, in the usual order of a specification. To meet the third want I look for the co-operation of the master-craftsmen, merchants and manufacturers in the neighbourhood of Dublin.

The timber trades alone will entail several pilgrimages. I question whether the most didactic among us would care to speak *ex cathedrâ* on the article itself. The stereotyped specification founded on the relations at one time rife between qualities, uses, ports of shipment, and market forms and marks is out of date, and the dearth of the dry red deals which stocked Dublin sheds in the good old days has not only introduced a new cult—that of the American baulk—but largely increased the demand for second Quebecs; whilst departures such as Kauri and Oregon pines, sequoia, canary, maple, and cypress are courting attention and making new demands on technical demonstration. From the timber yards we might perhaps turn to the creosoting works, and fill a few pages with notes on the process, the pounds per cubic foot injected for various uses, the pressures applied, and the depths of penetration. A visit like this, where we could handle the stuff, compare a few sawn sections, and pump the showman for all we were worth, would teach us more than a dozen text-book descriptions. After such a pleasant diversion our attention should be ripe for the saw mills and the carpentry and joinery shops.

The variety of sawn scantling now imported, especially from the Baltic, renders the appreciation of market forms in the importer's yard less problematical than when it was more confined to the log and the baulk, but it is in the saw-mills perhaps that we have most to learn from technical demonstration. I imagine that one of the chief advantages of technical demonstration in the joinery shops to a Science and Art "pass" man would be the dispelling of his little illusions in regard to the present use of framed floors and tongued and grooved back-linings in cased frames. What a shock to discover that the girder and the binder have been ousted by the steel section; that the insinuating steel nail makes a better edged-joint than the time-honoured tongue; that the tenacious tusk-tenon, the darling of his prettily-shaded isometrical details, is practically confined to trimming; and that so great a man as Viollet-le-Duc would drive it even from that refuge. What is even more wanted, because of its comparative neglect in this branch of technical education, is a similar demonstration in the shop-fitting and cabinet-making crafts; crafts whose niceties are only worked out by the specialist who can get a fair price and escape the demoralisation of the cut-throat competition now being fostered by Government departments. I would conclude the series by an examination of some of the best examples of genuine old joinery and fittings in the last-century houses of Dublin, such as still linger in Henrietta Street, Rutland Square, Sackville Street, Kildare Street, or Ely

* Inaugural Address delivered before the Architectural Association of Ireland on October 9th, 1900.

Place; and of the old furniture in the Science and Art Museum, much of which might be measured and drawn with advantage. Few technical studies are so refining in their influence upon the design of architectural joinery as that of the good old furniture of the sixteenth, seventeenth, and eighteenth centuries, and there can be little doubt that the coarseness of the Gothic Revival was largely due to its neglect. Another series of demonstrations which would very materially increase our stock of practical knowledge may possibly be arranged in connection with stonemason's work. In these yards the various building stones in common use for constructional purposes, and also those employed in decoration and in sculpture, could be exhibited and, I hope, a number of valuable hints obtained from the master-mason's ripe experience as to what quarries have produced the stones best able to resist the disintegrating effects of our Irish climate. We would expect, too, that the flaws and defects peculiar to each description of stone would be pointed out. The methods of setting out the work and the subsequent operations of sawing, dressing, carving and polishing the stones would be demonstrated. Then again we have in Dublin quite exceptional opportunities for seeing in well-equipped workshops art metal work, constructional steelwork and foundry work in all stages of production. I venture to think that if the young architect would avail himself of the opportunities now held out to him to increase his stock of practical knowledge, that knowledge would react most beneficially, not only on the morality of the master smith, but on the pocket of his clients. He would no longer create designs, presumably for wrought-iron, which could be produced only at excessive cost in that material, or else in the form of a malleable casting which might deceive both architect and client alike.

In the details of plumber's work the average architectural student or assistant is lamentably ignorant. He is probably acquainted with the first principles of sanitary plumbing; he will not, for example, leave a soil-pipe without ventilation; he will arrange for the disconnection of the house drain from the sewer, and he may even provide for a proper current of air through the drains; but when questions are put to him by the ingenuous plumber concerning the laying-out of the hot-water circulating pipes or the connection of the W.C. trap with the soil-pipe, he is liable to be placed in a position not entirely compatible with the dignity of the "arkos tectone."

From plumbing work it is not a far cry, in Dublin at all events, to enter the establishments of the master painters, for in more than one instance these trades, curiously enough, are combined.

Pilgrimages of similar scope, to the haunts of all the crafts that an architect calls to his aid, in ecclesiastical, civil, or domestic work, are in contemplation.

I have tried to put before you the paramount need of general education, of improved opportunities in the technical training which is our special stock-in-trade, and of the culture which refines their use and combines them to their best ends. Without a full measure of these things ambition is heavily handicapped. I speak, of course, of ambition in its broadest sense, the ambition to deserve and fill a niche in the Temple of Fame, not the mere instinct of self-preservation and successful plunder which we share with the domestic animal or the beast of prey; the desire to swell the store of wisdom already laid up in technical achievement and record, to raise and maintain the status of our calling, to extend without fear or favour the benefits of our ripe experience, to bear with and live down the prejudices or jealousies of our clients or fellows, and to feel ourselves efficient factors in private, social, and national life—citizens, in fact, of no mean city.

I have not spoken of personal gifts, but without a fair heritage of aptitude, fostered in the hope of something better than by-ends, the seed may fall on barren soil. If we cannot choose we can at least cherish them, so that when our barns and armouries are fuller than those of the less gifted or thrifty, we can draw upon ripened grain, or take down a burnished weapon from the rack.

I have pointed out that we have much to enlist both gratitude and hope in the new department, sop though it be, and I have suggested the ultimate establishment of a vastly more far-reaching scheme of State aid. Charles Lamb has shown us that to look a gift-horse in the mouth is a virtue rather than a vice, and thus is especially true of State aid. Those who run the State have, in addition to their ingrained aptitude for muddling, and the utter want of anything like business capacity in their nominees—have a pretty habit, especially in dispensing political charity, of undoing with the left hand what they do with the right. It may be a mistaken interpretation of the Divine injunction: "Let not thy left hand know what thy right hand doeth," but it is certainly neither business nor charity to set up a standard with one hand and besmirch it with the other! And yet this is what an enlightened Government is doing in the matter of technical education.

It is good for reflection to see, on the one hand, the feverish and belated efforts to provide the technical education which will place the failing artisan on equal terms with his better-taught German or American neighbour; and, on the other, the degradation of both master and man, on which year by year the Government is putting heavier premiums. I have already drawn attention to the inevitable result of cut-throat competition on the conscientious work that alone can train artisans worthy of the honourable name.

How is the master-craftsman to get a living price when strikes and the incapacity bred of the Government demand for jerry-work gnaw at one end of his profit, and indiscriminate calls for competition at the other, except by yielding to the temptation, mercilessly held out, of privity in the fraud? It is the knowledge that the degeneration which has followed in the wake of all the crafts that are prone to this evil—namely, those that are commonplace rather than *de luxe*—dates from the introduction, and thrives under the curse, of competition; it is this knowledge, I say, that has often induced concerns run on business lines to eschew competition and to act as notably the Belfast Banking Company did some years ago when they asked their architect, Mr. W. H. Lynn, R.H.A., to select the best contractor he could get for their new bank in College Green and settle a fair price. They knew that it was folly to put supervision to the test of getting what Mr. Ruskin has very properly termed "loving work" out of the signatories to the lowest tender, or to expect culture enough in a casual jury, possibly content with railway-station standards, to uphold the condemnation of work not obtrusively moribund or coarse; and they acted on their knowledge, with the result that the building is an object-lesson in material and workmanship.

I believe that this is the real plague-spot in our system, and that it behoves every good citizen who has the progress of technical education in Ireland and the Empire at heart to lend his influence to root it out, and render it less increasingly difficult to find what should never be divorced; namely, conscience and skill in the worker.



LONDON STREET ARCHITECTURE.

LONDON STREET ARCHITECTURE

WE print this week three drawings of London street architecture, by Mr. Sydney Newcombe; they are the first of a series of similar drawings which we propose to publish from time to time.

No. 60 Cheapside (see p. 201) is carried out in red gauged brickwork with Portland stone dressings, with the exception of ground-floor front, which is in polished granite. It was designed by Mr. H. Huntley Gordon, whose refined detail is such a relief to the mediocre architecture of many of our principal streets.

No. 1 Little Dean's Yard, Westminster, designed by Mr. T. G. Jackson, R.A., is used as a boarding-house in connection with Westminster School; it was described in our issue for June 30th, 1897, when we gave a reproduction of the elevation to courtyard. The front, shown

in the sketch on page 214, is built in yellow stock bricks relieved with red arches and jambs, with Portland stone sparingly used. Although this design has evidently been prepared with a view to economy, it is well worth inspection.

"The Yellow House" stands in the Bayswater Road, opposite the entrance to Kensington Gardens, and was designed by Messrs. Ernest George and Peto. It is carried out in yellow terra-cotta, the roofs being covered with green slates. The spacious forecourt is tiled and contains a sundial, giving the building an air of repose which is particularly noticeable in a thoroughfare possessing so many evidences of rush and bustle.

Professional Practice.

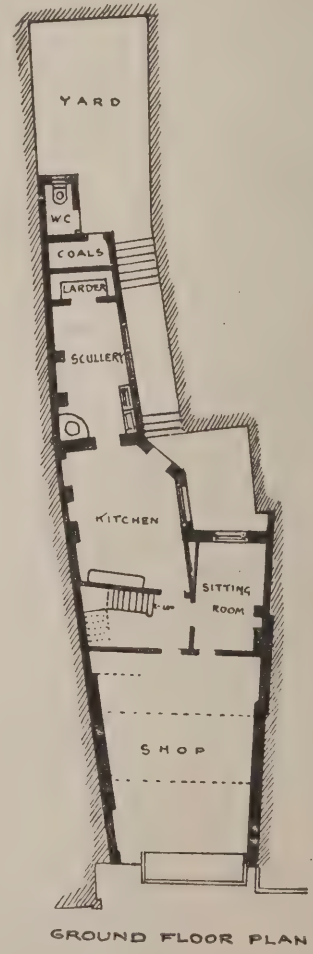
Brisbane, Queensland, Australia. — New General post-office and telegraph buildings are to be erected, and a competition for designs was recently held. The first premiated design was by Mr. John Barr, whose aim has been to keep each department distinct, with good lighting and cross-ventilation. The style is Free Classic. The walls are to be built partly of local sandstone and partly of brick with stone dressings. All partition walls are to be of terra-cotta lumber built in cement. Monier fireproof flooring will be used throughout. The public-hall floor is to be covered with large marble mosaic, the mail-branch floor with wood blocks, and basement and balcony floors with asphalt. The ceilings to the administrative branch are to be of plaster, and remaining ceilings of small corrugated iron; remaining floors of 4 by 1½ T. and G. boarding laid on battens. The heating is to be by electrical radiators in the rooms. On the ground floor an arcade is provided connecting Queen and Elizabeth streets, flanked by new lane, giving access to registration office, public lobby of money orders, stamps, telegraph, main staircase, clerks' entrance, private boxes, stores, parcels and dead-letter offices. First floor (17ft. high) has four departments on it, which have been arranged around a large central area. The administrative and money-order branches are arranged around three sides of an air court, which will be constructed as a balcony, having an asphalt floor with roofs over; doors from corridor and rooms will open on to it, and may be thrown open during hot weather. The central portion of this area is taken up by lantern lights to despatch-room. A service staircase is provided connecting all departments with pay clerks. Weather bureau and telephone exchange, 28ft. 6in. high, are placed at the Elizabeth Street end of the air court. The second floor (17ft. high) is taken up by telegraph and engineer's branches, the two departments being kept distinct, caretaker's or chief messenger's house being placed in centre of court over superintendent of money orders and lavatory. The telegraph room (34ft. high) has been provided with a gallery, with stores opening from it, having circular galvanised iron ceiling, and lighted by side and dormer windows. The basement floor (11ft. 6in. high) is basement to Queen Street and ground floor at Elizabeth Street, allowing parcels and dead-letter offices to be entered from arcade and street, thereby saving handling of heavy parcels, a loading space being provided at side. The estimated cost is £150,653. Messrs. Hall and Dod's design secured second place.

Driffield.—The new parish church, upon the site of the old one, has just been consecrated. It is of Romanesque type, with round arches and round-headed windows, and is faced inside and out with Lincolnshire bricks. The plan consists of nave, chancel, transepts, with short aisles, chancel aisle, vestry, and west porch. The principal entrance door in the west porch has a carved tympanum over the lintel, and a bell gable is provided at the west end of the nave. The roofs have curved boarded ceilings, with planted moulds dividing them into panels, and are constructed entirely of redwood. The seats, screens, chancel fittings, and wall linings are of wainscot oak. The extreme length of the nave and chancel is 106ft., and the width across the nave and transept 54ft., inside measurement. Sitting accommodation is provided for about 420. It is heated with hot water on the low-pressure system. Messrs. Hicks and Charlewood, of Newcastle-on-Tyne, are the architects, and Messrs. W. Leason and Son, Driffield, the sole contractors. The fabric has cost about £4,000. The pulpit and lectern are of carved oak. The roof is covered with red tiles.

Ilfracombe.—The building, No. 118 High Street, of which a plan and a front view are given on this and the next page, has lately been erected for Mr. J. H. Smith, butcher, at a cost of £1,100. The front is of Lawrance's T.L.B. red bricks with Bath stone dressings and carvings in Portland stone. The ground floor is laid with Duffy's Patent Acme Flooring, and the walls of shop are lined with white glazed brick. The architect was Mr. Allen T. Hussell, M.S.A., and the contractors were Messrs. Britton and Pickett, all of Ilfracombe.

Leeds.—Two new Board schools have recently been opened by the Leeds School Board, both schools being erected from plans by Mr. W. S. Braithwaite, architect to the Board. The new school erected in Stanningley Road, near Armley Park, occupies 5,052 yards of ground, and has been built to accommodate 1,180 children. On the ground floor, which is set apart for the education of infants, there is room for 410 children; and in the mixed department, on the first floor, which comprises a large central hall and twelve classrooms, there is accommodation for 780 scholars. The ground floor comprises a large hall and six classrooms, two of which are to be set apart for the care of babies. The heating apparatus, which has caused trouble in other similar erections, has been specially attended to. Large playgrounds adjoin the buildings. Inclusive of site and fittings, the school has cost £19,400.—The new school erected in Broad Lane, Bramley, has cost £10,016, inclusive of the site (2,665 square yards) and the fittings. It is a two-storeyed building, with accommodation for 650 children. The infants' department is on the ground floor, and consists of a central hall and four classrooms. Three of the rooms accommodate 60 each, and there is a babies' room. The mixed department, on the upper floor, has a central hall and six classrooms, each accommodating 60 children. The staircases are fireproof, and there are ample cloakrooms, teachers' rooms, &c., whilst at the rear of the building a workshop has been erected wherein at each lesson 24 boys may be given manual training. The heating is effected on the low-pressure hot-water system, and the ventilation has been carefully attended to. There are large playgrounds. The various contractors were:—Messrs. Appleyard Brothers, masons, &c.; Messrs. Trickett and Sons, joiners; Messrs. Sowry and Martin, plumbers; Mr. S. McFarlane, concreter; Mr. A. Marsden, plasterer; Messrs. Taylor and Parsons, ironwork; Messrs. Pickles Brothers, slating; Mr J. A. Naylor, painting; Messrs. Illingworth, Ingham & Co., furnishing.

Leicester.—The new Isolation Hospital has recently been formally opened, but there is still a good deal of work to do before the buildings leave the contractors' hands. The Town Council originally voted a sum of £54,000 for the buildings, but it is probable that the ultimate cost will exceed that amount. The designs of Messrs. Blackwell and Thomson, architects, of Leicester, gained the first award in the competition which the committee promoted, and from these designs the hospital has been built, Mr. Thomson having superintended the execution of the work. The site comprises about 14 acres of the Gilroes estate, and adjoins the Groby Road about a mile and a half from the Clock Tower. The administration block, a large two-storey building, faces the road at a short distance from the entrance. The hospital proper consists of four separate one-storeyed pavilions for the treatment of scarlet fever, giving accommodation for 26 beds each; a similar pavilion for typhoid fever containing 28 beds; two isolation pavilions—one a two-storey building—containing 28 beds, making accommodation for 160 adult patients. The buildings on the site have been so arranged that two additional scarlet fever pavilions can be easily added, and one additional isolation pavilion. It is suggested that the separate rooms in the isolation blocks can be conveniently used for typhoid patients should occasion require, hence an additional typhoid block is not projected. The other buildings comprise the administration block, discharging block, and mortuary, engine and boiler house, laundry, and porter's lodge. The total number of beds, if the full extension were carried out, would be 240. The several buildings are connected by macadam roads without covered ways, the ambulance vans thus being able to drive up to the door of each block. Owing to the natural fall of the ground, north to south, terracing is being adopted to some extent, the earth removed from the higher parts being used to fill up the lower portions as terraces, thus avoiding a large amount of unnecessary brickwork below the ground floor line. The site has an average elevation of about 280 feet above ordnance datum. The four scarlet fever pavilions are all arranged alike, and consist of two main wards, 72 feet long and 26 feet wide, to contain 12 beds each. In the central portion is provided a separation or observation ward of two beds leading out of the ward corridor, and having its own lavatory and w.c. The nurses' kitchen is centrally placed, and can overlook the beds in the two main wards by means of observation windows. At the distal end of each main ward is placed on one side the sanitary tower, containing the w.c.'s, slop and scalding sinks, disconnected by a ventilated lobby, and on the other side the bath-room, which contains two baths and two lavatories. The typhoid pavilion is very similar in plan to the scarlet fever pavilions, except, as the block will be used for two sexes, it is necessary to provide two separation wards instead of one, as in the scarlet fever blocks. The one-storey isolation block provides for a total of 12 beds. The two-storey pavilion is arranged on two floors, one half to face east, the other half west. On both floors in each half two two-bed wards are provided, leading on to the verandah, with nurses' kitchen and larder. The sanitary towers are approached from the verandahs. The first floor in each



GROUND FLOOR PLAN

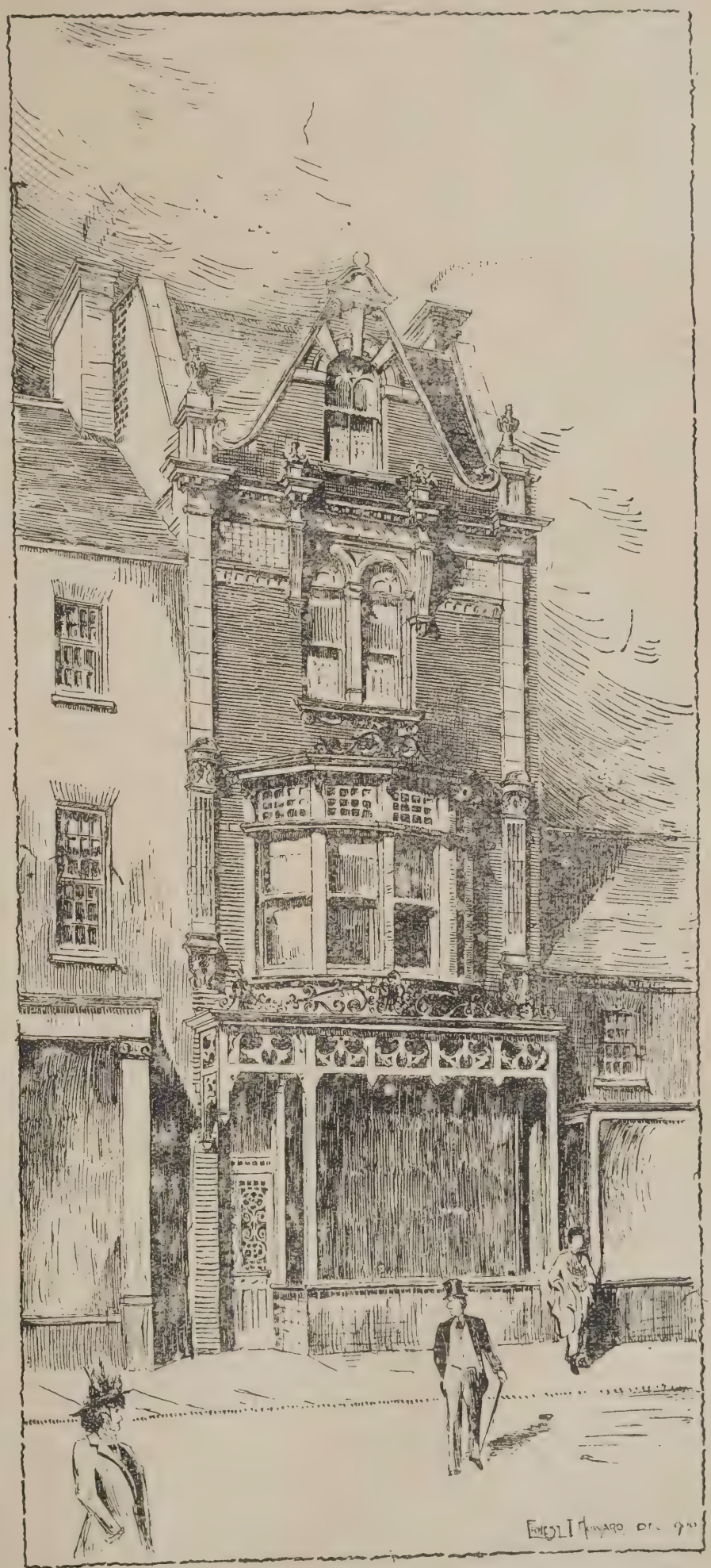
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PREMISES NO. 118 HIGH STREET, ILFRACOMBE.

half is approached by an open stone staircase at the extreme end of the verandahs. The floors of the wards are constructed of teak blocks. The administrative block contains on the right of the front main entrance, committee-room, doctor's sitting-room, lavatory, etc., dispensary, laboratory sto e, waiting-room and telephone enclosure; and on the left of the entrance, matron's sitting-room, office, nurses' mess-room, sitting-room, sewing-room, household-linen room, dry goods store, lavatory, etc., servants' hall. The servants' hall and nurses' mess-room are placed in close proximity to the kitchen. The floors of the corridors, kitchens, etc., are of terazzio. The first floor contains the nurses' and matrons' bedrooms, with bath-rooms, w.c.'s, and linen store. The doctor's bedroom and bath-room are also on this floor, and are approached by a separate staircase. Twenty bedrooms for nurses are provided on this floor. The second floor contains ten bedrooms for servants, a bath-room, etc. The porter's lodge is situated on the right-hand side of the main entrance from Groby Road, and stands 15 feet back. At the rear of the porter's lodge, on the right-hand side of the entrance roadway, is the discharging block, which is arranged in duplicate for male and female patients. A mortuary is of necessity provided, consisting of a post-mortem room, mortuary, and viewing chamber. The heating throughout is by low-pressure steam, with auxiliary heating arrangements consisting of stoves and grates. The sewage from the drains from the scarlet fever pavilions, typhoid pavilion, isolation block, and administrative block is each kept quite distinct, and is pumped up into one of the main carriers on the sewage farm by means of a Shones' ejector apparatus. The facings to all the buildings are Ellistown brick, with stone dressings, and the roofs are covered with green slates. The hospital is lighted by electricity throughout. The building has been carried out by Mr. J. F. Johnson, of Leicester, and the plumbing, etc., by Mr. F. W. Haskard, of Halford Street, Leicester.

Longforgan, Dundee.—Longforgan Church has just been undergoing alterations. The whole of the old pews and flooring, together with the old gallery which encircled on three sides the pupit, have been entirely removed. The old internal stone stairs giving access to either end of the gallery have also been removed, thus throwing open the whole internal area of the church for fresh treatment. An eastern annexe or chancel having a Gothic window of three lights to the east has been erected, communicating by means of a wide semicircular archway in the east gable of the old church. The structure has been refitted with new joists and flooring, and reseated with new pews of pitch pine. A small gallery runs across the west end. A vestry has been erected to the south of the chancel, while an exit porch has been provided in the corresponding angle at the north. The pulpit, which is octagonal in form, and of ornate design in cypress wood, occupies a site near the south spring of the chancel arch. It is fitted with carved panels. The three-light opening in east wall of chancel has been filled in with a series of stained-glass memorial windows, illustrating the Ascension. The walls of the church have been tinted. The church has been heated by coils of pipes on the low-pressure system. Mr. A. Hutcheson, of Dundee, is the architect, and the contractors for the various departments of work were: Mason, Robert Goodall, Errol; joiners, D. W. Clarke and Son, Dundee; plumber, A. L. Peacock and Co., Dundee; slater, James Laburn and Son; plasterer, James Laburn, Dundee; heating, G. H. Nicol and Co., Dundee; painting, William Norwell; glazing, Lindsay and Scott; sculptor, Alex. Neilson, Dundee. Messrs. Clayton and Bell, London, supplied the chancel window and carried out the decoration of the chancel.

Twickenham.—New business premises are about to be erected in York Street, from the designs of Mr. Paul Hoffmann, architect, of 152 and 153 Palmerston Buildings, Old Broad Street, E.C. The one will be known as "Victoria House," and will occupy a very prominent posi ion at the angle of York Street and



PREMISES, NO. 118 HIGH STREET, ILFRACOMBE. ALLEN T. HUSSELL, ARCHITECT.

Richmond Road, and the other opposite. These buildings, as well as several others in the same street, the designs of which have been entrusted to the same architect, will be erected in red brick and Bath stone. Some of the proposed new shops will have the usual living and bedroom accommodation on the upper storeys, while the upper portions of "Victoria House" will be occupied by residential flats, the bedrooms of which will overlook the grounds of York House. The contractor is Mr. T. W. Brown, of Hornsey and Bexhill-on-Sea, where he has just completed a block of shops and flats known as "Marina Court," for the designs of which Mr. Hoffmann has also been responsible.

GRANITE PAVING.

BY CHARLES T. RUTHEN, C.E.

GRANITE paving, when properly laid, will outlast any other form of roadway, more especially when subjected to very heavy wear. Its chief objection is that it is naturally very noisy; but this defect does not appear to have affected its general use upon roadways over which heavy merchandise is conveyed. Cost of maintenance is a great deal less than with ordinary macadamised roadways, and needless to say it is exceptionally clean compared with a macadamised road. The latter point alone is a very serious question in a large town.

North Wales granite setts are considered very good for use on roads used for heavy traffic, and are of course the most economical for ordinary traffic: but the cost is slightly more than that of Irish and other granites.

Construction.

The following description of the method of construction will give a fair idea:—If the roadway is an old one, the excavation would be taken out to the depth required for the foundation and setts, say a minimum of 12in. The bottom of the foundation would be parallel with the finished surface line of the setts. The foundation should be a bed of concrete at least 6in. thick (covering the whole of the portion to be paved), composed as follows, namely, six parts of screened ballast or gravel (all of which will pass through a screen of 2½-in. mesh) and one part of Portland cement, all thoroughly mixed upon a platform and used while in a semi-liquid state. Concrete made with lime instead of cement is equally good and very much cheaper. The proportions would be the same if lime were substituted for cement.

The lime should be ground blue lias, Aberthaw, or other similar lime, and seived through a screen of 2,500 meshes to the square inch. The cost of ground lime as above is about one-half that of cement. If the old material on the road be ordinary metalling, this will, after being screened, make a proportion of the concrete, instead of using ballast or gravel.

It would be well to note that the depth of the foundation varies according to the nature of the ground, and would be all the better by being 9in. or even 12in. deep instead of 6in. Should the ground be very soft, the roadway would be improved by the addition of a bed of stones, say 12in. deep, laid under the concrete foundation.

Some Things to Remember.

One ton of cement equals exactly one cubic yard, and, when mixed in the proportions of six to one, the resultant mixture is about seven cubic yards of concrete. This will cover an area of 42 superficial yards 6in. deep.

One ton of ground lime mixed in the proportion of six to one will cover 50 superficial yards 6in. deep. Fourteen labourers, mixing and laying concrete, will complete about 135 superficial yards per day.

As the concrete foundation is laid, the surface is well rammed with large flat rammers, in order that the concrete may get thoroughly consolidated, and so that the top surface may be brought to a fairly smooth face. The curvature of the concrete bed must be the same as that which is intended for the finished road-surface of the paving. The concrete foundation should have at least forty-eight hours to set before the paviors commence their work.

A bed of sand, 1in. in depth, is spread over the concrete foundation when ready for the setts. This sand acts as a bed for the stones. The size of granite setts varies. Those frequently used are 7in. by 5in., 5in. by 3in., 6in. by 4in. Paviors will lay an average of about 27 superficial yards each per day of nine hours.

After the stones are laid they are well rammed with heavy rammers, in order that they shall have a good solid bed, after which gravel (nothing smaller than ¼in. and nothing larger than ½in. gauge) is spread over the surface and brushed into the joints previous to the running of the grouting mixture. This process has the effect of wedging the stones and keeping them in place.

Grouting material composed of lime and sand or of cement and sand in equal proportions is often used, the mixture being made into a liquid state, spread over the surface of the roadway, and brushed into the joints.

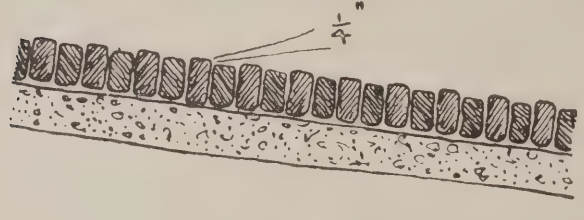
Bituminous Mixture

is, however, by far the best grouting material, and is composed of the following, namely, pitch and tar in the proportion of 2⅔gals. of tar to 1cwt. of pitch, thoroughly boiled in a special pitch boiler made for the purpose. These boilers vary in size, but there are two sizes in general use. The larger size holds 9cwt. of pitch and 24gals. of tar, and when boiled this makes about 150gals. of the mixture. The smaller size will hold just half this amount: 150gals. of this grouting mixture, as above, will flush the joints of about 22 superficial yards of paving. The quality and suitability of this mixture depends greatly upon the quality of the pitch and tar used. The proportions given above are for the best materials.

Pitch boilers can be "charged" four times a day—that is to say, with the large boiler 600gals. of bituminous grout could be prepared in one day, and with the smaller boiler about 300gals. The first "charge" takes about three hours to prepare, and the three subsequent "charges" two hours each. Three men grouting with the bituminous mixture will flush the joints of about 132 superficial yards of paving per day (with one large and one small boiler at work boiling the mixture).

After the grouting process has been completed, the surface of the road is covered with a thin coating of fine gravel, and at least seven days are allowed to elapse before traffic is permitted upon the road.

The approximate time required to pave a roadway with granite setts in the manner described may be gathered from the following figures, namely, 2,825 superficial yards may be completed in thirty whole working days, inclusive of excavation of old metalling or other material to the depth required for the new foundation, concreting, paving, and grouting; average number of men employed being sixty labourers and concretors, two rammers, three pitch runners, four paviors, one foreman and one ganger.



SKETCH A.



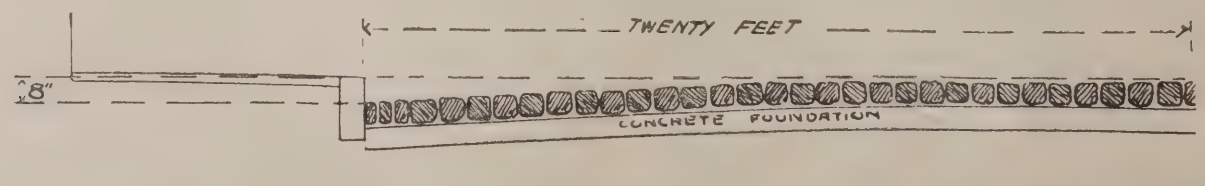
SKETCH B.

Inclines

exceeding 1 in 26 should not be paved with granite setts, although steeper gradients are paved in this manner; but considerable danger arises from the use of granite upon inclines greater than that mentioned.

A small projection, say of ¼in., made in each course when the stones are being laid (see sketch A) upon steep hills, will be found to be a great improvement, and safer for vehicular traffic (the projection affording a foothold for the horses) than the ordinary method of paving, as laid upon practically level roads. Another method of dealing with this point is shown on sketch B, every alternate course being lowered.

The curvature of the surface is shown upon sketch C. This varies according to the longitudinal gradient, but that shown upon sketch is very satisfactory for a level or nearly level road. If the cross gradient is too great, heavy vehicles, when using the roadway, gradually "slide" into the channel, and it is most difficult to get the vehicle on to the centre of the road again.



SKETCH C.

A Swiss Lady Architect.—The town of Mediasch (Switzerland) has chosen from a number of plans sent in for the new town hospital the design of Miss Erika Paulas. This lady is the daughter of an engineer, and was born in Zurich in 1875. As a child she displayed a great talent for drawing, and when quite a young girl surprised the town authorities of Bistritz (where her father held an appointment) by the design she sent in for new barracks. In the year 1895 she passed the usual builders' examination, and then all the examinations necessary to take an architect's degree.

LONDON COUNTY COUNCIL.

ON Tuesday in last week the Council met for the first time since the summer recess. In the course of his annual address Mr. W. H. Dickinson, the Chairman, said that whereas in the year 1898-9 the Council undertook works involving a gross capital expenditure of £7,000,000, it had in the year now under review practically involved itself in liability for a gross capital expenditure of more than £11,000,000. The chief items of that large sum in round figures were:—(1) New main sewers, costing about three millions (but of that only one and a half millions had been actually decided upon); (2) tunnel under the Thames, two millions; (3) improvements, three millions; (4) artisans' dwellings, one and a half millions; and (5) tramways and light railways, one and a half millions. The nett result of the Council's work during the eleven years of its existence as felt by the London ratepayer had been an addition to his rates in respect of debt of a sum of less than ½d. in the pound. Dealing with the housing of the Council's staff, the Chairman said that, in addition to the main building in which the Council sat and the three adjoining houses which had been added to it, they had no fewer than twenty distinct houses, many of which were a long way from the Council's headquarters. Turning to the

Main Drainage Work,

the Chairman said that the total amount of sewage treated in the year had been 79,382,570,830 gallons, and the weight of sludge sent to sea had been 2,288,000 tons. The most important act of the committee during the year had been to induce the Council to embark upon the great scheme of extension of the main drainage which was some time ago elaborated by Sir Alexander Binnie, and was estimated to cost £2,947,000. The existing system, laid down forty years ago, was designed to serve the needs of an anticipated population of 3,450,000 persons; but the growth of London had exceeded all expectations, and they found that already the population using their system exceeded 4,700,000, and the sewers now conveyed in dry weather 80 per cent. more sewage than the amount which they were constructed to carry. Under those circumstances the Council had, after very great hesitation, felt that the enlargement of the drainage system must be commenced, and on December 5th, 1899, it agreed to the recommendations of its committee. Those recommendations did not cover the whole field, as it was deemed advisable that only the new outfall sewers should at first be constructed. That work involved an expenditure of £1,250,000, or about two-fifths of the complete scheme.

The Improvements Committee had, the Chairman remarked, carried through reports involving a nett cost of £2,047,840 for sixteen schemes. As regards the parks and open spaces, whereas in 1889 the Council's parks and open spaces numbered 40, they now numbered 91. In the former year the annual maintenance of them cost £52,000. It had now increased to £114,000. Turning to the

Housing Question,

the Chairman said that, taking buildings either completed within the past twelve months or nearly completed, the money value of these amounted to £370,000, or three times as much as in any previous year. Beyond that they had over £350,000 worth of buildings ordered, but not then put out to contract, bringing the total value of buildings decided upon up to £720 000. In addition, they had building schemes not finally approved by the committee, but in a more or less forward state of preparation, of the value of £1 500,000. The total value of the work requiring attention was therefore not far short of two and a quarter millions, an expenditure which would impose no slight responsibility and burden upon the office of any architect. In return for that expenditure nearly 50,000 persons would be accommodated, bringing up to 59,751 the number of persons provided for since the inception of the Council in 1889.

On the subject of water the Chairman remarked that the average daily flow of the Thames in September over the period of seventeen years had been 491,500,000 gallons. When it was borne in mind that the Balfour Commission reported that London within thirty-one years from now would require to draw 300,000,000 gallons a day from the Thames, and that, in the opinion of that Commission, at least 200,000,000 gallons should be left at all times to flow down the river, it was clear not only that the amount of reservoir accommodation necessary for storing the winter floods in sufficient quantity to provide for summers like those of 1898 and 1899 would be far greater and far more costly than the Balfour Commission ever suspected, but also that in the end London would be compelled to resort to new sources at much greater expense than if that were undertaken now. He believed that if the present opportunity were lost, future generations would look back to their action with much the same feeling of regret as that which they had expressed at the action of the City of London when in 1612 it gave the control of the New River undertaking over into private hands. The Council passed a vote of thanks to the Chairman and ordered his address to be printed.

The Piccadilly Widening Scheme.

The Improvements Committee brought up their report, originally submitted on July 24th, in favour of making an arrangement with the Government for the widening of Piccadilly to about 170ft. between Hyde Park Corner and Walsingham House by cutting off a slice of the Green Park. The committee in their report impressed upon the Council the fact that Piccadilly was one of the main thoroughfares of London, and must, in their opinion, always remain so. It was frequently congested not by local, but by general through traffic. They considered that this traffic must continue to increase, and therefore it must be indeed plain that the widening of the thoroughfare at no distant date was inevitable. The present was a very favourable opportunity for securing the improvement at a most reasonable cost, and they were therefore strongly of opinion that the Council would do well to approve the proposal at once, and undertake to pay the cost of the necessary paving and other works. It might be desirable to make one or two very slight alterations in the line of widening shown upon the plan submitted, and they therefore proposed that the Council's undertaking to pay the cost of the works should be subject to the details of the plan being hereafter agreed between the Council and the Office of Works. They understood that the First Commissioner quite concurred in that course. They also stated that if, instead of acquiring vacant land, the Council had to arrange for the setting-back of the buildings on the northern side of Piccadilly, the cost would not be less than 1½ millions sterling. In the case of the widening of the Strand at the Hôtel Cecil, for which the Council arranged in 1896, the thoroughfare was widened to 80ft. for a length of only about 225ft.; but although in that case vacant land was acquired, and the Council did not have to pay for trade interests, the improvement cost the Council £30,000, which, in the circumstances, was rightly considered a reasonable sum. In the case of Piccadilly, however, the street would be widened for a length approaching half a mile at no greater cost than that of widening the Strand for a length of only 225ft., namely, £30,000, the Council having in the case of Piccadilly to pay nothing for the land. They recommended that the proposal should be accepted. After a short discussion the recommendation was agreed to.

The Building Act Committee reported that they had refused their consent, under sections 13 and 41 of the London Building Act, 1894, to the erection of fourteen shops, with rooms over, on a portion of the yard on the west side of Ludgate Hill Railway Station, and of a kiosk at the north end of such yard, abutting upon New Bridge Street and Pilgrim Street, as shown upon the plans submitted with the application of Mr. W. Wallace on behalf of the South-Eastern and Chatham Railway Company.

The Council decided to send a letter to the Local Government Board asking that it might be authorised under Clause (C) of the memorandum of association of the Sanitary Inspectors' Examination Board to appoint five representatives to serve on that Board, and stating that the Council would be glad if the president of the Board would receive a deputation from the Council in support of its request.

A YEAR'S BUILDING IN GLASGOW.

SIR JAMES BELL, Bart., whose term of office as Lord Dean of Guild has just expired, in his valedictory address recently at the Glasgow Dean of Guild Court, reviewed the work for the year ending August 31st last. He stated that the year closed had the fourth largest valuation. The demand for houses and shops seemed to have been very great up to the year 1897-98, but since then there was a steady decline of, roughly, nearly £300,000 per annum. Last year in valuation there was only about half that in 1897-98. Under the heading of public buildings this year showed an increase of from five to eight, but a fall in the money valuation of from £144,400 to £42 500. Churches, halls, and schools showed an increase in both numbers and valuation; twelve linings last year, with a valuation of £88,680, against fourteen linings this year, with a valuation of £106,050. A most gratifying feature of last season's work was the great increase in the valuation of warehouses, shops, and workshops, the number last year being 113, against 115 this year; while the money valuation increased from £516,490 last year to £757,870 this year, or an increase of little less than a quarter of a million. This increase was all the more striking because 1898-99 was the first year this exceeded the half-million. Additions and alterations to properties, while 104 fewer in number than the previous year, showed about £3,000 more in valuation, fully accounted for in the increased price of material and wages paid. During the past year 20 new streets were granted linings of 5,722 lineal yards. Taking the total number of linings granted last year, the numbers are 533, with a valuation of £1,900,428. Turning again to the heading of houses and shops, Queen's Park district showed the greatest activity in regard to building, the number of linings granted there being 32, with a valuation of £233,050. In this division only three houses were of one apartment, 107 of two apartments, 165 of three apartments, 98 of four apartments, 61 of five apartments, and 59 of six and upwards. The Eastern Division came next in the number of linings and valuation. The linings are 17 in number, with a valuation of £126 867; but on analysing the return, in the Eastern Division there were 132 of one apartment, 360 of two, 121 of three, and only 28 of four rooms and upwards. Maryhill Division came third in the list, with a valuation of £109,700 for 14 linings, that including 42 one-roomed houses, 161 two-roomed houses, 12 of three rooms, 22 of five, and 46 of six rooms and upwards. The St. Rollox Division, whilst fourth in the list, showed a very large number, a regrettably large number, of one-roomed houses. The linings were ten in number, with a valuation of £49,850. These covered 272 houses of one apartment, 412 of two apartments, 55 of three apartments, and only 6 of four rooms and upwards. In the Central Divison there were only two linings granted for shops and houses, with a valuation of £46 400. In the Western Division two, with a valuation of £44,000. In the Northern four, with a valuation of £39 500. A very large proportion under the columns marked additions and alterations, with a total of 298 linings and a valuation of £344,641, had been occasioned through the coming into force of the various Health Acts of the City of Glasgow.

A new Church at Dundee for St. Thomas's Established Church congregation is to be erected on a site at the junction of Lochee and Tullideph Roads. The cost of the building, which will accommodate 800 worshippers, will be about £5,000. The plans of the new building were prepared by Messrs. Johnston and Baxter, architects, Dundee.

Engineering Notes.

The New Hospital at Totnes is being warmed and ventilated by means of Shorland's patent Manchester grates, supplied by Messrs. E. H. Shorland and Brother, of Manchester.

"Hawthorpe," Uppermill, near Oldham.—This residence has lately been fitted with the improved hot-water heating apparatus by Messrs. John King, Ltd., engineers, of Liverpool, who are employing their ornamental "Rahnee" radiators.

Electric Tramways for Folkestone. — On Wednesday last the Folkestone Town Council decided to apply for Parliamentary powers to construct a system of electric tramways in Folkestone, at a cost of about £93,000. The scheme includes both the overhead and conduit systems.

Change of Address.—Messrs. H. J. Skelton and Co., engineers, iron and steelwork contractors, &c., have changed their address from 12 Lime Street, E.C., to 71 Finsbury Pavement (Electric Railway Station Buildings), Moorgate Street, E.C. The firm's new telephone number is 1692 London Wall.

New Thames Tunnel.—The scheme for the new tunnel under the Thames between Rotherhithe and Ratcliff is making progress. The Bridges Committee of the County Council estimate that it will cost £845,750 to acquire the property necessary for the scheme. The Council will be asked this month to authorise the expenditure.

Water Supply of Douglas, I.M.—Mr. F. Thorpe, of Greenfield, Oldham, has been appointed overseer of the new reservoir which the Douglas Corporation are about to construct in Baldwin Valley. The work will commence almost immediately. Mr. Hill, of Manchester, is the engineer of the undertaking, which will cost £50,000.

Chester Tramways. — The Chester Town Council resolved on Wednesday last to apply to Parliament for an Act empowering them to take over the Chester tramways undertaking, to adapt it for mechanical traction, and to extend the system beyond the borough boundaries. The price paid by the Council to the tramway company is £18,300, plus the value of the rolling stock.

The Watering of Tramways.—The National Cyclists Union has now taken counsel's opinion as to the legality of tramway companies watering their lines, and is advised that the excessive watering of the tramlines is a nuisance for which tramway authorities have no justification under their Act of Parliament. The National Cyclists Union is obtaining expert and other evidence upon which it hopes very shortly to commence a prosecution.

New Pier at Yarmouth.—The Widnes Foundry Company, of Widnes, are the contractors, and Messrs. Mayoh and Haley, of London, are the engineers for the new structure intended to take the place of the present antiquated pier at Yarmouth. It is proposed to make the pier 800ft. long; for half of that length the width will be 50ft. and the other half about 150ft. On the wider part there is to be a pavilion capable of holding 2,000 persons, and designed for concerts and theatrical performances. The pier will cost about £50,000.

Lambeth Bridge.—As the present bridge at Lambeth is in a very unsatisfactory condition, Sir Alexander Binnie has prepared plans for a suspension bridge, with an alternate design for a more rigid type of construction, technically known as the "braced-arch." The new bridge is to be wide enough for a double line of tramway, 66½ft. to 68ft, with a gradient of from about one in forty-one to one in thirty-four. As the bridge will be situated in the neighbourhood of the Houses of Parliament, and will lead to Lambeth Palace, it must in some way be made to harmonise with both. The Bridges Committee therefore propose that one of the best authorities on Gothic architecture of the day should be asked to advise in working out the details of the piers, towers, and abutments of the bridge.

New Bridge over the Tay.—On Saturday last Sir Robert Pullar, of Tayside, opened the new bridge over the Tay at Perth, which has cost £35,000.

King's College, London.—The £15 Engineering Entrance Scholarship has been awarded to Mr. N. G. Langrish, one £10 to Mr. J. H. P. Bilbrough, and the other £10 to Mr. F. R. Fairmaner.

Improvements at Antwerp.—It is proposed to extend the city of Antwerp and to construct several miles of quays along the Scheldt. The project, which has aroused much interest, includes the construction of a new industrial city on the left bank of the river, to be connected by a city tunnel.

Electric Light for Hornsey.—On Friday last a Local Government Board enquiry was held into the application of the Hornsey District Council for sanction to borrow £73,500 for electricity works. Mr. Robert Hammond, consulting electrical engineer to the Council, explained that the cost of the undertaking would be as follows:—Generating works, £28,110; feeders and distributors, £31,003; public lighting, £4,700; meters, house connections, &c., £4,575; and general charges, £5,112; making a total of £73,500.

New Electricity Works at Poplar, London, E., have been opened. They have cost about £100,000, and have been carried out under the supervision of Mr. Alfred Blackman, M.I.E.E. (formerly electrical engineer to the Aberdeen Corporation). The present total capacity of the station is 32,000 eight-candle power lamps, but space is left for large extensions. The arc lamps erected in the principal thoroughfares number 195, and it is proposed to convert 680 ordinary street lamps by fitting incandescent electric lights. It may be added that there are sixty-five miles of streets in the three parishes of Poplar, Bow and Bromley, and that more than thirty miles of mains have already been laid. Arrangements have been made with the National Electric Wiring Company for free installations for private consumers; and current will be supplied under the maximum demand system for lighting at 5d., 4d., and 3d. per unit (the prices being for the first, second, and following consecutive hours respectively), and for power at 3d. and 1½d. As the private company which desired to light the district proposed to make charges of 7d. per unit for lighting, and 5d. for power, the advantage of municipal lighting will be apparent; while as gas in the district costs 3s. per thousand (which is roughly equivalent to electric light at 6d. per unit) the new illuminant can compete with the older. Arrangements are being made for the supply of meters on the slot system. Already applications have been received for 5,000 eight-candle lamps, so that the enterprise may claim to be making a good start. It may be added that all the buildings at the works in Glaucus Street, Bromley, were erected by the direct employment of labour under the control of the Board's surveyor, Mr. Winter.

Surveying and Sanitary Notes.

A New System of Drainage at Eastbourne was recently carried out at a cost of nearly £100,000, and has just been viewed by a deputation from Nice.

The Surveyors' Institution.—An ordinary general meeting will be held on Friday, October 19th, at 3.45 p.m., for the special purpose of reading a balloting list (No. 25) for the election of new members, and a balloting list for the election of a new member of council to fill the vacancy caused by the death of Mr. William Wright, of Wollaton. The first ordinary general meeting of the session 1900-1901 will be held on Monday, November 12th, 1900, when the president, Mr. John Shaw, will deliver an opening address. The chair will be taken at 8 o'clock. The following members, having passed the requisite qualifying examination, have been transferred during the recess from the class of "Professional Associates" to that of "Fellows" of the Institution:—On June 27th, 1900: William Easter (King's Lynn, Norfolk), Thomas William Alfred Hayward (Sudbury, Suffolk), Fitz-Lawrence Percival Dudley Jennings (Bournemouth), Dyneley Luker (Ealing, W.), Percy Edward Ridley (London, S.W.), John Henry Shufflebotham (Taunton). On October 1st, 1900: Henry Hugh Addiscott (London, S.W.), Francis Julian Laurence Birch (Melplash, Dorset), Richard Herbert Chichester (Market Drayton), William Clarkson (Poplar, E.), George Crosbie Dawson (Nuneaton), Dugdale Oakeley Dunlop (Manchester), Howard Goadby (Twickenham), Arthur Ernest Hope (Forest Gate, W.), David Pugh Jones (Llandaff), William Beaumont Leather (Leeds), Douglas Samuel Matthews (London, S.W.), Richard Frederick Parry (Bishop's Waltham, Hants), James Reginald Pineger (London, W.), William Sly (Whitehaven), Charles Gordon Smith (Stamford Hill, N.), Charles Herbert Southorn (Leamington Spa), Frederick Beauchamp Wells (Lympsfield, Surrey). It has also been announced that the following, having passed one of the examinations exempting candidates from the preliminary examination of the Institution, have been enrolled by the Council:—As Students: Frederick Bartlett Lang (Plymouth), Hugh Francis Vivian Parrott (Hayes), Albert Priest (London, S.W.), Herbert Henry Wigley (Winslow, Bucks). *Students' Preliminary Examination*, 1901.—Those proposing to enter their names for the students' preliminary examination, to be held on the 16th and 17th of January next, must intimate their intention to the Secretary before the last day of November. It is proposed to examine candidates from the counties of Lancashire, Cheshire, Yorkshire, Durham, Cumberland, Westmoreland, and Northumberland, at Manchester. Candidates from other counties in England and Wales will be examined in London, Irish candidates in Dublin, and Scottish candidates in Glasgow. *Professional Examinations*, 1901.—The students' proficiency examination will commence on the 18th of March next. Examinations qualifying for the classes of Professional Associates and Fellows will also commence on the 18th of March next. All particulars as to days, subjects, and course of examination will be forwarded on application to the Secretary. English candidates for the professional examinations will be examined in London, Irish candidates in Dublin, and Scottish candidates in Glasgow. *Special-Certificate Examinations*, 1901 (for Members).—Notice is also given that the next special-certificate examinations in forestry and sanitary science will be held on Tuesday, Wednesday, and Thursday, the 11th, 12th, and 13th of June. Particulars of these examinations can be obtained from the secretary, 12 Great George Street, Westminster, S.W.

BUILDING TRADES' GIFT.

MR. T. F. RIDER, past-president National Association of Master Builders, as honorary secretary of the Building Trades' Gift to the Nation, announces the following further subscriptions:—

	£	s.	d.
THE BUILDERS' JOURNAL Shilling Fund (Subscriptions, first instalment)	57	12	0
Messrs. F. and H. F. Higgs and Workmen	10	0	0
Messrs. H. Stevens and Co. and Workmen, Southampton	6	17	2
Messrs. Harris and Wardrop and Workmen	5	15	3
Workmen of Messrs. James Carmichael, Wandsworth	3	15	3
Messrs. George Nutter and Sons and Workmen	1	10	0
Workmen of Messrs. Perkins and Co.	1	1	0
Mr. Walter Dennison and Workmen	1	1	0
Workmen of Messrs. E. Chadwick and Sons, Dewsbury	0	18	9
Workmen of Mr. J. F. Godham, Greenwich	0	14	6
Workmen of Messrs. Sparrow and Sons, Nottingham	0	9	6

A New Baptist Hall at West Norwood.—Chatsworth Hall, a block of buildings which has just been erected in connection with the Rev. Archibald G. Brown's church at West Norwood, was opened last week. The new hall and its allied rooms, &c, have been rendered necessary by the increase in the Sunday-school work of the church and the need of further accommodation for week-night meetings and other gatherings. The total cost will be about £5,500.

Masters and Men.

Building Trade Wages at Bournemouth.—At a recent public meeting of operatives employed in the building trade the following resolution was carried: "That this meeting is of opinion that the time has arrived when the conditions of labour in the building trade of the district should be governed by working rules, and that taking into account the cost of commodities and rent an increase in wages is necessary; it therefore determines to use its utmost endeavours to achieve these objects."

The Newcastle Building Trade Dispute.—At a meeting of the Northern Counties Federation of Building Trade Employers, held recently, it was unanimously resolved that unless the dispute between the Operative Bricklayers' Society and the Newcastle, Gateshead, and Tyne District Master Builders' Association be settled a general lock-out of the bricklayers in the Northern Counties will take place on November 3rd. Notices to this effect are being sent to the local secretaries of the bricklayers' societies in the Northern Counties.

State of the Building Trades in the Colonies. The October circulars of the Emigrants' Information Office and the annual editions of the penny handbooks show the present prospects of emigration. New handbooks on the West Indies and Malay States have been issued. The season for emigration to Canada is now over, except for persons with capital. In New South Wales, at the Broken Hill mines, there is a good demand for carpenters and masons, engine-drivers, firemen and cleaners, boilermakers, blacksmiths, toolsmiths and fitters. In Victoria there is a good demand, which is likely to continue, for a limited number of thoroughly skilled plumbers on the Melbourne drainage works, and for iron-workers. The Chief Inspector of Factories, in his annual report just issued, states that there was an increase of 3,702 persons employed in factories and work-rooms in 1899 as compared with the numbers in 1898. These figures show a great improvement in trade. In South Australia, Tasmania, and Queensland the supply of labour is mostly equal to the demand. In Western Australia the supply of men at Coolgardie in the building and other trades, of miners, and unskilled labourers is greater than the demand At Perth the building and other trades have improved, but the supply is about equal to the demand. In agricultural parts, as at Albany. Toodyay, Geraldton and Dongarra, the supply of all kinds of labour is equal to or in excess of the demand. It is difficult for clerks, accountants, bookkeepers, and that class of labour to find employment. The last reports show that there was plenty of work in New Zealand. At Auckland and Napier the building trades have been busy. At Wellington the building and engineering trades have been very busy. At Nelson the building and engineering trades have been brisk. At Christchurch the building trades have been particularly busy, bricklayers having been in special demand; men in the engineering trades have also been fully employed. At Dunedin carpenters, bricklayers and stonemasons have been fully employed, but painters and plasterers have been slack. At Invercargill the building trades—in which competent carpenters have been specially wanted—and the engineering trades have been very busy. Persons are warned against going to South Africa in search of work, so long as the war lasts. They will not be allowed to proceed up country. There are large numbers of persons there at the present time who are out of employment.

Cornelly Church has been reopened after restoration. The chancel was restored some years ago, and the remaining parts of the church, including nave, Gregor aisle, tower and porch, have now been restored. The church is probably of the thirteenth century, with an interesting carved font of great antiquity. An entirely new roof has been erected, the walls have received much repair, and there has been fresh glazing. Above £700 has been spent on the work.

Keystones.

A New Electric Light Station at Dartford is to be erected. Messrs. Hesketh and Stokes, of 110 Cheapside, E.C., are the architects.

A New Drill Hall at Henley-on-Thames has been erected for the use of Rifle Volunteers, Yeomanry, and Church Lads' Brigade.

Messrs. Harrington and Ley, architects, of 65 Bishopsgate Street Without, E.C., are erecting a warehouse at Silvertown for the American Radiator Company.

Workmen's Dwellings at Plymouth. — The Local Government Board have given their sanction to a proposed loan of £10,215 for the erection of additional municipal workmen's dwellings at Prince Rock, Plymouth.

A New Church at Bournemouth, dedicated to St. Andrew, has been opened in Malmesbury Park. Another church dedicated to St. Ambrose has been erected on the West Cliff at a cost of £12,500, to accommodate 700 persons.

A New Congregational Chapel at Barry Dock is being built at the corner of Tynewydd Road and Wyndham Street. Mr. George Thomas, F.S.I., architect, Cardiff, is the architect, and Mr. J. Prout, Tynewydd Road, Barry Dock, the builder of the chapel.

A new Church at Glass Houghton, Castleford, is being erected. The first section will seat 300 persons, and will cost £3,500; but when completed the Church will hold 600 persons, and cost £7,000. The architects are Messrs. Demaine and Brierley, of York.

Mr. Edwin Bradbury has gained the prize of £10 10s. offered by the Royal Institute of Architects of Ireland for the best sketch design of a town hall for a provincial town prepared by a member of the Architectural Association of Ireland. The Institute have decided to offer a similar prize next year, but in the form of a travelling studentship.

Mr. L. J. Wood, the well-known painter of Continental towns, died last week at the age of 87 years. He was born in Islington in 1813, and at an early age developed a talent for art. The works of David Roberts, R.A., greatly influenced him. He never received any instruction in art but what he derived from his early friendship with the late J. D. Harding.

Plympton Cross.—The cross discovered about sixty years ago in the walls of the Old Guildhall, Plympton St. Maurice, and removed to the churchyard, has just been restored and placed on the south side of the church. The shaft—a monolith 10ft. in height—is a specimen of fifteenth-century work. It was hewn out of stone that was freely used in the building of the two local churches, the Old Guildhall, and the Old Priory—a kind found on Roborough Down. There is now an octagonal base of three steps, and a new top forms the arms. The total height of the erection is 15ft.

St. Gabriel's College, for the training of female teachers for elementary schools, has been installed in new permanent buildings at Kennington, which were formally opened last week. The permanent building has been erected at a cost of £42,000, towards which about £20,000 has been obtained. It is as yet unfinished. The site, about four acres in extent, overlooks Myatt's Fields. The building will provide accommodation for 80 resident students and the same number of day students. The building consists of chapel, refectory, dormitories and class-rooms.

A New Church at Ealing, S.W., dedicated to St. Augustine, in Lillie Road, was consecrated last week. The church in its present state—the nave and aisles only being completed—will accommodate 500 worshippers. There is still to be built the chancel, side chapel, organ chamber, and vestries. The whole is estimated to cost £7,000. The architects, Messrs. J. E. K. and J. P. Cutts, have adopted the Fifteenth Century Perpendicular style, and the edifice is constructed of Bath stone faced with red brick externally and the walls plastered inside. The nave is six arches long, with an open timber roof and a wood block floor.

A Church on Mount Zion is being erected on the site of the Dormition of the Holy Virgin. The site was given to the Emperor William by the Sultan on the occasion of His Imperial Majesty's visit to Jerusalem.

The Colston Hall, Bristol, which was destroyed by fire on September 1st, 1898, has been rebuilt, and is to be reopened on November 27th. The hall will accommodate between 4,000 and 5,000 persons, and will contain an organ costing £5,000.

A Chapel for the Missions to Seamen in the port of Manchester is to be erected. The chapel, estimated to cost about £1,500, will be part of a block of mission buildings. The whole will cost upwards of £4,000. A site has been obtained at a cost of £900.

At St. John the Baptist's Church, Penzance, new stalls and a pulpit have been dedicated. The new additions are of massive character, and constructed entirely of West Country grown oak. They are in the fifteenth-century style of Gothic. The stalls accommodate sixteen men and eighteen boys. The fronts are pierced, and ornamented by carved and tracery work. The new pulpit is octagonal on plan and has been placed upon the north side of the sacred fane, to the westward of the chancel arch. It is profusely carved and diapered, the spandrels above the ogee arches being filled by shields and mantling. These additions have been carried out by Messrs. Harry Hems and Sons, of Exeter.

A London Improvement.—A letter from Mr. C. H. Brodie shows a curious state of affairs in respect to an important street improvement at the junction of Oxford Street and Shaftesbury Avenue, W. Owing to proposed building operations, there is just now the opportunity of removing an unsightly projection and equalising the alignment of the curve. This architectural embellishment is likely to remain unaccomplished, for the most absurd of all reasons—that each of the authorities concerned says that it is the other's business, although they both agree that the improvement should be carried out. The St. Giles's District Board of Works said the London County Council was the party to act, while the Council, when applied to, pointed to the other. Probably by the time they have decided the question the new buildings will be finished and the symmetry of the street spoiled.

New Infirmary for St. Austell Workhouse.—At a meeting of the St. Austell Guardians, Mr. H. Preston Thomas, Local Government Board Inspector, said, with reference to the proposed additional infirmary accommodation for the workhouse, it was not a very advisable proceeding. He had strongly advised the Local Government Board to erect a new building, three storeys high, and about 30ft. behind the existing one. The cost would be about £3,500, whereas to patch up the old building would probably cost £2,000. It was also suggested by the Local Government Board architect that the centre portion of the existing building be demolished, so that the two wings could be utilised if needed in future years, and connected by corridors. It was resolved to have a new building.

A New Opera House at Weston-super-Mare is to be erected. The principal elevation will front Regent Street, and the building will be in the Italian Renaissance style. Freestone will be mostly used with an admixture of red brick. The interior will be treated in the same style both in construction and decoration. Great care has been taken to safeguard the public against panic or its results. Ample exits from all parts of the building are to be provided, and all the doors will open outwards, and will be fitted with patent panic locks. Seating accommodation will be provided for about 1,200 persons, a good view of the stage being obtained from all parts of the house. There are two tiers, each of good depth, supported by cantilevers. Attached to each tier will be a saloon and foyer. The whole will be lighted by electricity, and ventilated and heated on the most approved principles. The architects are Messrs. R. Milverton Drake and Pizey, of Bristol.

The new Gaiety Theatre is to be commenced in about two months' time.

A Stained-glass Window has been lately erected in Frithelstock Parish Church. The window is composed of three lights and tracery, and is situated under the tower. The restoration of the tower is now complete.

The Central Hall at Bermondsey, S.E., which has recently been erected for the South London Wesleyan Mission, was erected from designs by Messrs. C Bell, Withers, and Meredith, architects, of 3 Salters' Hall Court, E.C., and not by the Rev. H. T. Meakin, as stated on page 180 of our issue for October 3rd.

Workmen's Dwellings at Liverpool.—The Insanitary Property and Artisan's Dwellings Committee have resolved to recommend the City Council to approve a scheme for the erection of dwellings for the labouring classes, in accordance with plans prepared by the deputy surveyor, and to apply to the Local Government Board for their sanction to the borrowing by the Council of £53,500 for the purpose of carrying out the scheme. The dwellings are to be in Kerr Street, Newsham Street, Shelley Street, Clive Street, and Arley Street.

Architects' Benevolent Society.—The fiftieth annual report of the Council states that the desire, frequently expressed, that every architect in active practice should become a contributor, is still very far from realisation. The amount received in subscriptions during the past year was £469 3s., which is a slight decrease on the previous year. The proposal to celebrate the fiftieth anniversary by a festival dinner has been deferred till next year, on account of the many calls on the country made by the war in South Africa. The honorary treasurer of the Society is Mr. W. Hilton Nash, Bush Lane House, Bush Lane, Cannon Street, E.C.

Mr. Walter Hanstock, principal in the firm of W. Hanstock and Son, architects, of Batley and Leeds, died last week. Mr. Hanstock has held a prominent place in his profession for at least two decades, and structures in England, Ireland, Scotland and Wales have been erected to his designs. The new baths at Leeds and Batley were his creations, the abattoir recently built by the Leeds Corporation was from his plans, and the designs accepted a few months ago by the Batley Corporation for a new Town Hall were his also. The deceased leaves a widow and one son, Mr. Arthur Hanstock. Mr. Hanstock, jun., has been in partnership with his father for two or three years.

The New War Office Buildings.—A year's work on the foundations for the New War Office buildings in Whitehall has resulted in the excavation of a huge pit some 30ft. in depth, not yet wholly cleared as regards the central portion, but finished around the boundaries of the site, to allow of the concrete work of the "dry area" to be in the meanwhile proceeded with. Like the new series of buildings for the Admiralty across the way, the New War Office will be built in what will practically be a water-tight pit, especial measures having to be adopted in the raising of heavy buildings on these sites, in view of the still moist and unstable character of the subsoil, little distant from, and at a not much higher level than, the Thames.

Holborn to the Strand: Exhibition of Designs.—The Improvements Committee of the London County Council reports that the plans of buildings to be erected fronting on the Strand and on the crescent road to be formed between Wellington Street and Clement's Inn, will be exhibited for nine days at the Gallery of the Royal Society of Painters in Water Colours, Pall Mall East. The Committee suggests that on October 25th the gallery should be open only to members of the Improvements Committee, and on October 26th and 27th to members of the Council and their friends, from 10 o'clock a.m. until 6 o'clock p.m., and that the public should have admission, without payment, on October 29th to November 3rd inclusive, from 12 o'clock at noon until 8 o'clock p.m. The names of the architects will not be known until after the exhibition has taken place.

New Patents.

These patents are open to opposition until November 19th.

1899.—Bacterial Filter Beds.—18,061. W. D. SCOTT MONCRIEFF, 14 Victoria Street, Westminster, S.W. According to this invention air is drawn downwards through the bed in order to extract carbonic acid gas and other gases as they are formed by the organisms, which gases are removed by fans or other suitable mechanism. Perforated half-channel pipes are laid over the bottom of the bed and communicate with a side conduit, at a suitable point in the crown of which the fan is mounted.

Bricks, Tiles, &c.—18,442. R. STANLEY, Manor Court, Nuneaton. The object of this invention is to give to a brick or tile a facing or coating for the purpose of imparting some particular quality, colour, vitrification, or finish. For instance, a red clay brick of a bad colour may be faced to resemble a better clay. This is accomplished by spraying the inside of the die-box with liquid or dust immediately prior to the entrance of the brick.

Slotting Doors.—20,132. J. FLOOKS, 14 Church Road, Watford, Herts. On the door, in the required position, is fixed a frame carrying an auger mounted on a cross-piece which is connected with a screwed spindle at each side. When the auger is turned the cross-piece advances, carrying the auger with it, and so forming a slot in the door.

Tramway Rails.—22,993. L. COOPER, Central Bank Chambers, Leeds. The rail is made in two parts longitudinally, each carrying half the groove for the wheel. When the groove is worn to such an extent that repair is needed, it is only necessary to remove one half of the rail.

1900.—Partitions.—13,052. E. PRÜSS, 34 Cöthenerstrasse, Berlin. The partition consists of a stiffening framework of hoop iron stretched across the space to be filled and a double wall of thin bricks. The iron strips do not pass through, but over, one another, and the bricks fit on each side, the whole being held together by mortar. Each square of the framework is filled with sixteen bricks, eight on each side.

The following specifications were published on Saturday last, and are open to opposition until November 26th. A summary of the more important of them will be given next week. The names in italics within parentheses are those of communicators of inventions.

1899.—18,827, SINNBERG atmospheric gas burners. 18,879, WEBB, interlocking tiles. 19,421 JONES, PIERCE & TREGLOWN, rock drills. 19,553, CHISHOLM, swivel joints for bay window curtain-poles. 19,921, BASSETT, plastering of walls, ceilings, &c. 19,955, ADAMS, hot and cold water taps. 20,432, GRUNDY, GRUNDY & GRUNDY, automatic valves for water and other fluids. 20,690A, WILKINSON, gas burners. 21,173, PICKLES & PICKLES, application of balanced cranks to wood-cutting and sawing machines. 21,801, WINTERFLOOD, water-heaters and automatic valve attachments for them. 22,141, TOYE, lifts. 22,167, BUSCH (*Busch*), lifting jacks. 22,247, PRESTON, ships' closets. 22,518, DALE & DALE, tool-grinding machines. 22,893, PERRIN, cutter heads for wood-working machinery. 22,997, ROBINSON, wrenches. 23,229, WINKLER, incandescent gas lamps. 23,348, FIEGEHEN, grabs and excavators. 24,408, STALEY & PARKER, sanitary pipe machines. 24,511, WINTERFLOOD, water-heating apparatus. 24,659, GRAHAM, hot coke conveyors. 24,674, SMITH, window and wall cleaning appliance. 24,883, HADDAN (*Friedinger*), wooden wall plugs.

1900. 4,305, BROWN AND BECK, devices for closing, checking, and regulating swing and other doors. 6,739, SCHUCH AND WOLF, sash balances for windows. 7,933, PINK AND VULKAN GESELLSCHAFT FÜR SELBSTZÜNDENDE GLÜHKÖRPER MIT BESCHRÄNKTER HAFTUNG, incandescent mantles. 7,967, LLEWELLYN, picks for mining and other purposes. 8,005, LEVY, apparatus for disinfecting by steam under pressure. 9,512, IVES, treatment of sewage. 11,995, SONSALLA, ventilating doors. 12,240, SMITH, acetylene gas generators. 12,424, HARTUNG, means for forming prismatic sheet glass. 12,849, MORTON, pumps. 12,916, SHEPPARD, device for casting wire glass. 12,917, SHEPPARD, device for casting sheet glass. 13,545, HUDLER, incandescent gas burners. 14,160, SMITH, acetylene gas generator.

New Companies.

New Sunlight Incandescent Co. (1900), Ltd.

This company was registered on October 3rd with a capital of £100 in £1 shares to acquire the goodwill, business, trade marks, and designs of the New Sunlight Incandescent Company, Limited (incorporated in 1899). The directors are the directors for the time being of the Welsbach Company.

Herbert W. Periam, Limited.

This company was registered on October 3rd with a capital of £15,000 in £1 shares to acquire and carry on the business of bolt, nut, screw, rivet, washer, and roofing nail manufacturers, &c., now carried on by H. W. Periam at 25, 26, and 27 Floodgate Street, Birmingham, and the business of factors of and dealers in similar goods now carried on by the said H. W. Periam and J. Pearce, trading as John Pearce, at 242 Mosley Street, Birmingham. The first directors (to number not less than three nor more than seven) are H. W. Periam, H. B. Periam, and C. J. Pearce. H. W. Periam may retain office so long as he holds 2,000 shares.

New Expanded Metal Company, Limited.

This company was registered on October 3rd with a capital of £35,000 in £1 shares (8,000 deferred) to acquire the business of working certain patents relating to metal trellis or lattice work now carried on by the Expanded Metal Company, Limited (in liquidation), and to carry on the business of metal workers, &c. The first directors (to number not less than three nor more than twelve) are W. B. Close, J. Cranmer, A. de Wette, C. Lambert, and W. H. P. Stevens, with power to add J. F. Golding to their number as managing director. Registered office: 39 Upper Thames Street, E.C.

CURRENT PRICES.

		£	s.	d.	£	s.	d.
FORAGE.							
Hay, best	per load	4	0	0	4	7	6
Sainfoin mixture	do.	3	10	0	4	10	0
Clover, best	do.	4	5	0	5	0	0
Beans	per qr.	1	8	6	1	9	6
Straw	per load	1	8	0	1	18	0
OILS AND PAINTS.							
Castor Oil, French	per cwt.	1	10	0	1	11	6
Colza Oil, English	do.	1	12	6	—		
Copperas	per ton	2	0	0	—		
Lard Oil	per cwt.	1	19	0	—		
Lead, white, ground, carbonate	do.	1	4	10	—		
Do. red	do.	1	0	4½	—		
Linseed Oil, barrels	do.	1	13	9	—		
Petroleum, American	per gal.	0	0	6	0	0	6½
Do. Russian	do.	0	0	5 11/16	0	0	5⅞
Pitch	per barrel	0	8	6	—		
Shellac, orange	per cwt.	2	17	6	—		
Soda crystals	per ton	3	2	6	3	5	0
Tallow, Town	per cwt.	1	6	0	—		
Tar, Stockholm	per barrel	1	8	6	—		
Turpentine	per cwt.	1	9	0	1	9	3
METALS.							
Copper, sheet, strong	per ton	86	0	0	—		
Iron, Staffs., bar	do.	9	15	0	11	10	0
Do Galvanised Corrugated sheet	do.	12	10	0	13	0	0
Lead, pig, Spanish	do.	17	12	6	17	15	0
Do. do. English common brands	do.	18	0	0	—		
Do. sheet, English, 3lb. per sq. ft. and upwards	do.	21	0	0	22	0	0
Do. pipe	do.	23	0	0	—		
Nails, cut clasp, 3in. to 6in.	do.	12	0	0	13	0	0
Do. floor brads	do.	11	15	0	12	15	0
Steel, Staffs., Girders and Angles	do.	8	5	0	9	0	0
Do. Mild Bars	do.	9	2	6	9	10	0
Tin, Foreign	do.	131	0	0	131	10	0
Do. English ingots	do.	135	0	0	135	10	0
Zinc, sheets, Silesian	do.	23	10	0	—		
Do. do. Vieille Montaigne	do.	24	5	0	—		
Do. Spelter	do.	19	10	0	19	12	6

TIMBER.

HARD WOODS

Ash, Quebec	..	..	per load	3	17	6	4	10 0
Birch, Quebec	..	..	do.	3	12	6	3	17 6
Box, Turkey	..	..	per ton	7	0	0	15	0 0
Cedar, 1in., Cuba		..	per ft. sup.	0	0	3	0	0 3½
Do. Honduras		..	do.	0	0	3½		—
Do. Tobasco	..	..	do.	0	0	3½		—
Elm, Quebec	..	..	per load	0	12	6	5	10 0
Mahogany, Average Price for Cargo, Honduras		..	per ft. sup.	0	0	5⅝		—
Do. African	..		do.	0	0	3½		—
Do. St. Domingo			do.	0	0	6⅞		—
Do. Tobasco	..		do.	0	0	4⅛		—
Do. Cuba	..		do.	0	0	5⅞		—
Oak, Dantzic and Memel			per load	3	15	0	5	7 6
Do. Quebec	..	..	do.	4	12	6	5	0 0
Teak, Rangoon, planks		..	do.	9	0	0	21	0 0
Wainscot, Riga (Baulk)			do.	3	15	0	5	15 0
Do. Odessa Crown			do.	3	15	0	5	15 0
Walnut, American		..	per cub. ft.	0	2	1	0	2 10

SOFT WOODS.

Fir, Dantzic and Memel		..	per load	3	0	0	4	0 0
Pine, Quebec Yellow		..	do.	4	7	6	6	0 0
Do. Pitch	..	..	do.	2	14	0	3	6 0
Laths, log, Dantzic		..	per fath.	4	10	0	5	10 0
Do. Petersburg		..	per bundle	0	0	10½	0	0 11
Deals, Archangel 2nd & 1st			per P. Std.	12	15	0	18	0 0
Do. do. 4th & 3rd			do.	12	10	0	13	15 0
Do. do. unsorted			do.	11	0	0	12	10 0
Do. Riga	..	..	do.	6	15	0	8	10 0
Do. Petersburg 1st Yellow			do.	18	15	0		—
Do. do. 2nd	„		do.	11	15	0	15	0 0
Do. do. Unsorted	„		do.	5	5	0	13	0 0
Do. do. White			do.	8	5	0	11	15 0
Do. Swedish	..	..	do.	10	10	0	22	10 0
Do. White Sea		..	do.	11	5	0	18	0 0
Do. Quebec Pine, 1st		..	do.	13	15	0	23	15 0
Do. do. 2nd			do.	18	15	0		—
Do. do. 3rd &c.			do.	9	0	0	9	15 0
Do. Canadian Spruce, 1st			do.	10	10	0	11	15 0
Do. do. 3rd & 2nd			do.	8	10	0	10	0 0
Do. New Brunswick		..	do.	7	5	0	8	0 0
Battens, all kinds		..	do.	8	0	0	13	5 0
Flooring Boards, 1in. prepared, 1st		..	per square	0	12	3	0	14 9
Do. 2nd		..	do.	0	9	6	0	10 9
Do. 3rd &c.		..	do.	0	10	0	0	10 9

The Glasgow and West of Scotland Technical College Architectural Craftsmen's Society held its opening meeting for the session last Saturday, when Mr. Alex. Davie delivered his presidential address, dealing with the subject of the carrying-out of building contracts.

COMING EVENTS.

Wednesday, October 17.

SANITARY INSTITUTE.—Lectures and Demonstrations for Sanitary Officers: Part I. Mr. Henry R. Kenwood on "Water: Composition Pollution and Purification," 8 p.m. Inspection and Demonstration at Common Lodging House.

NORTH OF ENGLAND INSTITUTE OF MINING AND MECHANICAL ENGINEERS.—Visits to Hylton Colliery and the Roker Pier Works at Sunderland, 10.30 a.m.

BUILDERS' FOREMEN AND CLERKS OF WORKS INSTITUTION.—Quarterly Meeting at 8 p.m.

Thursday, October 18.

WORSHIPFUL COMPANY OF CARPENTERS.—Lectures on Sanitary Building Construction, at Carpenters' Hall. Mr. A. Buchanan on "Plumber's Work connected with Dwelling-houses," 7.30 p.m.

Friday, October 19.

ARCHITECTURAL ASSOCIATION.—Conversazione at King's Hall, Holborn Restaurant, 8 p.m.

SANITARY INSTITUTE.—Lectures and Demonstrations for Sanitary officers: Part I. Mr. Henry R. Kenwood on "Elementary Statistics," 8 p.m.

INSTITUTION OF MECHANICAL ENGINEERS.—Mr. Bryan Donkin on "Observations on an improved Glass Revealer, for studying Condensation in Steam-engine Cylinders and rendering the effects Visible," 8 p.m.

Saturday, October 20.

SANITARY INSTITUTE.—Lectures and Demonstrations for Sanitary Officers: Part I. Inspection and Demonstration at Leyton Sewage and Destructor Works at 3 p.m., conducted by William Dawson, M.I.C.E.

Tuesday, October 23.

SANITARY INSTITUTE.—Lectures and Demonstrations for Sanitary Officers: Part I. Mr. J. Wright Clarke on "Details of Plumber's Work," 8 p.m.

Wednesday, October 24.

SANITARY INSTITUTE.—Lectures and Demonstrations for Sanitary Officers: Part I. Mr. J. Wright Clarke on "Sanitary Appliances," 8 p.m. Inspection and Demonstration in the Parish of St. George's, Hanover Square, at 2 p.m., conducted by Mr. Albert Taylor.

RUSKIN SOCIETY OF BIRMINGHAM.—Rev. Joseph Wood, M.A., on "Browning's Art Poems," 8 p.m.

Thursday, October 25.

SOCIETY OF ARCHITECTS.—Annual General Meeting at 8 p.m., to receive annual report and elect officers and council for ensuing session.

WORSHIPFUL COMPANY OF CARPENTERS.—Lectures on Sanitary Building Construction, at Carpenters' Hall. Professor R. Elsey Smith, A.R.I.B.A., on "The Drainage of a Dwelling House," 7.30 p.m.

TENDERS.

Information from accredited sources should be sent to "The Editor." Results of tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the Work.

DURHAM.—For laying pipe sewers, &c. (1,900 yards), for the Urban District Council. Mr. H. W. Taylor, A.M.I.C.E., St. Nicholas' Chambers, Newcastle-on-Tyne:—

J. Manners	£3,966 0 0
J. Carrick, Crossgate Peth Durham* ...	1,942 8 0

* Accepted.

KIRKCALDY.—Accepted for the execution of drainage and sanitary conveniences at the Shore, Dysart, for the Dysart Town Council. Mr. D. Forbes Smith, A.R.I.B.A., architect, Kirkcaldy. Quantities by the architect:—

James Robb, High Street, Dysart	£78 2 3

KIRKCALDY.—Accepted for the erection of new class rooms and cookery room at Dysart North Public School for the Dysart Burgh School Board. Mr. D. Forbes Smith, A.R.I.B.A., architect, Kirkcaldy. Quantities by the architect:—

Mason, Balfour Bros., Sinclairtown	£896 0 0
Joiner, George Hay & Son, Dysart	472 10 0
Plasterer, Alex. Hutchison, Sinclairtown ...	142 19 6
Slater, David Stark, Kirkcaldy	79 10 0
Plumber, James Crombie, Gallatown	241 18 11½
	£1,832 18 5½

LINCOLN.—For the erection of boiler-house, laundry, &c., at the County Hospital. Messrs. W. Watkins & Sons, architects, Silver Street, Lincoln:—

Halkes Bros. ...	£3,431 8 10	H. S. & W. Close ...	£2,817 0 0
Lincoln Co-op. Building Society, Ltd.	2,977 0 0	Main, Kendall & Main, Lough-boro'*	2,575 0 0
W. & M. Halkes ...	2,964 14 0		

* Accepted.

LONDON.—For the erection of a school, West Hampstead, for the Managers of Aske's Haberdashers' Schools. Mr. Henry Stock, architect, 9 Denman Street, London Bridge, S.E. Quantities by Messrs. Widnell & Trollope, 20 Tothill Street Westminster, S.W.:—

Vigor & Co.	£27,162	F. & H. F. Higgs	£24,370
Snewin & Co.	25,985	Dove Bros.	24,365
B. E. Nightingale ..	25,753	Bowers & Co.	23,910
H. J. Williams	25,633	Turtle & Appleton ...	23,780
S. F. Halliday	25,178	Gough & Co.	23,754
King & Son	25,058	Chessum & Sons	23,651
Godson & Sons	24,875	Patman & Fothering-ham	22,871
Allen & Sons, Ltd. ...	24,545		

LONDON.—For the erection of house, stabling, &c., at rear of Town Hall, for the Bermondsey Vestry. Mr. R. J. Angel, C.E., Town Hall, Spa Road, Bermondsey. Quantities by Mr. A. F. Wrightson, 26 Budge Row, Cannon Street:—

W. Shurmur	£31,350	Foster Bros.	£22,365
Todd & Co.	30,969	Wilson Bros.	22 169
Johnson & Co.	25,560	H. L. Holloway	22,100
W. Wallis	24,431	Smith & Son	21,869
Martin Wells & Co. ...	24,300	Chessum & Son	21,700
H. J. Williams	24,175	Killby & Gayford, 87 Worship Street* ...	21,214
Balaam Bros.	24,188		
F. & H. F. Higgs	22,480		

* Accepted.

Telegraphic Address: "Astra, Stoke-on-Trent." Telephone No. 2097.

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MEDAL FOR THE "RAPID" SLOP-WATER CLOSET
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SANITARY WARE WORKS
BURNLEY, LANCRE.

LONDON.—For the construction of 1,220 yards sewers, Bushey Heath, for the Hendon Rural District Council. Mr. J. A. Webb, engineer, Stanmore Hill, Stanmore:—

	Stanford joints.	Yarn and cement joints.
E. W. Hollingsworth	£2,961	£2,888
G. R. Mann	2,918	2,845
H. Brown	3,166	3,066
Clift Ford	3,216	3,150
E. W. Killingback & Co.	3,763	3,681
R. Ballard & Co.	2,862	2,717
S. Saunders, Earl's Court Square*	2,747*	2,672
Johnson & Langley	3,700	3,615
W. Jackson	5,160	5,180
E. T. Bloomfield	3 449	3,379
Wilkinson Bros.	3,200	3,049
T. Adams	5,416	5,216

* Accepted.

PRESTON.—For reconstructing the Princes Theatre, Tithebarn Street, Preston, for Messrs. Sawyer & Woodruff. Mr. William T. Munford, architect, 12 Guildhall Street, Preston. Quantities by the architect:—

		Time for Completion.
Charles Walker	£4,555 0	15 Weeks.
William Hothersall	4,490 0	not stated
Croft & Sons	4,416 0	"
Cartmel & Son	4,357 5	"
William Whiteside	4,350 0	15

SHREWSBURY.—For the erection of residence for Mr. Frank Plimley. Messrs. Dalgleish & Dickens-Lewis, architects, 18 Talbot Chambers, Shrewsbury. Quantities by the architects:—

Builders' Work.

R. Price & Sons	£865 0 0
Walter Richards	797 0 0
Edward Farmer & Sons	781 0 0
William Pace	720 0 0
Thomas Pace*	690 0 0

Plumbers' Work.

Scull Bros.	£113 6 10
A. T. Marston & Co.	109 17 0
W. B. Morris & Co.*	107 0 0

* Accepted. [All of Shrewsbury.]

TUNBRIDGE WELLS.—For the erection of six houses and a shop, Queen's Road, Tunbridge Wells, for the Tunbridge Finance and Investment Company, Limited. Mr. H. Elwig, jun., architect:—

Marshall	£2,020	Leney & Son	£1,770
Funnell Bros.	1,870	Goodwin Bros.*	1,735

* Accepted.

WORCESTER.—For the erection of an engine-house at waterworks for the Corporation. Mr. T. Caink, C.E., Guildhall, Worcester:—

Thomas Vale	£2,580	Bromage & Evans, Worcester*	£2,168
Wood & Sons	2,457		
Stokes Bros.	2,289	Watts & Bray	2,135

* Accepted.

CONTRACTS OPEN.

TO BUILDERS AND CONTRACTORS.

The Committee of the Walsall and District Hospital desire to receive TENDERS for the ERECTION of NURSES' HOME and OUT-PATIENTS' DEPARTMENT in the Wednesbury Road, according to Plans and Specification prepared by Messrs. Bailey and McConnal, Architects, Bridge Street, Walsall, at whose offices the plans, &c., may be seen and Bills of Quantities obtained on payment of One Guinea, which will be returned on receipt of a bonâ-fide Tender.

Tenders, sealed and endorsed, are to be delivered at the Architects' Offices not later than TWELVE o'clock midday TUESDAY, October 30th, 1900.

The Committee do not pledge themselves to accept the lowest or any Tender, nor will they consider any Tender from a Contractor who will not bind himself to pay the standard rate of wages in the district.

S. WELSH, Secretary.

October 1900.

TO BUILDERS and CONTRACTORS.

The Waltham Holy Cross School Board are prepared to receive TENDERS for ALTERATIONS and ADDITIONS to the OUT-OFFICES at the Board Schools in Milton Street, Waltham Abbey, in accordance with plans and specification, which may be inspected at the Office of the Clerk to the Board at Waltham Abbey during office hours.

Tenders, marked "Tender for Alterations to School Buildings," must be delivered at the Clerk's Office not later than TWELVE noon on MONDAY, OCTOBER 29th inst.

The Board do not bind themselves to accept the lowest or any Tender, and the acceptance of a Tender will be subject to approval by the Board of Education.

By order of the Board,
H. GOUGH,
Clerk.

Waltham Abbey,
October 1900.

GLAMORGAN QUARTER SESSIONS AND COUNTY COUNCIL.

ALTERATIONS AND ADDITIONS TO MERTHYR POLICE STATION.

The Standing Joint Committee of the Glamorgan Quarter Sessions and County Council is desirous of CONTRACTING for ALTERATIONS and ADDITIONS to Merthyr Police Station

Contractors will be required to pay their workmen the recognised rate of wages.

Plans and Specification of the Works required may be seen, and copies of the Bill of Quantities obtained, by those desirous of tendering, at the Merthyr Police Station and at these Offices.

Sealed Tenders are to be delivered to me, together with the names of two substantial sureties, not later than WEDNESDAY, the 24th inst., marked outside "Tender for Alterations and Additions to Merthyr Police Station."

The Committee will not necessarily accept the lowest or any Tender.

T. MANSEL FRANKLEN,
Clerk of the Glamorgan County Council.

Glamorgan County Council Offices,
Westgate Street, Cardiff,
October 1900.

TO BUILDERS.

The Commissioners of H.M. Works and Public Buildings are prepared to receive TENDERS for the ERECTION of a NEW COUNTY COURT at MIDDLESBROUGH.

Drawings, Specification, and a Copy of the Conditions and Form of Contract may be seen on application at the Offices of the Registrar, County Court, Middlesbrough.

Bills of Quantities have been prepared for the use of Builders by Messrs. H. Gritten and Son, of 8 Princes Street, London, S.W., and together with Forms of Tender may be obtained at H.M. Office of Works, Storey's Gate, London, S.W., on payment of One Guinea. The sums so paid will be returned to those persons who send in Tenders in conformity with the conditions specified below.

The Commissioners do not hold themselves responsible for the accuracy of the quantities, nor do they bind themselves to accept the Lowest or any Tender.

Tenders are to be delivered before 12 o'clock noon on MONDAY, the 22nd instant, addressed to the Secretary, H.M. Office of Works, &c., Storey's Gate, London, S.W., and endorsed "Tender for New County Court, Middlesbrough."

H.M. Office of Works, &c.,
October 1900.

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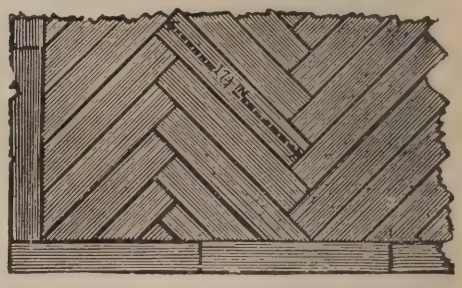
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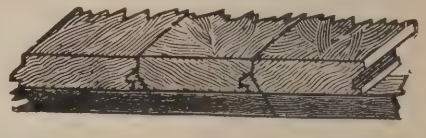
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DEBENHAM, TEWSON, FARMER and BRIDGEWATER beg to announce that their SALES for 1900 of ESTATES, Investments, Town, Suburban, and Country Houses, Business Premises, Building Land, Ground Rents, Advowsons, Reversions, Stocks, Shares, and other Properties will be held at the Auction Mart, Tokenhouse Yard, near the Bank of England, in the City of London, as follows :—

Tuesday, October 23rd	Tuesday, November 20th
Tuesday, October 30th	Tuesday, December 4th
Tuesday, November 13th	

By arrangement, Auctions can also be held on other days in town or country. Messrs. Debenham, Tewson, Farmer and Bridgewater undertake Sales and Valuations for Probate and other purposes of Furniture, Pictures, Farming Stock, Timber, &c.

Detailed Lists of Investments, Estates, Sporting Quarters, Residences, Shops, and Business Premises to be Let or Sold by private contract are published on the 1st of each month, and can be obtained of Messrs. DEBENHAM, TEWSON, FARMER, and BRIDGEWATER, Estate Agents, Surveyors and Valuers, 80 Cheapside, London, E.C. Telephone No. 503, Bank.

SAFFRON WALDEN.

MR. CHEFFINS will SELL by AUCTION, on FRIDAY, OCTOBER 19th, 1900, by direction of Messrs. D. Dix & Sons, who are relinquishing the building branch of their business. the whole of the BUILDER'S PLANT and STOCK-IN-TRADE, embracing 12 h.-p. horizontal engine, saw bench and circular saws, Reynolds' planing and thicknessing, mortising and moulding machines, steam band-saw machine, countershaft, boring machine, iron appliances for concrete building, hydraulic cement press, ironmongery and earthenware, including rain-water fittings, guttering, piping, stoves, gas apparatus for greenhouse heating, wrought iron fence and gate, drain pipes, bends, half-bends, junctions, &c, sanitary fittings, oak, pitch-pine, and deal planks and boards, compo. boards, roofing and paving tiles, benches with patent vices, wooden shed 22ft. by 9ft., builder's van and 3 spring carts, comfortable phaeton, pony gig, strong black cob, useful brown pony, 4 sets of brass-mounted harness, large quantity of firewood and numerous other effects (about 400 lots), upon the PREMISES in West Road. Sale to commence at HALF-PAST TEN o'clock precisely.—Catalogues may be obtained of Mr. CHEFFINS, Saffron Walden.

TWICKENHAM.—Highly valuable FREEHOLD PROPERTY, comprising two important riverside residences, with extensive grounds. With possession.

MESSRS. VENTOM, BULL & COOPER will sell by AUCTION, at the MART, Tokenhouse Yard, E.C., on WEDNESDAY, NOVEMBER 7th, at TWO o'clock precisely, in lots, the important and very valuable FREEHOLD PROPERTY, comprising the delightful historic residence known as Radnor House, Crossdeep, Twickenham, together with beautifully laid-out grounds, meadow land, modern stabling, green and forcing houses, farmery, &c. Also adjoining Radnor House, the valuable residence, known as Crossdeep House, with stabling, outbuildings, and well-timbered grounds, and four freehold cottages in Chillingworth Gardens, the two properties having a river frontage of about 520 feet, the whole covering an area of about 15 acres. The property has important frontages to four roads, and possesses exceptional value for building purposes, for which it is immediately ripe and could be developed without affecting the enjoyment of the residences.—May be viewed by orders, to be obtained only of the Auctioneers, and particulars and conditions of sale may be had of Messrs. WRIGHT, BECKET & WRIGHT, Solicitors, 17 Water Street, Liverpool; at the Mart; and of the Auctioneers, 35 Old Jewry, E.C.

FREEHOLD BUILDING LAND, comprising about 8 acres, within a few minutes' walk of Willesden Junction.

MESSRS. E. & H. LUMLEY will SELL by AUCTION at the MART, Tokenhouse Yard, E.C., on TUESDAY, NOVEMBER 13th, 1900, at TWO o'clock, in one lot, unless previously sold, the valuable FREEHOLD BUILDING LAND, tithe free and land tax redeemed, comprising about 8 acres, situate in the main road (Harlesden Lane, opposite Sellons Avenue and Springwell Avenue), near High Street, Harlesden, and Willesden Junction, and ripe for development into shop and villa plots or for the creation of ground rents. Plans, particulars, and conditions of sale can be obtained at the Mart, E.C.; of the Solicitors, Messrs. THOROLD, BRODIE & BONHAM-CARTER, 4 Regent Street, S.W.; and of the Auctioneers, Messrs. E. & H. LUMLEY, St. James's House, 22 St. James's Street, S.W.

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DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
	BUILDING.		
Oct. 19	Coventry—Alterations	Phillips and Marriott, Ltd.	H. W. Chattaway, Architect, Trinity Churchyard, Coventry.
„ 19	New Frystone, Yorks—Wall	Pontefract Rural District Council	J. P. Senior, Surveyor, Carleton, Pontefract.
„ 20	Seven Sisters—Engine Houses	E. Evans Bevan	J. C. Rees, Architect, Neath.
„ 20	Dartford—Electric Light Station	Urban District Council	Hesketh and Stokes, 110 Cheapside, E.C.
„ 20	Springfield, Essex—Constabulary Headquarters	Standing Joint Committee	Clare and Ross, 66 Duke Street, Chelmsford.
„ 10	Banbury—Shed	Town Council	N. H. Dawson, Town Hall, Banbury.
„ 22	Clayton-le-Moors, Lancs.—Converting	Industrial Co-operative Society, Ltd.	J. W. Cooper, Industrial Co-operative Society, Ltd., Clayton-le-Moors.
„ 22	Middlesbrough—County Court	Commissioners of H.M. Works and Public Buildings	Office of Works, Storey's Gate, London, S.W.
„ 23	Croydon—Culvert	County Council	Borough Surveyor, Town Hall, Croydon.
„ 23	Leeds—Plasterers' Work	Guardians	Poor Law Office, East Parade, Leeds.
„ 23	Croes Newydd, near Wrexham—Engine Shed	Great Western Railway Co.	Engineer, Great Western Railway Station, Paddington, W.
„ 23	Bootle—Offices	Corporation	H. Hartley, 8 Harrington Street, Liverpool.
„ 24	Croydon—Shops		F. and W. Stocker, Architects, Queen Street, Cheapside, E.C.
„ 24	Staveley, near Chesterfield—Lock-up	Derbyshire County Council	J. S. Storey, County Offices, St. Mary's Gate, Derby.
„ 24	Merthyr, Glamorgan—Additions	County Council	T. M. Franklen, County Council Offices, Westgate Street, Cardiff.
„ 24	Washingstocks, Catshill—Engine House, &c.	East Worcestershire Waterworks Co.	E. B. Marten, Church Street Chambers, Stourbridge.
„ 25	Walker, Northumberland—Culvert	Urban District Council	Surveyor, Council Offices, Walker, Northumberland.
„ 26	Warwick—Disinfecting Houses	Guardians	F. P. Trepess, 8 Jury Street, Warwick.
„ 25	Elswick, near Preston—Hospital	Hospital Committee	E. C. H. Maidman, 13 South Charlotte Street, Edinburgh.
„ 29	Waltham Abbey—Alterations	School Board	Clerk, School Board Offices, Waltham Abbey.
„ 29	Kendal—Engine-house	Corporation	T. N. Ritson, Gas Offices, Kendal.
„ 30	London, E.C.—Stores	Electricity Supply Department	J. Rush Dixon, Town Hall, Old Street, E.C.
„ 30	Walsall—Nurses' Home	Hospital Committee	Bailey and McConnal, Bridge Street, Walsall.
„ 31	Lymm—Public Offices and Fire Station	Urban District Council	S. P. Pilcock, Architect, Warrington.
„ 31	Middlesbrough—Offices	North Eastern Railway Company	W. Bell, Architect, York.
Nov. 1	Lisnaskea, Ireland—School	Board of Public Works	B. L. Winslow, Solicitor, Lisnaskea.
„ 1	Tunbridge Wells—House	Corporation	Borough Surveyor, Town Hall, Tunbridge Wells.
„ 2	Nantymoel, Wales—Institute		J. Rees, Architect, Pentre.
„ 3	Dirk Cove, Cork—Coastguard Station	Board of Public Works	Carpenter-in-Charge, Queen's College, Cork.
„ 30	Port of Recife—Works	Federal Government	Commercial Department, Foreign Office, S.W.
	ENGINEERING.		
Oct. 19	Dalrymple, Ayrshire—Waterworks	District Sub-committee	J. and H. V. Eaglesham, Engineers, Ayr.
„ 22	Saffron Walden—Pump	Corporation	A. H. Forbes, Hill Street, Saffron Walden.
„ 22	Glasgow—Widening Railway	Caledonian Railway Co.	Engineer, Buchanan Street Station, Glasgow.
„ 23	Cardiff—Engines	Corporation	A. Ellis, Old Post-Office Buildings, Cardiff.
„ 23	London, E.—Crane	Whitechapel Board Electrical Committee	Engineer, Electricity Works, 27 Osborn Street, Whitechapel, E.
„ 23	Yatton—Widening Bridge	Great Western Railway Company	Engineer, Great Western Railway Station, Bristol.
„ 26	Lowestoft—Removal of Old Outfall	Corporation	G. H. Hamby, Town Hall, Lowestoft.
„ 29	Ilford—Heating	School Board	C. J. Dawson, 7 Bank Buildings, High Street, Ilford.
„ 30	Clevedon, Somerset—Main	Water Co.	J. Mansergh, 5 Victoria Street, London, S.W.
„ 31	Kendal—Gasholder Tank	Gas, Water and Electricity Committee	T. N. Ritson, Gasworks, Kendal.
Nov. 1	Dundrum Bay, co. Down—Harbour Works	County Council	County Surveyor, Court House, Downpatrick, co. Down.
„ 14	Lahore, India—Tramway Materials	Municipal Committee	Secretary Municipal Committee, Lahore.
„ 15	Newcastle-upon-Tyne—Widening Bridge	Corporation	Town Clerk, Town Hall, Newcastle-upon-Tyne.
Dec. 17	Cienfuegos, Cuba—Electric Lighting	Municipality	Secretary, Municipal Offices, Cienfuegos, Cuba.
Jan. 2	Christiania—Transmission of Electric Power	Stavanger Corporation	E. Berentsen, British Vice Consul, Stavanger.
	IRON AND STEEL.		
Oct. 23	Glasgow—Rails	Corporation	J. Young, 88 Renfield Street, Glasgow
„ 26	Walthamstow—Corrugated Iron Buildings	Urban District Council	Engineer, Town Hall, Walthamstow.
	PAINTING AND PLUMBING.		
Oct. 19	Churwell, Yorks—Painting		S. Brown, Elland Road, Churwell.
„ 20	Guildford—Painting	Guardians	Peak and Lunn, 36 High Street, Guildford.
„ 22	Stafford—Painting	Corporation	W. Blackshaw, Borough Hall, Stafford.
„ 22	Bootle, Lancs.—Sanitary Improvements	Corporation	Borough Engineer, Bootle, Lancs.
	ROADS AND CARTAGE.		
Oct. 23	Willesden—Road Making	District Council	Engineer, Public Offices, Dyne Road, Kilburn, N.W.
„ 24	Hammersmith—Road Making	Vestry	Surveyor, Town Hall, Hammersmith, W.
„ 26	Bexhill—Granite	Urban District Council	Clerk, Council Offices, Bexhill.
„ 29	London, N.—Road Works	Hornsey Urban District Council	E. J. Lovegrove, Southwood Lane, Highgate, N.
„ 29	Windsor—Roadmaking	Rural District Council	Mr. Menzies, Surveyor, Englefield Green, Surrey.
„ 31	Litherland, Lancs.—Passages	Urban District Council	W. B. Garton, 25 Sefton Road, Litherland, Lancs.
Nov. 14	Barnsley—Kerbing	Town Council	J. H. Taylor, Borough Surveyor, Barnsley.
	SANITARY.		
Oct. 19	Bristol—Sewers	Waterworks Co.	Waterworks Company, Small Street, Bristol.
„ 20	Walton-on-Thames—Sewer	Urban District Council	Surveyor, Council Offices, Walton-on-Thames.
„ 22	Luton—Scavenging	Rural District Council	W. Austin, 7 George Street West, Luton.
„ 23	Bedford—Drains		J. Lund, Town Hall, Bedford.
„ 27	Aughnacloy, Ireland—Drainage		G. P. Hatton, Church Street, Dungannon.
„ 29	Guildford—Sewerage Works	Rural District Council	J. Anstee, Commercial Road, Guildford.
„ 29	Long Crendon, Thame—Sewers	Rural District Council	Taylor, Sons and Crimp, 27 Great George Street, London, S.W.
Nov. 8	Northwich—Sewers	Rural District Council	H. Bancroft and Son, 88 Mosley Street, Manchester.
	TIMBER.		
Oct. 22	General Post Office—Telegraph Poles	Postmaster-General	Chas. E. Stuart, G.P.O., London, E.C.

COMPETITIONS OPEN.

DATE OF DELIVERY.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	BY WHOM ADVERTISED.
Oct. 20	Sevenoaks—Hospital	£10 10s.	Surveyor, Council Offices, Sevenoaks.
„ 22	Swindon—Laying-out Grounds	£50	E. T. Jones, 42 Cricklade Street, Swindon.
„ 30	Devizes—Hospital	£20, £10	O. Sheppard, Clerk to Joint Committee, Devizes.
„ 30	Musselburgh—Town Hall	£26 5s. and £15 15s.	Town Clerk, Council Offices, Musselburgh.
„ 30	South Shields—Municipal Buildings	£200, £100, £50	J. M. Hayton, Town Clerk, Court Buildings, South Shields.
Nov. 15	Newcastle-upon-Tyne—Bridge		H. Motum, Town Clerk, Town Hall, Newcastle-upon-Tyne.
„ 30	Swansea—Harbour Offices	£100, £50	T. Strick, Harbour Offices, Swansea.
Dec. 1	Bridlington—Parade Extension	£36 5s., £15 15s.	A. E. Matthewman, Town Hall, Bridlington.
March 25	Basford—Sewerage Scheme		C. J. Spencer, Clerk, Public Offices, Basford.

THE BUILDERS' JOURNAL & ARCHITECTURAL RECORD

October 24, 1900. No. CCXCVIII.

Effingham House, Arundel Street, Strand, W.C.

An Architectural Causerie.

Sham Architecture. In the October number of the "Strand Magazine" there are two articles dealing with architecture, one interesting and readable, the other distinctly bad. In the former, entitled "Which is the Finest Building in the World?" the selections of leading architects are given—Professor Aitchison chooses the Pantheon at Rome; Mr. Alfred Waterhouse, St. Mark's, Venice; Mr. Phené Spiers, Sta. Sophia, Constantinople; Mr. John Belcher, Greenwich Hospital; Mr. Norman Shaw, St. George's Hall, Liverpool; Mr. William Emerson, the Tâj Mahâl, Agra, India; Mr. T. E. Collcutt, St. Paul's Cathedral; Mr. Thomas Blashill, Chartres Cathedral; and Mr. Walter Emden, Michael Angelo's Chapel, Florence. It is desired now, however, to draw attention to the article on "Artificial Rock Formation," in which the author displays the grossest incompetence to deal with architectural construction. The article bristles with absurdities, manifestly the results of a knowledge which is at once limited and peculiar.

The suggestion to form "quaintly-fashioned" artificial rocks on stretches of flat coast-line is bad enough, but it is not the quarrel with this really pernicious article. A magazine such as the "Strand," with its immense circulation, has in its power great opportunities for good or evil. What then can be said of an author who openly and unblushingly advocates and defends the erection of artificial ruins as adjuncts to natural scenery? "While allowing that such work is undoubtedly of a deceptive nature, it cannot be denied that the fraud is entirely harmless in character." Mr. Best has not even mastered the first principle of the building art, and it would be an act of charity to inform him that in architecture, shams are the greatest of all sins. If a building is a sham, then its existence is useless—it has no mission, and is certainly not a fit subject for eulogy in the pages of a popular magazine.

Later on, one is told that the artificial ruin "is certainly a thing of beauty, fascinating in conception, and a picturesque adjunct to the best work of the artist in scenery." An artificial ruin is not "a thing of beauty" since it has no use, neither is it "fascinating in conception," as, beyond a very weak desire to copy, it has no motive; and lastly it cannot be an "adjunct to the best work of the artist in scenery"; it is a sham, and in nature nothing is unreal or useless. "At the same time, a ruined tower or gateway forms one of the best means of concealing unsightly objects from view, and is capable of serving a variety of useful purposes." An author who deliberately says that the motive of architecture is to hide artificial eyesores is obviously not a fit and proper person to hold forth on the canons of any art, much less on those of the most exacting of all. A view of one of these sham abominations—a "home-made abbey"—is given on page 399, and as the original is "composed chiefly of brick," one thanks heaven that, so far, the secret of colour-photography is unsolved. This sham ruin is not even a passable copy of a genuine abbey, and its utterly false proportions are quite in accord with the unholy motives which suggested its erection. Again, on page 400, we are shown



a reproduction of a spurious Norman castle (the learned author of the paper charitably withholds the name of the builder) in Hertfordshire. "It is built entirely of flint, dressed with artificial stone. Many an astute antiquarian (*sic*) has been deceived by the Hertfordshire 'ruin,' and it is by no means improbable that in the course of a century or two the secret of its construction will die out, and this 'Norman castle' . . . may then be regarded as one of the most finely preserved specimens of early architecture in the kingdom." Let Mr. Best make no mistake. Immediately the Hertfordshire people develop the slightest regard for ancient works, or discover the remotest germs of architectural taste, this wretched sham will be utterly destroyed and made into a funeral cairn for its unhappy author as a warning to others; then perhaps we shall be spared another exhibition of an unhealthy admiration for things which should be offensive to those who presume to write for the edification of the lay public. J. R. L.

Those Little Things that Mean so Much. Just as in the conduct of life, in the making of a career, there are the little graces that mean so much in gaining success—whose absence is so greatly noticed, to the final confusion of him who has them not—so there are the minor details in the proper ordering of a building or a town which make or mar its appearance. This, which seems by way of being an apothegm, is unhappily forced upon one's notice by a plentiful lack of the graces and an assertive intrusion of the petty ugliness of life in places where they have no sort of right to exist at all. There is a fatal facility in the production of the positively ugly and a wicked wrong-headedness in the perpetration of the commonplace just where it mars the beautiful or the sublime (and so by contrast becomes more hideous than uglier things in less soulful surroundings) which *might* make angels weep and *does* make mere mortals angry or despondent, accordingly as their natures are choleric or melancholic. That these little solecisms mean little or nothing at all to the mass is a good thing for the mass, always supposing that such hindrances to the enjoyment

of beauty could exist concurrently with the million educated up to keener artistic perceptions. With the supposition that they could, it is well for the mass that it eats and drinks and takes things as it finds them and sees nothing wrong, although the best view of some hallowed spot is desecrated by a gasometer, and though the babbling rills and lazy rivers of a once unpolluted countryside are turned to the hue of ink or glisten with the filthy iridescent hues that derive from the waste of some modern factory. Nor are the crowds alone reckless of these things. The new-rich, having passed their lives in the getting of riches, pay the penalty of having a true sense of the beautiful denied them, just as, inversely, the artist's penalty for his life-long pursuits is an exaggerated perception of the sordid where it exists in uncongenial surroundings. One sometimes queries the advantage of a training which reveals these blemishes in such morbid prominence and renders it almost physically painful to see, as one may often see in our cathedrals, the naked stove-pipes of the heating apparatus reared up against Norman arch or Early English tracery, their leaky joints blackening with coal smoke the revered architecture that has hitherto survived, unstained, the breath of close upon 900 years. Such things lead to the impious thought that, after all, Deans and Chapters may not necessarily be the most enlightened custodians of these historic piles! It is impossible to find the fitness of things exemplified in cathedral naves or transepts by the unblushing presence of a home-made coal-scuttle for the feeding of the stoves, made from Tate's cube-sugar cases; yet such things may be observed. We are not advocating such *tours de force* as those resorted to by the would-be artistic housewives of a decade ago, who painted their coal-scuttles with marguerites and sunflowers, and fondly imagined that the fact of their containing coals was cloaked thereby; but there is surely somewhere to be found a middle course between brutal frankness and insincerity.

It would be easily possible to multiply instances of the little vulgarisms that bring the soaring fancy down to earth again: the hoardings that display commonplace advertisements athwart the meadows as you speed by in the train, and while your spirit communes with the gods, suddenly succeed in distracting your attention with the insistent admonition at the tail end of some monstrous puff:—"but see that they *are* So and So's." The wily advertiser is justified of his guile, although you curse him for his bad taste; for the mind instinctively tries back to recover the beginning of the announcement, and when the advertisement recurs (as of course it is bound to do), greedy curiosity takes in the information; and the pills or soap, or what not, is duly impressed upon your memory. But what avails it to multiply instances? Everyone can do it for himself, so fruitful are the times!

C. G. H.

Red Lion Inn, Glastonbury.

IN an old town like Glastonbury there is generally much to interest the architect and artist, little details he can sketch, suggestions for design which he can make use of at a later date. The drawing by Mr. W. Lee Clarke of the old Red Lion Inn at Glastonbury is an example of this, with its quaint roofs and archway. The inn is situated in the Market Place, and the passage shown leads to the Abbot's Garden, which is situated at a higher level at the back of the house.

On Reflection.

Manchester Infirmary.

WHILE the Council in London is concerned about one Piccadilly, the Manchester authorities are concerned indirectly about another: this, however, not in connection with a street-widening scheme, but as part of the proposal for the new Royal Infirmary, which is to be built on the present site. Until quite recently the Medical Board of the Infirmary was most hostile to any system other than that of pavilions, but there has been a change of opinion sufficient to cause the Board to admit that an efficient hospital might be built on a non-pavilion principle. The difficulty in the selection of plan is chiefly due to the fact that the available space is limited, and pavilions require more ground than buildings erected on any of the other systems. According to the last plans drawn up for Manchester, the space actually occupied by the buildings would have been only five per cent. more than that occupied at present; but on account of the spreading of the pavilions all the Piccadilly frontage would have been taken up, making it more like a street than an open space. These plans were therefore rejected, and no decision has since been arrived at with regard to the type of plan to be adopted. The late Sir Douglas Galton stipulated that the three essentials in hospital design were light, air, and warmth. Since his day there have been great improvements in ventilation and sanitation, but even now there is much difference of opinion on the former subject. As regards light, the pavilion system undoubtedly offers the best solution; but it is found that with a range of windows on each side there is a considerable cooling surface of glass, and consequently heating becomes a very difficult matter. The corridor plan (on which the present Royal Infirmary at Manchester is built) has much wider blocks, so that there may be rooms on each side of a central corridor; while the block plan is practically the corridor plan without the corridor, its place being taken by a partition. Each plan has its advantages, though the pavilion principle is the one most generally adopted now. But the Manchester authorities find that it will not suit them, and so they are taking thought before they spend their £200,000.

Hist! The Voice of the F.R.I.B.A.

A JUNIOR in an architect's office will tell you that an F.R.I.B.A. is a being who walks with the gods. But when the junior grows up and learns a little of the true principles of his art—if he does—the image will be blackened somewhat, and there will be patches in what was formerly considered to be a faultless creation. So the F.R.I.B.A. is mortal after all; so mortal that we find one of the race advocating in a contemporary the duplication of Greek terra-cotta vases for the beautification of the garden. Our contemporary is devoted to clay, and the writer goes on smoothly through the well-worn courses of the landscape architect, the harmonising of the building with its surroundings, the use of native possibilities of the site, &c. A specific example is next cited. "The architect has designed a Classic building, and has finished laying out the terraces and other accessories accordingly. Then the owner, having precious little artistic taste as a rule, has a number of miscellaneous terra-cottas on pedestals put up at various points in the grounds. . . . Instead of selecting figures of Classic origin to harmonise with his building . . he usually gets something belonging to the Italian Renaissance, with a few amphoræ and vases of a floral pattern thrown in." Our contemporary has nothing to say against these latter in themselves, but objects that they are out of place in the garden of a Classic building; therefore we are to copy the beautiful terra-cottas of Greece—Niké, Eros, Aphrodite, and the rest. "If it is right for the architect to poach on ancient preserves, so it is for the terra-cotta maker. . . . The Greek archaic period also presents us with many beautiful terra-cotta statues, particularly of the real life of the period—representations of ladies in outdoor costume, gala dress, &c. Athletes, competitors in outdoor games, both Greek and Roman, are the very subjects for the class of terra-cottas of which we are speaking." What will the purists say to this? Reformers have tried to drum nonsense into our heads: of course, two blacks do make a white; it is right for the vase designer to become a copyist out and out, so let us sit down and do likewise. This is fine advocacy. Here lies the way of a national style, and Messrs. Norman Shaw, Halsey Ricardo, Ernest Newton, W. R. Lethaby, E. S. Prior, H. Wilson, Beresford Pite, and a host of others who are attempting—and succeeding—to produce buildings which we can justly claim as our own—they are all wrong, all misguided. So struggle on ye copyists, machine out your duplicates, be careful to have everything exact; then survey your handiwork and thank God that he has given you such talent and that you have put it to such noble use.

A new Indictment.

THE sky-scraper is a production which has been the cause of more outbursts of admiration and disgust than perhaps any other form of building; and so many indictments have already been levelled at it that one or two more now will have less effect, if possible, than those which have preceded them. It is averred that these "climbers" of the bricks and mortar family—or, to be more correct, of the column and girder family—disturb land values in a shocking manner, steal the light and the air, congest the traffic in their neighbourhood, complicate the already very difficult problem of fireproof construction, overtax the sewers and drains that serve them, even produce an alarming mortality among lift men—but why continue? This is not news, with the exception of the item apropos the lift men. But there is a new allegation made by Professor Hyatt, of St. Louis, a weather observer, and no doubt a sane and holy man, which is worth stating. He says that high buildings in a city perceptibly increase the average outdoor temperature. And the good gentleman is right, for, as everyone knows, when the sun strikes on stone wall or slate roof there is a considerable conservation of its energy which is radiated upon suffering humanity around and below. Anyone who has passed a summer in the United States knows what a painful experience it is, the sweltering heat and the oppressive humidity; so that an increase in temperature beyond a certain limit is a thing to be fought like plague. There is yet much to do in the prevention of heat radiation, as there is in heat conservation. It is a common observance that corrugated iron buildings are hot in summer and cold in winter, and the law which they exemplify is the same in regard to buildings of stone and brick. As already stated, there is room for reform in the matter of interior linings for combating natural atmospheric conditions, and enabling the house occupant to enjoy a more equable temperature.



SOUTH-EAST VIEW OF ST. MARY'S CHURCH, BIRKIN, YORKS., SHOWING OLD GATE PILLARS TO HALL.

BIRKIN CHURCH, YORKSHIRE.

By R. A. EASDALE, A.R.I.B.A.

HALF-WAY between Pontefract and Selby, at the side of a quiet country road, stands the little church of the parish of Birkin. With its plain north side and west end facing the road, it attracts very little attention from passers-by who do not take the trouble to make a closer inspection; and as the church is three miles and a half (as the crow flies) from the nearest railway station, and the Great North Road runs past the outskirts of the parish three miles away to the west, it is not surprising that such an interesting and unique piece of architecture is so seldom visited.

The remoteness of the village accounts in some measure for the fact that the archæological value of the church is so little known, and yet at one time the village was the place of residence of men of note. Not one stone remains of the old hall or mansion—the only evidences of such a building are the two quaint stone pillars standing in a field adjoining the church (see illustration). Records at the beautiful seventeenth century rectory tell of the genealogical descent of the family occupying the hall. One Asolf or Oswolf took the name of De Birkin in the twelfth century, and Isabella De Birkin married one D'Everingham.

One of this family restored the church and added the fourteenth century D'Everingham south aisle. Ellen D'Everingham married Gervase, son of Hugh Cressy, Esq., Justice o the Queen's Bench of Ireland, who had issue Everingham Cressy, who died 1644. Dorothy Cressy, only child of Everingham Cressy, married in 1690 Duncan Primrose, of Culross, co. Perth, an ancestor of the present Lord Rosebery.

Another interesting fact showing the importance of this family is that one of the Johns de Birkin was Sheriff of Yorkshire, and carried into effect the order of Henry the Third for the election of an Abbot of Selby named Richard.

The rectory—a very large picturesque building—stands amongst fine trees in the midst of a beautiful garden. This garden was laid out, about 1722, by the poet Mason, who was also a landscape gardener of repute. Mason was one of a number of literary men who visited a former rector of the parish, amongst whom may also be mentioned Gray, of Elegy fame. (Can it be that Birkin is the real Stoke Pogis?) Two other facts to prove the antiquity of the village may be mentioned—namely, a record that "one Osbert, a priest, of Birkin, sold land to John De Lacy," and, somewhat recently, the unearthing of a Roman or British stone coffin about half a mile from the church. With this preface we may now go on with the description of the building which is the subject of this article.

The novelty of the plan and the beauty of the mouldings and carving appear in no work on English church architecture; indeed, the church is so little known, even in Yorkshire, that when the Yorkshire Archæological Society visited it some time ago many of the members expressed their surprise that such a building existed in their midst. The probable date of the Norman work is 1140. The first plan would be an aisleless nave with square western tower, square chancel, terminating eastward in a semicircular apse. The walls of nave, tower, and chancel are unbuttressed, but the apse has flat pilaster buttresses stopping under a corbelled eaves. The circular apse is somewhat of a novelty in Norman work, most examples having square east ends.

The technical setting-out of the plan, as found out after plotting to a large scale, is very interesting. The chancel is an exact square of 16ft. 6in. internally. The apse is set out by striking a circle of 13ft. 8in. tangential to the inner face of the chancel square (internal faces of nave walls nearly correspond with the external faces of the chancel walls). The nave is a double square to the inner faces of north and south walls, and outer faces of east and west walls, and the tower is a square of half the nave square.

Singularly enough, the ruins of the chapel in the grounds of Pontefract Castle show a similar semicircular apsidal termination as that at Birkin, and after measurement it was found that the same geometrical proportions and method of setting-out had been followed in each case, though the apse in the Castle is somewhat larger than that at Birkin. A reference to the comparative diagram of the two apses on the next page will show that the curve of the apse if continued on its inner face would be tangential to the line of the inner face of the chancel. Whether this interesting fact proves that Birkin church was built through the instrumentality of the De Lacys of Pontefract or not, it certainly points to that theory being more correct than that the monks of Selby did the work, though Birkin is more easy of access from Selby than from Pontefract.

The architectural features of the Norman part of the church are in every way worthy of the grand builders of Norman times.

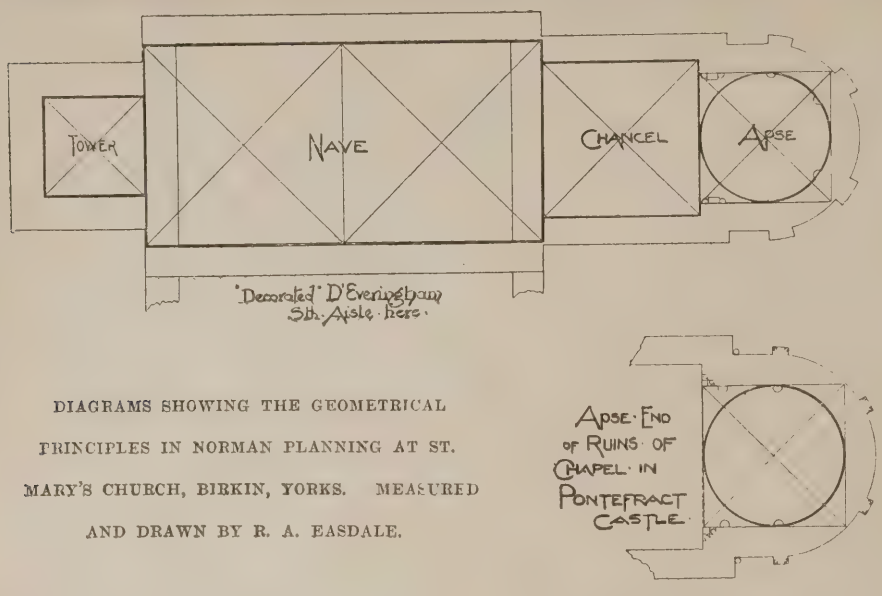
All the ornamental work is in slight relief; a fact no doubt to which we owe its wonderful state of preservation. The arches are semicircular throughout, and the capitals show a number of varieties of scalloped forms (there are no cushions proper), many combined with angle volutes. The priest's door in the south wall of the chancel has a lintel with a semicircular relieving arch, the tympanum being of solid square stones set anglewise; a probable survival of the *opus reticulatum* of the Romans.

The apse is perhaps the most interesting part of the building, and is one of the earliest specimens of an apsidal ribbed vault in a small church. It is divided into five bays, as will be seen by examining the general plan and detail plan (see centre plates). A transverse rib crosses the apse, the west side of the rib being placed over the tangential point of the curve of the apse with the square of the chancel.

This fixes the position of the vaulting shafts at the springing of the apse, giving a width of 5ft. 4in. between the centres of the shafts. This width of 5ft. 4in. is repeated for the side bays of the apse, leaving a much wider centre bay of 7ft. 5in., the centre window being wider than the side windows. From the shafts on the apse curve two moulded ribs spring, meeting in the semicircular transverse rib across the apse springing. The vault cells between the ribs have a domical curve generated by the semicircular label of the windows, which serves as a sort of wall rib, and the ribs themselves are constructed on the advanced method of actual groin ribs, and not the earlier method of merely radiating ribs on the surface of the semi-domes.

The ribs are in narrow stones throughout (like all the rest of the Norman part of the church), and the keystone in the centre of the





DIAGRAMS SHOWING THE GEOMETRICAL PRINCIPLES IN NORMAN PLANNING AT ST. MARY'S CHURCH, BIRKIN, YORKS. MEASURED AND DRAWN BY R. A. EASDALE.

transverse rib with the intersection of the two radial ribs is in one large stone.

The absolutely logical method of the Normans in their whole procedure is very evident here, especially the way in which the supports of arch and vault are designed to suit arch orders and ribs—a shaft to each order and to each rib.

Notwithstanding the fourteenth century addition of the south aisle, the original "æsthetic" idea of the planning can be readily realised on looking eastward from the dark tower. It is quite evident that the dominant idea was to keep the tower dark (only one window 7in. wide), and the nave dimly lighted, the chancel having a north and south window, and the apse three windows, thus giving a flood of light directly on to the altar. The effect is very striking and charming even now; and this must have been very much more pronounced before the light south aisle was added.

This aisle was erected about the middle of the fourteenth century by the then lord of the manor, D'Everingham. The aisle extends the full length of the nave, and is lighted by a three-light western window and a five-light eastern one, as well as two three-light south windows, all these windows having tracery of different design. Two wide and lofty double-chamfered arches with hexagonal pillar between separate the aisle from the nave. A piscina is placed in the south wall near the eastern wall. (A piscina of evident Norman date was found some time ago in the rectory garden, probably taken from its place in the apse.) Two quaint corbels support the roof timbers of the aisle, one representing a huntsman with dog, bow and arrows.

The addition of the south aisle necessitated the removal of the magnificent Norman doorway from its position in the south wall of the nave to a similar position in the new aisle wall, and the squint in the chancel-arch piers would be pierced at that time. The doorway has three columns and four arches. The outer arch has twenty-four richly-carved plates with zig-zag work on the soffit; the second arch has zig-zag work on face and soffit of different designs; the third arch has the characteristic "bird's-beak" ornament over deep moulds; and the fourth or inner arch is almost without any mould—a very effective arrangement which accentuates the richness of the outer arches.

The capitals of the columns are very elaborately carved, as well as each abacus, the neck mould also sharing in the profusion of ornament. A very notable characteristic of the whole of the Norman ornament is its diversity of detail; no two caps are alike, and ornament is rarely repeated in any position. The corbels round the eaves of the chancel and apse are plain hollows with a head projecting; but those on the north side are of different designs, many being the well-known varieties of axed-work. The lower part of the tower is Norman, as shown by the small size of the stones, and the narrow semicircular-headed windows, with a deeply-splayed opening inside. The upper part of the tower is fourteenth or fifteenth century work, with its characteristic large stones, pointed belfry window, and crocketed pinnacles. The church contains a good example of a Jacobean pulpit (with a sounding board of elaborate design), a stone font dated 1625, several monuments, and one life-size recumbent effigy—with legs crossed—on a tomb.

The whole building was restored in 1883 by Mr. J. Oldrid Scott. This small church is well worthy of study from its unique plan, splendid carving and masonry, and the common-sense of its whole construction. Every part tells of forethought, care, and ability: no bungling or hesitation in building the apse—a most difficult problem in those days, no doubt: and after duly examining the place, and becoming imbued with the true spirit and meaning of it all, one cannot fail to have a feeling of intense admiration for those noble, honest old builders whose very names are forgotten, but whose handiwork remains to this day a thing of wonder and beauty.

ACLAND AND RUSKIN.

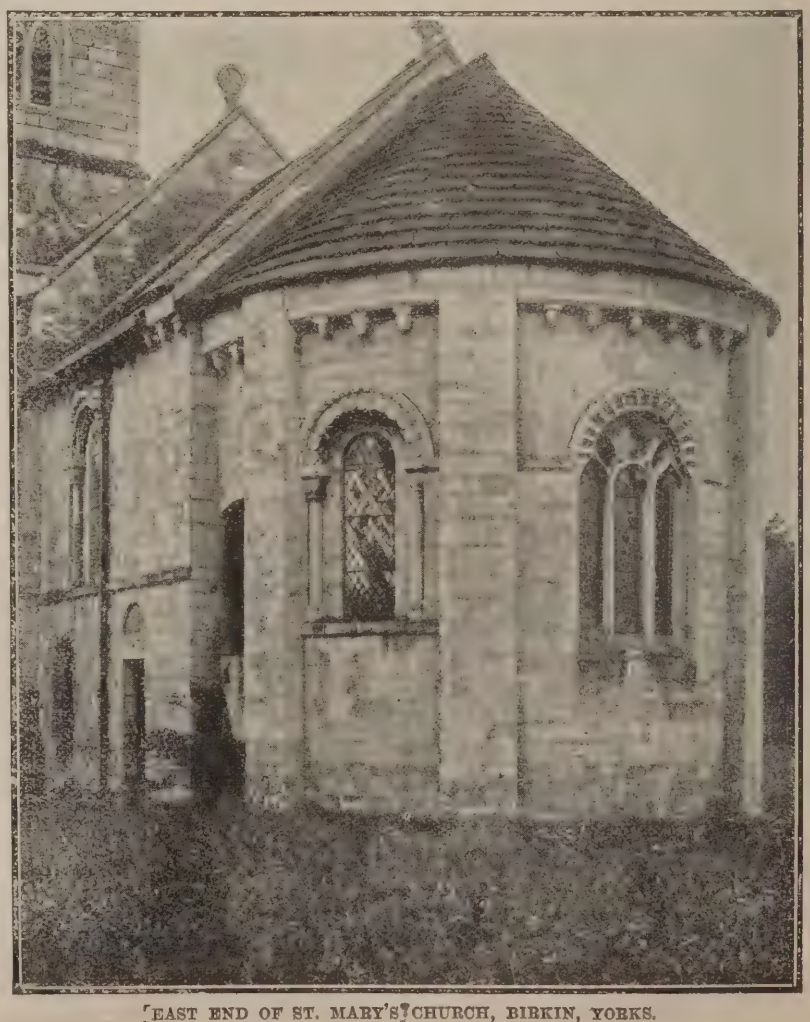
THE OXFORD MUSEUM.

THE many-sided life of the late Sir Henry Acland, who died on October 16th at the age of eighty-five, has special significance for us on account of its close connection with the life of John Ruskin and its devotion to sanitary reform. In 1854 Dr. Acland went very carefully into the subject of the sanitation of Oxford, and he showed that the whole place was full of the filthiest cesspools, contaminated wells, badly constructed drains and sewers, and that the narrow streams about the town were horribly befouled by its drains. The light thrown upon the state of things here led to a great sanitary reform, and the stir up at Oxford afforded a lesson for the whole country. In a work of this kind Dr. Acland was in his element. He was serving God and man, and he gloried in such work. He wrote and spoke much on insanitary villages. In 1866 he was appointed a member of Mr. Gathorne Hardy's Cubic Space Commission, and he was a Royal Sanitary Commissioner from 1869 to 1872.

Ruskin on many of his visits to Oxford as professor was Acland's guest, and Acland seldom if ever missed being present at Ruskin's lectures. Other and more enduring witness of their friendship exists. In 1853 Acland was with Ruskin and Millais in Scotland, and it was at Acland's suggestion that Millais painted the well-known portrait of Ruskin, standing beside the torrent of Glenfinlas.

Ruskin's interest in the Oxford Museum, which was the outcome of Acland's reformative ideas about anatomy and physiology, is well known. He delivered lectures on it, and wrote pamphlets; he inspired the architects, gave money for its decoration, and himself designed a doorway.

In 1858 the Museum was in course of erec-



EAST END OF ST. MARY'S CHURCH, BIRKIN, YORKS.

tion, its architects being the late Sir Thomas Deane and Mr. Woodward, and its style Modern Gothic. On January 20th of the following year Ruskin wrote to Acland in reference to their unfulfilled hopes about the building. The following is an extract from the letter :—

"But farther—do you suppose Gothic decoration is an easy thing, or that it is to be carried out with a certainty of success at the first trial, under new and difficult conditions? The system of the Gothic decorations took eight hundred years to mature, gathering its power by undivided inheritance of traditional method, and unbroken accession of systematic power; from its culminating point in the Sainte Chapelle, it faded through four hundred years of splendid decline; now for two centuries it has lain dead—and more so—buried; and more than so, forgotten, as a dead man out of mind; do you expect to revive it out of those retorts and furnaces of yours, as the cloud spirit of the Arabian Sea rose from beneath the seals of Solomon? Perhaps I have been myself faultfully answerable for this too eager hope in your mind (as well as in that of others) by what I have urged so often respecting the duty of bringing out the power of subordinate workmen in decorative design. But do you think I meant workmen trained (or untrained) in the way that ours have been until lately, and then cast loose on a sudden, into unassisted contentions with unknown elements of style? I meant the precise contrary of this; I meant workmen as we have yet to create them: men inheriting the instincts of their craft through many generations, rigidly trained in every mechanical art that bears on their materials, and familiarised from infancy with every condition of their beautiful and perfect treatment; informed and refined in manhood, by constant observation of all natural fact and form; then classed, according to their proved capacities, in ordered companies, in which every man shall know his part, and take it calmly and without effort or doubt—indisputably well,—unaccusably accomplished—mailed and weaponed *cap-à-pie* for his place and function. Can you lay your hand on such men? or do you think that mere natural good-will and good-feeling can at once supply their place? Not so—and the more faithful and earnest the minds you have to deal with, the more careful you should be not to urge them towards fields of effort in which, too early committed, they can only be put to unserviceable defeat. Nor can you hope to accomplish by rule or system what cannot be done by individual taste."

Sir Henry Acland's memory is perpetuated by Ruskin in one of the most striking passages of "Præterita" (Vol. I., ch. xi.):—"Fortunately for me—beyond all words, fortunately—Henry Acland, by about a year and a-half my senior, at Christchurch chose *me*; saw what helpless possibilities were in me, and took me affectionately in hand. . . . He quietly showed me the manner of life of English youth of sense, good family, and enlarged education. . . . gave me the good of seeing a noble young English life in its purity, sagacity, honour, reckless daring, and happy piety. . . . Both in art and science he could pull me on, being years ahead of me, yet glad of my sympathy, for till I came he was literally alone in the University in caring for either. . . . The curious point in Acland's character was its early completeness. Already in these yet boyish days his judgment was unerring, his aims determined, his powers developed; and had he not, as time went on, been bound to the routine of professional work and satisfied in the serenity, not to say arrested by the interests, of a beautiful home life, it is no use thinking or saying what he might have been; those who know him best are the most thankful that he is what he is."

The First Batch of the 110 Artisans' Houses at Hornsey, erected by the Hornsey District Council, shows on the year's working a balance on the right side of £317, after paying £45 for repairs. A second batch is now in course of erection at Highgate, at rents varying from 7*s.* to 9*s.* a week. The smaller houses have four rooms and the larger have five, with a garden 60ft. long.

ITALIAN GARDENS.

A BEAUTIFUL villa in a fair landscape garden makes one of the most delightful scenes of the cultivated earth. This is only true if the garden be artistic, and unfortunately it is one of the rarest things in the world to find such a garden. To be really effective the artificial or formal garden requires to be laid out with the greatest possible care by an artist, and it is for this reason that the beautiful gardens of the Renaissance in Italy are so celebrated. For century after century Italy has produced artists who have given their serious attention to all the small matters of life as well as in the creation of palaces, statues, or great mural paintings.

The Italians were the initiators of the artistic movement of the Renaissance, and to-day these gardens are considered by modern landscape architects to be masterpieces. They are not only plantations destined to give shade and to assemble rare flowers, but were arranged to give a chance for a promenade. They afford a majestic decoration around a villa or château. Art is combined with nature to produce a most graceful and grandiose effect, and they were laid out with the true feeling for art. All of the gardens of the Renaissance in Italy were planned following a regular method, and this



THE RECTORY, BIRKIN, YORKS: SOUTH VIEW.

is not strange when we consider the architecture for which the garden served as a setting The architectural lines are strongly accentuated by the plantations. One finds in these gardens specimens very little altered of the best creations of the Renaissance. There are still the same disposition, the same ornamentation, and almost the same flora. The gardens of Italy present the rich and picturesque quality of modern gardens without their puerile simplicity. They are planted regularly around the villa, and it is always by an artistic progression that the house is reached. In the Italian gardens nature is assisted by art, and art is not used entirely in their creation. These gardens give exactly the same idea of country houses of which we hear so much from classic writers, as, for instance, Lucullus in the gardens of Sallust, the gardens of Pliny, Cicero, &c. They have their modern counterparts in those of the Villa Albani, Pamfili-Doria, the Aldrobrandini, &c.

If one studies the plans of these villas and those of the Barberini, Borghese, and d'Este, one will notice that the artists have not been dominated by the thought of making a symmetrical design, but that in adapting the lines of the plantations to the house itself, their principal object, they have largely concerned themselves with making use of the natural disposition of the ground as they find it, and devote a large part of their energies to achieving well-studied perspectives, intended to be viewed either from the house or from important points of the promenade. The design of the garden was not made solely with a view to the principal effect, for minor views were arranged for, but the grounds were laid out in such a manner that there were a number of interesting parts ably brought together so as to form a homogeneous design. Each detail is a picture sufficiently detached from the *ensemble* to be of value by itself. Each particular composition is justified by usage, and every work has its decorative quality which demonstrates its right to exist. Placed in well-chosen sites, nature has imposed few obstacles to the creation of a beautiful composition, and even furnishes the principal means for accomplishing remarkable effects. The great terraces shade those walking on stately promenades from the direct rays of the sun, and connect with one another by straight or circular paths. Broad staircases ornamented with balustrades, vases, and statues give a noble and elegant aspect to the gardens. Beautiful fountains are constantly playing, and the sparkling water contrasts with the green of the foliage. The beautiful parterres and avenues are usually provided with statues, arches, and columns. These decorations taken from architecture and sculpture seem entirely in place in Italian gardens, although they do not appear as much so in the gardens of the north, where the light is less intense and the climate less propitious.

It was not until the golden age of the Italian Renaissance, when architecture had well-nigh attained perfection, that new form was given to the principles which had once been embodied in the classic Roman villa. In many cases the villa itself and the gardens were designed by the same master, who was at once architect, landscape architect, and sculptor. The Italian gardens are constantly noted in the literature of the Renaissance, and even the scenes in Boccaccio's masterpiece are laid in an Italian garden in the environs of Florence. In some of them were scientific collections, such as botanical and zoological specimens, as in the parks of Lorenzo de Medici, the botanical collection being kept at the villa at Careggi, where he breathed his last, and the zoological collections at Poggio a Cajano. The greatest architects and sculptors did not feel that it was beneath their notice to devote great attention to such gardens.

Tivoli is an ideal spot for a villa, and this fact was fully realised by the Romans, for many of them, including Mæcenas and the Emperor Augustus, founded beautiful villas there. Under Hadrian the splendour of the place attained its climax, and in the Middle Ages it participated in the fate of Rome. The Villa d'Este is the masterpiece of Pirro Ligorio, and was originally begun by the

Bishop of Cordova. The quantity of water employed to adorn the grounds, and the variety of its treatment, show a reminiscence of the Moorish gardens of Spain. The villa is interesting architecturally on account of the ingenious construction of the terraces and the ramps which connect the palace with the gardens below it. The charm of the gardens is in their atmosphere and the mass of the grounds which is in shadow. At present the trees have grown to a great height, and the once trim hedges are no longer well kept, and the garden is an unkempt wilderness. The sound of trickling, splashing water, and the singing of the birds lend variety to the scene. From almost any part of the gardens can be obtained wonderful views of the Campagna. Unfortunately, access is now denied except to those who may be acquainted with its owner, who is a high ecclesiastic.

It is not only in the south that we have specimens of beautiful villas, but also in the north, as, for instance, in the splendid alley of trees and statues at a villa near Vincenza.

In the environs of Florence there are many fine villas. The Villa Reale di Castello is located in a beautiful park, and contains a fine fountain surmounted by a figure of Hercules. Unlike the Villa d'Este and the Roman gardens, water is not used in so much profusion: in Rome and Tivoli water was supplied in such vast quantities by the aqueducts that it could be used very freely. The Villa of Poggio a Cajano lies near Florence, and was built for Lorenzo the Magnificent by Giuliano da San Gallo in the simple rustic style. It is surrounded by a splendid old park, and commands a beautiful view of the mountains which surround the valley of the Arno. It was not always the case when the Italian gardens were laid out that terraces, fountains, and statues were the sole means of decoration; occasionally whole parks were left as nature had planned them.—"Scientific American" (Building Edition).

MAYBOLE CASTLE.

MAYBOLE, "the capital of Carrick," is a town of considerable architectural and archæological interest. At one time its streets were lined with "many pretty buildings belonging to the several gentry of the country," but now Maybole Castle is the only one left in anything like its original condition. The plan of the original building—it has been added to in later times—is a modification of the L-shaped plan so common in Scottish castles. The small arm of the L contains the stair, which in the upper floor blossoms out into the "bower" with the very fine oriel shown in the sketch of the castle from the south-west. This oriel—one of the few mediæval examples of this feature left in Scotland—is enriched with several heads, supposed by local authorities to be portraits of the actors in the story which forms the subject of the well-known ballad of the elopement of the wife of the sixth Earl of Casillis with a certain "Jonnie Faa." But, apart from tradition and myth, the castle with its unique oriel and "skew" with pierced gable-head, its quaint dormer windows and peculiarly Scottish chimneys and corbelling, is well worth the study of every architect. The drawings of the castle on this page are by Mr. J. Jeffrey Waddell.

A new Mission Church at Weston Green, Thames Ditton, is to be erected from plans by Mr. A. J. Style, architect.





THE WINDOWS OF ST. SAVIOUR'S, SOUTHWARK

AN INTERESTING SCHEME OF COMMEMORATION.

A CEREMONY which took place a short time ago at the ancient church of St. Marie Overie, or St. Saviour's, as it is usually styled, marked another stage in the original and broad-minded scheme of commemoration of by-gone worthies, inaugurated by Canon Thompson eight years ago, in the placing of stained-glass windows in the church to the memory of the goodly company of celebrated men who have lived or worked in this great Borough of Southwark. On the occasion in question, Dean Farrar unveiled the Bunyan window in the north aisle, a memorial to that inspired Non-conformist tinker whose great work ranks among our classics. This window to the author of the "Pilgrim's Progress" has appropriately been given by the children of the diocese of Rochester. It is an example of the liberal-minded view taken by Canon Thompson that Bunyan, the once persecuted of the Church, who officiated at Zoar Street Chapel, often in fear of again being cast into prison, should now find his apotheosis under the roof of the Establishment. He is but one of a varied company, forming a kind of abridged Positivist Calendar in stained glass, whose tardy memorials are rendering St. Saviour's a place of pilgrimage. It is nearly four years since the restored church, soon perhaps to be the Cathedral of a new Diocese of Southwark, was re-opened after the rebuilding of the great nave and the execution of other works, involving a total expenditure of £80,000. Since the beginning of that work of restoration fourteen commemorative windows have been installed, including the Bunyan window and the neighbouring one to Chaucer to be unveiled by the Poet Laureate on October 25th.

Beginning with the south window of the south transept, the gift of Sir Frederick Wigan, the subject is the Tree of Jesse. Like most of the series, it is by C. E. Kempe. Close by is the Newcomen Window, to the memory of one of Southwark's greatest benefactresses, Elizabeth Newcomen, buried in the church, November 20th, 1675. The Newcomen Charity and educational endowments are more than ever valuable. This window, a beautiful one of three lights, was unveiled by the Duke of Connaught in 1898. Another three-light window—the easternmost in the south aisle—is to Shakespeare and his brother Edmund, presented by Sir Frederick Wigan "to the glory of God and in gratitude for His good gift to men in the genius of William Shakespeare, 1564–1616, whose greatest works were mostly written while he was connected with and resident near the Globe Theatre, once standing on the banks of this parish, and whose brother Edmund, an actor, was buried in this church." Figures of Shakespeare and of Spenser are prominent in this window.

The next is one of a series of single lancet lights. This is to Philip Massinger, "buried as a stranger in this parish," 1639. The subject, taken from Massinger's play of the

"Virgin Martyr," represents St. Dorothea. The window to John Fletcher, who is also buried in the church, near his brother dramatist, comes next in order. The central panel, taken from his "Knight of Malta," shows the consecration of a knight of the Order of St. John. Another dramatist's memorial follows, in that to Francis Beaumont, 1586-1616, the collaborator with Fletcher. A symbolical figure of Friendship, with the armorial shields of the two poets, fills the centre. Next in succession westwards is a window to Edward Alleyne, "a player," one of the chief exponents of the drama in the age of the great Elizabethans. Much more, however, than a wearer of sock and buskin was Alleyne, for he was the founder of Dulwich College, and as such has his place here, in the memorial placed by the governors and old scholars of that flourishing foundation. The principal feature of it is a representation of Alleyne reading the charter and constitution of his "Colledge of God's Guift," in the presence of Lord Chancellor Bacon, Lord Arundel, Inigo Jones, and others. Alleyne lived longer than many of his contemporaries, who were remarkable both for the brilliance and the short span of their lives. He died, sixty years of age, in 1626. St. Paulinus, Bishop of Rochester from 633 to 644, occupies the next place. We now come to the west end of the church, with a window to Saint Swithun, Bishop of Winchester, from 852 to 862, and founder of this Collegiate Church.

The central three-light window of the west front is the finest in the building, and is appropriately seen down the whole length of the long vista of the church. It was designed by Henry Holliday in the Burne-Jones manner, and represents the Six Days of Creation, in a gorgeous glow of colour that as the summer sun enters the western sky flares and dazzles like a bonfire. The north aisle is as yet almost wholly a range of plain windows, all of them, however, allotted, and it is only a question of time when they will be filled. Two, as we have already seen—the Bunyan and the Chaucer windows—are ready. Chaucer, of course, has his place here by reason of his famous pilgrims starting hence for Canterbury. Those yet to come are to Oliver Goldsmith, who once practised as a physician on Bankside, in the parish; to Dr. Johnson, who lived for some years with the Thrales at their brewery in Park Street, where, by the way, his chair is still preserved by Barclay and Perkins; to Baxter, who officiated for some years in a place of worship on the site of Shakespeare's Globe Theatre; to Henry Sacheverell, chaplain of St. Saviour's, and a favourite preacher of Queen Anne's; and to Cruden, author of the familiar "Concordance to the Bible," buried in the parish.

A large window to the memory of the Prince Consort is in the north transept, and in the lady chapel, a recent one among the crude attempts of sixty years ago that afflict this part of the church. This rather curiously commemorates Charles the First and Archbishop Laud. Charles, it is not generally known, was a benefactor to the poor of Southwark, while Laud was a friend of Bishop Lancelot Andrewes, of Winchester, who lies here. The portraits of both King and Archbishop are very finely rendered. The remaining new window to be mentioned is that over the altar, given by Sir Frederick Wigan, a beautiful rendering of the Crucifixion. Funds are accumulating towards the making of the windows that yet remain blank, and so in a few years' time, what will soon, no doubt, be the cathedral of a new London diocese will be fully furnished with a series, handing down the memory of great men who have been connected in some way with South London.

Machen Church, Newport, Mon., is being restored by Mr. C. B. Fowler, F.R.I.B.A., who has discovered on the west side of the chancel arch stone doorways leading to the rood loft. On sounding the wall on the south side of the chancel arch a niche, with a cusped head, was also found, filled in with boards and lath and plaster. The entrance to the rood loft is rather uncommon in this position. Generally it is constructed in the north wall of the nave. A similar niche on the north side of the chancel arch has been found.

Enquiries Answered.

The services of a large staff of experts, including all those engaged on "Specification," are at the disposal of readers who require information on architectural, constructional, or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Smoke Prevention.

CREDITION.—J. E. B. writes: "Can you advise me what method to adopt to prevent as far as possible a chimney discharging volumes of black smoke? The chimney is 45ft. high, the flue is 2ft. by 2ft. at the base, and is built for a 8 horse-power Cornish boiler. The smoke passes from the fire through the centre of the boiler, and returns under the boiler, thence to the chimney through a flue on each side of the boiler. The chimney is not strong enough to allow it to be built higher without taking down about 30ft. of it."

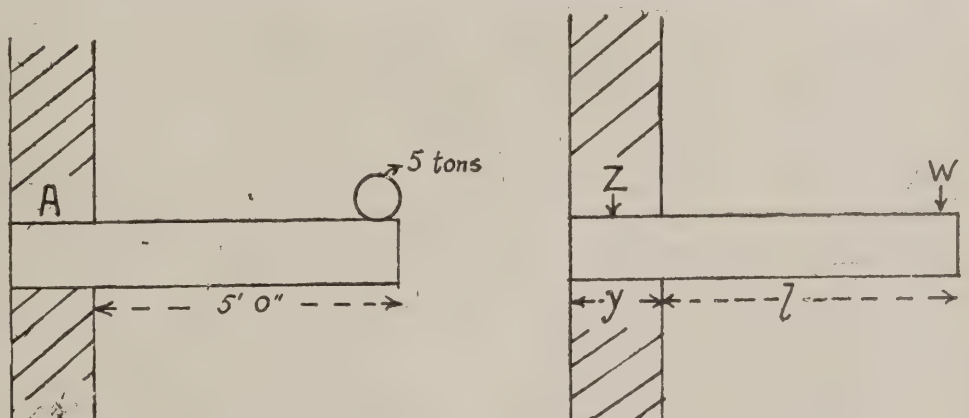
Increasing the height of the chimney will not improve matters, for the cause of the trouble lies in the fire-box of the boiler. If it is found impossible to fit a new fuel-feeding apparatus, a new boiler with such an apparatus will be necessary. In one of these the fuel is thrown on to a kind of sieve which is moved to and fro, dropping the fuel over the fire. Several such appliances for smoke consumption are on the market.

Counterbalance of Cantilever.

LLANELLY.—A. E. E. writes: "I would be greatly obliged for detail information on the following:—

$$A = \frac{2 \times 5 \times 5}{3} = 16\tfrac{2}{3} \text{ Tons.}$$

How does Mr. Middleton make the above equal to his alternative method? $Z \times \frac{y}{2} = W \times l$."



COUNTERBALANCE OF CANTILEVER.

They are not equal. The load A being evenly distributed acts at the centre of the wall, and therefore $A = \frac{2 \times 5 \times 5}{1\frac{1}{2}}$.

G. A. T. M.

Materials for Brass Rubbings.

WARWICK.—C. M. C. A. writes: "Are there any special materials supplied for taking brass rubbings, and if so, from whom may they be obtained? Otherwise, I suppose ordinary full-size detail paper and heelball will answer."

The best heelball is made by Mr. Francis Ullathorne, 7 & 9 Gate Street, Lincoln's Inn Fields, price 6d. and 1s. a piece. A composition known as a brass-rubber, giving an exact facsimile, is also used, but I am unable to say whence it may be obtained. Black lead and oil, or black lead (the ordinary stove lead) and paper—the first has the objection of being a very dirty process. As to paper, ordinary white, 20½in., is good enough, but the quality should be thin.

ANDREW OLIVER.

R.I.B.A. Final Examination.

LLANELLY.—A. E. E. writes: "Could I enter for final examination of the R.I.B.A. if I were a member of the Society of Architects by examination? I have heard that the latter does away with the preliminary and intermediate examinations of the former society."

Any architect in practice for himself, and over 25 years of age, may be admitted to the final R.I.B.A. examinations without first passing the intermediate or preliminary, but the Society of Architects' examinations are not acknowledged.

G. A. T. M.

The Royal Academy Schools.

LONDON, N.E.—STUDENT writes: "A short time ago you published particulars of the work for admission as a student of the Royal Academy Schools. One of the drawings required to be done at the Royal Academy by the probationer is to be 'a geometric elevation (with or without a plan) of some building, or some part of a building, in London, to be done from the probationer's own notes, and measurements taken from the building itself.' Does this mean that the probationer has to select his own subject in London and measure it before the time of the examination, or that the examiners will select the subject to be measured? If the former should be the case, could you give me any idea of the kind of subject they require?"

The probationer has to select his own subject in London, but he need not necessarily measure it before the examination; he may do so two or three days after being admitted. Any Renaissance doorway would do as a subject—say, that of St. Martin's Church. It would be well for querist if he went down to the Academy School and saw Mr. Pheané Spiers, the master.

A Question of Frontage.

LONDON, N.—F. B. writes: "X has a house, built three years ago, on a road which may be called A. Z, the opposite owner, is now building a house with its back to X's front, having acquired all the land between the road A and another road, B, running parallel 200ft. away. Should the local authority approve such a plan under the Local Government Board's model by-laws; and, if so, under which by-law? Or is X's remedy (if any) a civil one, his value being depreciated by the unexpected and objectionable outlook? There is only 10ft. set back from road A: the by-laws require 20ft. at the *back*, but Z insists that his *front* faces the road A, although his W.C.'s and offices face this road and his entrance and bays the road B."

It does not appear that the local authority could refuse to sanction the plan merely because the front elevation is unsightly, and Z is within his rights in calling that his front which is built to the general frontage line in road A. It is doubtful if querist has any remedy.

G. H. B.

Law Lettering.

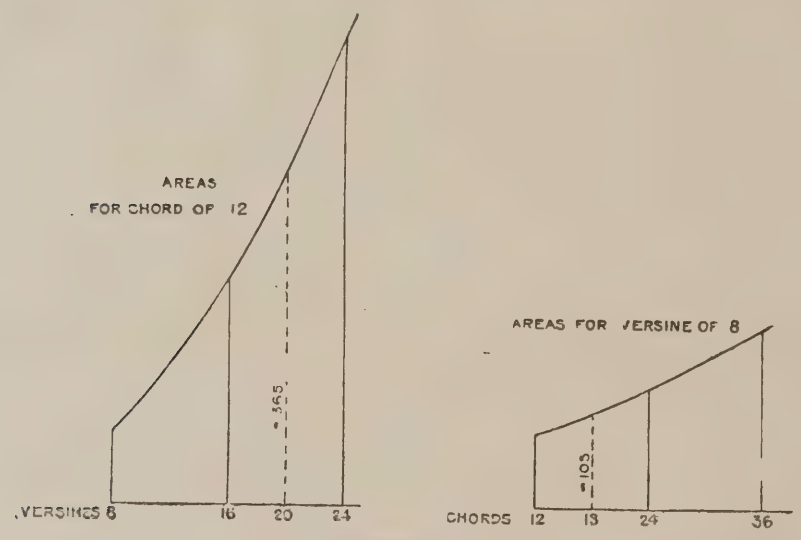
BOLTON.—ENGROSSER writes: "Kindly recommend some books from which to study and practise Old English or other lettering

required for law purposes. Which are the better to use, pens or quills?"

There are many copy-books to be obtained showing the various styles of lettering—Egyptian, Roman, Old English, French, &c. Some may be purchased for sixpence. Then there is Mr. Lewis Day's book, "Alphabets, Old and New" (B. T. Batsford, 94 High Holborn, W.C., price 3s. 6d. nett), which should be of great use. Many law-writers use quills—it is a matter of individual preference—but good work can be done with a broad steel pen. Before parchment can be written upon, it must be pounced with cuttlefish powder, which can be bought at any law stationer's. Ordinary engrossing is done with a special nib having a long, fairly wide point.

Area of Segment of Circle.

STONEHOUSE, DEVON. — ASSISTANT SURVEYOR writes: "Is it possible to find a formula for a curve giving the areas of circular segments of constant chord, but varying versines, plotted on a base denoting versines, the ordinates giving the areas? Of course the curve may be obtained roughly by calculating the area for each separate versine, but this would be very tedious and laborious."



AREA OF SEGMENT OF CIRCLE.

The simplest formula for area of segment of circle is the following:—

$$A = \frac{4}{3}v \sqrt{\left(\frac{5}{8}v\right)^2 + \left(\frac{1}{2}s\right)^2}$$

where A = area, v = versine or rise, s = span or chord. By making a few calculations, covering the range required, the areas for constant chord or constant versine can be plotted as ordinates to a curve, and any intermediate area can then be scaled from the curve. Suppose, for instance, the chords taken be 12, 24, and 36, and the versines be 8, 16, and 24, the areas will be:—

Versines.	Chords.		
	12	24	36
8	83·31	138·67	199·25
16	248·75	333·23	439·25
24	516·15	614·72	749·76

and any row either vertical or horizontal can be plotted (see figures) to obtain intermediate values. A single curve cannot be made to do duty with two variable quantities, as the case involves the use of a curved surface instead of simple curve, and there is no means of plotting a curved surface. HENRY ADAMS.

Examinations in Building Construction.

CASTLE DOUGLAS. — OUT OF THE WAY writes: "I should like to pass some examinations in building construction. I am 934 miles from London, and it is improbable I will be any nearer for some time. May I think of entering for them under these circumstances? I am eighteen years of age."

It would be best to write to the secretary of the Science and Art Department, South Kensington, S.W., asking for particulars of the examinations in building construction, the location of the nearest examination centre to Castle Douglas, and all further particulars as to date of examination and fee charged for entry. The examinations are usually held on the first Saturday in May of each year. Anyone is eligible to sit. G. A. T. M.

Plaster Casts of Vases.

NOTTINGHAM. — DECORATOR writes: "How are fibrous plaster casts of vases and flower-boxes made? Where can I purchase models?"

Vases and flower-boxes composed of fibrous plaster are unsuitable for their proper use, i.e., rearing or keeping plants or flowers, in the open air, and are only used for theatrical purposes or house decorations, similar to artificial plants, flowers, &c. Vases and flower-boxes to resist the effects of weather, wet and soil are generally composed of artificial stone. Terra-cotta, also cast-iron, is sometimes used in the manufacture of vases, and similar wares. Plaster piece moulds are used for casting fibrous plaster casts of vases and flower-boxes, also for casting artificial or Portland cement vases, and for pressing terra-cotta casts. The moulds are seasoned and oiled, then gauged plaster is brushed over the surface, and then canvas is laid on and brushed over with plaster until the whole surface is covered. This operation of brushing plaster and canvas is repeated, and when the plaster is set the mould is taken off, and the seams on the cast cleaned off, thus completing the cast. Flower-boxes are made in a similar way. Models of vases and flower-boxes can be purchased from W. Millar, No. 1 and 3 Arch, Brighton Terrace, Battersea Park Station, London. W. M.

A Municipal Engineering Text-book.

BRIGHOUSE.—J. T. L. writes: "Can you te l me the best book or work to get for municipal training for a youth who has served a few years in an architect's office?"

"Municipal and Sanitary Engineer's Handbook," by H. Percy Boulnois, M.I.C.E, 15s.; published by E. and T. N. Spon, 125 Strand, W.C.

Rules for Setting-out Stairs.

LONDON, S.W.—A. P. writes: "Do the rules given in 'Rivington' and similar works for width of treads and heights of risers of stairs include the projection of nosing?"

Although the nose forms part of the tread, it should be ignored when setting out the staircase, and only the going from riser face to riser face set up on the drawing, the nosing being added afterwards. The proportion of treads to risers should be:—

Width of tread.	Height of riser.
7in.	8in.
8in.	7½in. to 8in.
9in.	7in. to 7½in.
10in.	6½in. to 7in.
11in.	6in. to 6½in.
12in.	5½in. to 6in.
13in.	5in. to 5½in.
14in.	4½in. to 5in.
15in.	4in. to 4½in.

J. W.

Welsh National Eisteddfod: Competitions.

KETTERING.—C. H. writes: "I should be glad to have particulars of the Welsh National Eisteddfod subjects for design, referred to in a recent issue. Where can I obtain them?"

The Welsh Eisteddfod for 1901 is to be held at Merthyr Tydfil, and a local committee has been, or will be, formed to arrange all the business in connection with the subjects of competitions, &c. The subjects are generally announced in a pamphlet at the close of the year preceding the Eisteddfod, and are obtained from the secretary, who will be able to give any further information. I regret I have been unable to obtain the name of the Merthyr Tydfil secretary. The designs, &c., for the various competitions are usually sent in before the 12th or 13th of August, and the Eisteddfod is held in September each year, when the awards are made. R. W. O.

Section of Column or Stanchion.

CHORLEY.—A. B. C. writes: "If you were given the weight to be carried by a column or stanchion, the length, and the safe weight per square inch, how would you find what section to use?"

If the safe load per square inch be given it is a simple matter to find by trial what section to adopt. For example, a hollow cast-iron column 12in. diameter to carry 60 tons, where the safe load is 2 tons per sq. in. $\frac{60}{2} = 30$ sq. ins. required. By reference to table, 12in. diameter = 113 sq. in. area, $113 - 30 = 83$ sq. in. $= 10\frac{1}{4}$ inside diameter. $12 - 10\frac{1}{4} = 1\frac{3}{4}$, $1\frac{3}{4} \div 2 = \frac{7}{8}$ thickness of metal. If the section is to be solid of + form, a trial section must be made to see if the area is sufficient and altered accordingly. It is, however, very unusual for the safe stress to be given, as that depends upon the ratio of diameter to length. For full method of calculating and designing see "The Practical Designing of Structural Ironwork" (Spon 8s. 6d.)

HENRY ADAMS.

Colouring Portland Cement Red.

LONDON, N.W.—A. G. S. writes: "What is used for colouring Portland cement red without affecting the stability of material?"

Portland cement can be coloured red by mixing it with a red oxide. The quantity of oxide to be added to the cement depends upon the strength of the oxide, as some are much stronger than others. Five per cent. of a strong oxide will impart a close resemblance of the desired colour to the work, but a weak oxide will require from 10 to 15 per cent., and even 20 per cent., to obtain the same colour. Some of the red oxides range in colour from scarlet or Turkey red, gradually deepening to chocolate. The oxide should be intimately mixed with the cement in a dry state before it is gauged. For cast work the coloured cement should only be used for the brushing coat and then backed up with the natural coloured cement and aggregate. For plastered work the coloured cement should only be used for the fining coat. The use of a good oxide and proper manipulation will not deteriorate in colour or effect the stability of the work. Another method for colouring Portland cement work, with or without sand, is effected by brushing over the surface, while it is moist or semi-dry, with a solution of alum mixed with oxide.

W. MILLAR.

The Parish Church of Weston Turville, Buckinghamshire, which was about 700 years old, has just undergone extensive restoration. In 1861, when the church was reseated, many coloured pieces of glass were discovered under the floor, and they were inserted in the windows nearest to which they were found, proving that this church was one of the many that suffered desecration during the days of the Civil War. It is hoped to refill the windows with stained glass in the near future. A list of the patrons of the living and the rectors from the year 1264 to the present time is exhibited in the nave, and shields bearing the coats-of-arms of various patrons and persons hitherto connected with the church have just been places in the chancel roof. The church now possessed a magnificent organ.

LONDON COUNTY COUNCIL.

At last week's meeting of the London County Council, the General Purposes Committee reported that the solicitor had informed them that the contract for the purchase at the price of £20,000 of the fee simple of No. 17 Fleet Street, subject to an existing lease and an arrangement for a renewal of it, had been exchanged, and that completion was to take place on or before December 24th next. On July 31st they reported upon a claim made by the vendors for £1,349 for expenses and liabilities paid or incurred in pulling down the back and side walls and rebuilding a portion of the party wall, and in respect of architect's and surveyor's fees and charges for plans of the rebuilding. That claim had now been waived except as regards the sum of £165 16s., which they asked might be refunded, and they supported their request by the statement that the amount was included in the estimate of the Council's architect for the cost of rebuilding. When the matter came before the Council on March 27th the sum of £7,000 for "rebuilding the back and restoring the front of the building" was included in the total estimate of £27,300 in connection with the cost of acquisition and restoration of the premises, and, as indicated in the report on July 31st, the sum of £7,000 covered a "moiety (£165 16s.) of the party wall at back." It was a fact, therefore, that the sum in question, although not specifically mentioned in the report in March last, was included in the original estimate, and should in the circumstances be paid to the vendor as part of the £7,000 authorised for the rebuilding. As the solicitor had asked for definite directions, they had given instructions to him for the completion of the purchase to be at once proceeded with, and for the request as regards the payment of the sum of £165 16s. to be acceded to. They recommended that the course taken should be approved. This was agreed to.

Colonel Rotton observed that it was ridiculous nonsense to pay £27,000 for sentiment.

The recommendations of the Improvements Committee with reference to the exhibition at the gallery of the Royal Society of Painters in Water Colours, at 5A Pall Mall East, of the suggested designs for the Holborn-Strand elevations (see page 222 of last week's issue) were agreed to. The Committee was authorised to spend a sum not exceeding £52 10s. in obtaining expert advice upon the designs in question.

The same Committee also reported that the Council upon their recommendation agreed on July 4th and October 10th, 1899, to contribute one-half of the nett cost of the widening of the portion of Mansell Street within the City boundary, and of the southern end of Middlesex Street, proposed to be undertaken by the Corporation from time to time as opportunity occurred. The estimated nett cost of this improvement of the northern approach to the Tower Bridge was £105,500. The Corporation had now submitted for the Council's approval an amended plan showing an improved line of widening in Middlesex Street. They approved the amended plan, and recommended "that, notwithstanding any previous resolution of the Council, the amended plan submitted by the City Corporation, showing a modified line of widening for Middlesex Street at Nos. 1 to 7 (odd numbers), and at the Essex public-house, be approved." The report was passed.

The Improvements Committee also submitted estimates of the gross and nett cost of ten proposed improvements (not including the Westminster improvement, the nett cost of which is estimated at £586,000), as follows:—Mare Street, Hackney, £660,750 gross and £576,100 nett cost, after deducting recoupment by sale of surplus land; Goswell Road, £227,800 gross and £209,500 nett; St. John Street, Clerkenwell, £92,400 gross and £79,400 nett; Blackstock Road, Islington, £5,200 gross and nett; Archway Road, Islington, £6,000 gross and nett; Kentish Town Road, £10,450 gross and nett; Nine Elms Lane, £171,300 gross and £160,300 nett; Battersea Rise, £46,900 gross and £43,900 nett; Blackheath Road, Blackheath Hill, and New Road, £41,200 gross and £39,700 nett; High Street and Gardener's Lane, Putney, £45,030 gross and £37,430 nett—total, £1,307,030 gross and £1,167,980 nett.

The Committee asked the Council to approve the gross amounts, because they might have to be expended before any recoupment was obtained.

The report was adjourned in order that the financial aspect of the estimates might be considered by the Finance Committee.

Engineering Notes.

The London County Council Tramways show a profit of £54,847 for the year ending March 31st last.

New Dock at Llanelly.—In order to complete the new dock at Llanelly the sum of £144,000 is required.

Mr. W. P. Adams, M.I.E.E., of 35 Queen Victoria Street, E.C., has been appointed consulting electrical engineer to the Borough of Heywood.

Proposed Tramway in Tottenham Court Road.—The Vestry of St. Marylebone has decided to refuse its sanction to the proposal of the London County Council to lay a tramway along Tottenham Court Road.

Proposed Electric Tramways at Oldham.—A Local Government Board enquiry was held last week into the application of the Oldham Corporation for power to borrow £280,000 for electric tramways in the borough.

New Dock for Swansea.—The Swansea Harbour Trust executive have decided on a site eastward of Lambert's works for the new dock. The site will afford water space of 54 acres, and the project, it is estimated, will involve the outlay of a million and a half sterling.

Heating of the County Hall, Wakefield.—Mr. Rivers, heating engineer, having inspected the County Hall, Wakefield, and given it as his opinion that the best course would be to thoroughly revise the heating system, rather than to attempt to patch up the present defects, the tender of Messrs. Ashwell and Nesbitt for carrying out the improvements at a cost of £1,245 was accepted at the last meeting of the West Riding County Council.

Transmission of Electricity.—The well-known Niagara Falls installation for the generation of electricity is, as regards distance of transmission, eclipsed by a company which supplies Los Angeles (California) with electricity generated at a distance of 83 miles away. Even this, however, is to be rendered insignificant by the plant now being built which will convey to San Francisco electricity which has been generated 145 miles away. This, it need hardly be said, will be the greatest feat hitherto accomplished in electrical transmission: 60,000 volts will be thus supplied generating 14,000 horse-power, or enough to run the street railway system of San Francisco with a good surplus for factories.

Proposed Tramways for Leigh.—The following recommendations of the Tramway Committee have been approved by the Leigh Town Council:—That the town clerk, borough surveyor, and electrical engineer be instructed to report upon the advisability of the corporation (1) constructing and working tramways; (2) constructing tramways and letting them on lease; (3) permitting a company to construct and work tramways within the borough; that the town clerk be instructed to request the South Lancashire Tramways Company, in pursuance of the South Lancashire Tramways Act, 1900, to widen St. Helens Road and King Street, the east and west sides of the north and south approaches to Leigh Bridge, and Leigh Road.

A new Rival of the Arc Light.—At the junction of Wellington Street with the Strand six new street lamps have been erected by Messrs. W. Sugg & Co. for the Strand Board of Works. By them Messrs. Sugg claim to be able to supply a light superior to an electric arc lamp at half the cost. The advantages claimed for the new burner are that it gets about ten times the light out of the same number of cubic feet of gas. This is obtained by sending the gas through the burners by means of a hydraulic ram, which increases the ordinary pressure in the gas main about four and a half times. The gas passes through a small burner of steatine, an incorrodible stone, and is then impinged by diagonally placed outlets upon a Sunlight burner. The velocity with which the gas passes through the burner carries with it a volume of air, and the two mixed burn with an intense white light.

Electric Trams for High Wycombe.—An important scheme for the establishment of electric tramways was considered on Tuesday in last week by the Wycombe Town Council. The scheme provides for the laying of lines from the eastern boundary of the borough to the western, a distance of four miles. The Council approved the scheme, and it is probable that it will soon be carried out.

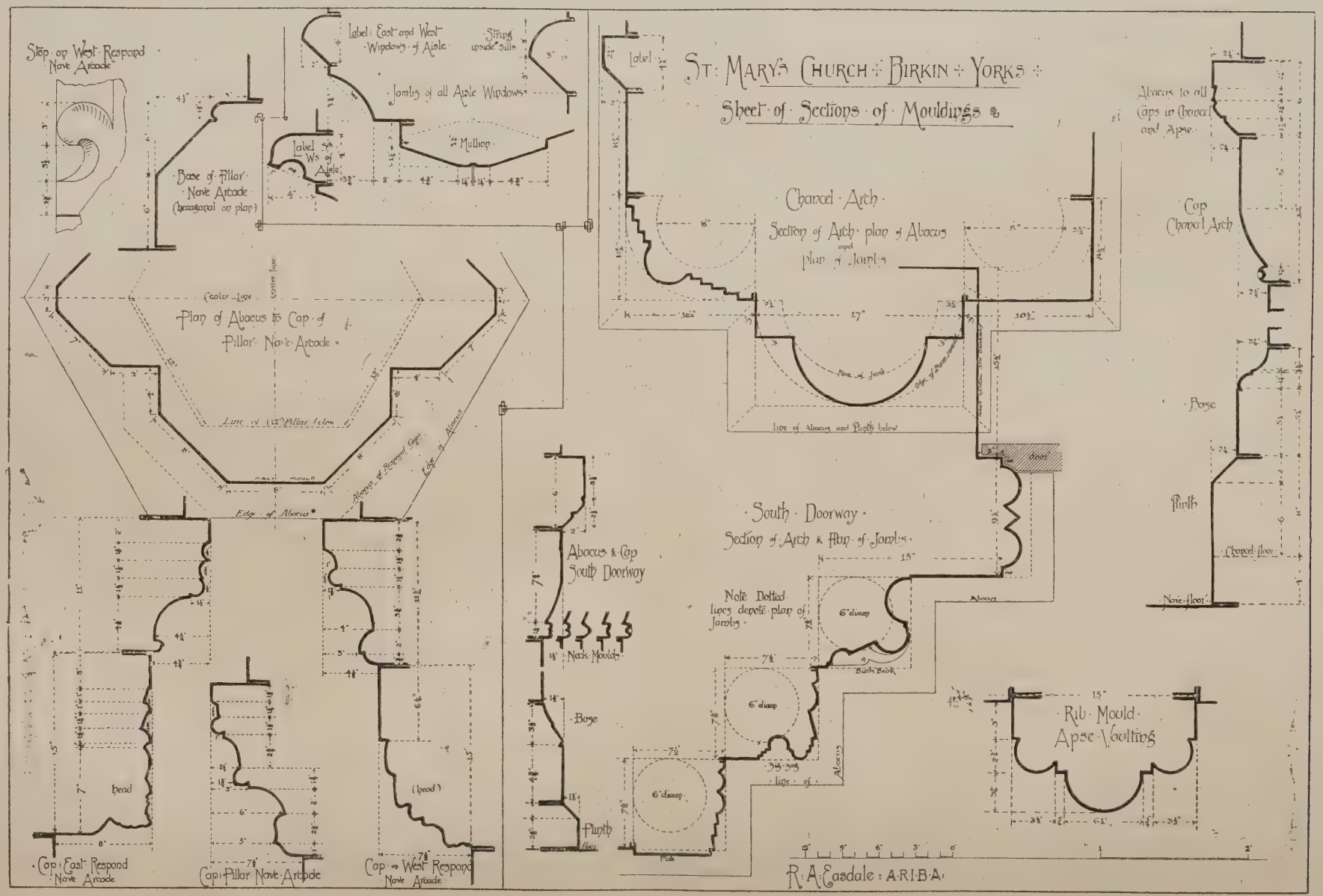
Hackney's New Electricity Works. — On Thursday last Mr. Alderman Dickinson, L.C.C., laid the foundation stone of the new electricity works in Millfields Road, Hackney Like its neighbour, Shoreditch, Hackney is associating with its electric light and power works a refuse destructor. The buildings are to be erected on a site of about five acres, with a frontage on the Lea River Canal. The engine-house alone will be 130ft. by 50ft. The chimney shaft will be carried up to a height of 200ft., and, according to Mr. Robert Hammond, the engineer, has been specially designed as an ornament to the neighbourhood. The amount of horse-power which it is proposed to erect plant for will be about 3,000; and this, with accumulators, is expected to supply sufficient current for about 50,000 glow lamps of the usual 8 candle-power type. Room, however, is to be left for increasing the horse-power to 6,000. Arrangements have been made for the erection of 320 arc lamps, and cables of a total length of 100 miles are being laid down in the streets and roads. The refuse destructor will consist of twelve furnace cells, capable of burning 150 tons of refuse a day; and as far as is possible this will be automatically handled—as at Shoreditch.

Masters and Men.

The Bricklayers' Strike at Newcastle-on-Tyne and Gateshead, which has existed since May last, now threatens to eventuate in a general lock-out in the building trade of the North of England. A large and influential meeting of the Master Builders' Federation was held last week at Newcastle to consider the position, and it was resolved to endorse the action of the Federation in arranging for a lock-out from November 3 in the Northern Counties if the dispute be not settled by that date. If the employers' resolution be carried out it will affect the joiners, masons, slaters, plumbers and painters, in addition to the bricklayers. The demand of the bricklayers is for an advance of 1d. per hour, from 10d. to 11d.; and the employers have offered to refer the matter to arbitration, or to guarantee the present rate of wages for the next two years.

Trade in September.—The Board of Trade report that in the engineering and metal trades employment during September has remained fairly good. Employment in the building trades has remained good in most branches; the percentage of unemployed Union members among carpenters and plumbers at the end of September was 2·1, compared with 1·8 in July and August. In the furnishing trades employment has fallen off. Twenty-nine fresh disputes occurred in September, 1900, involving 6,032 workpeople. Of these disputes five occurred in the building trades, six in the mining and quarrying industries, and six in the metal, engineering and shipbuilding trades. Changes in the rates of wages of 164,199 workpeople were reported during September, making a nett increase of about 2s. 1½d. per head.

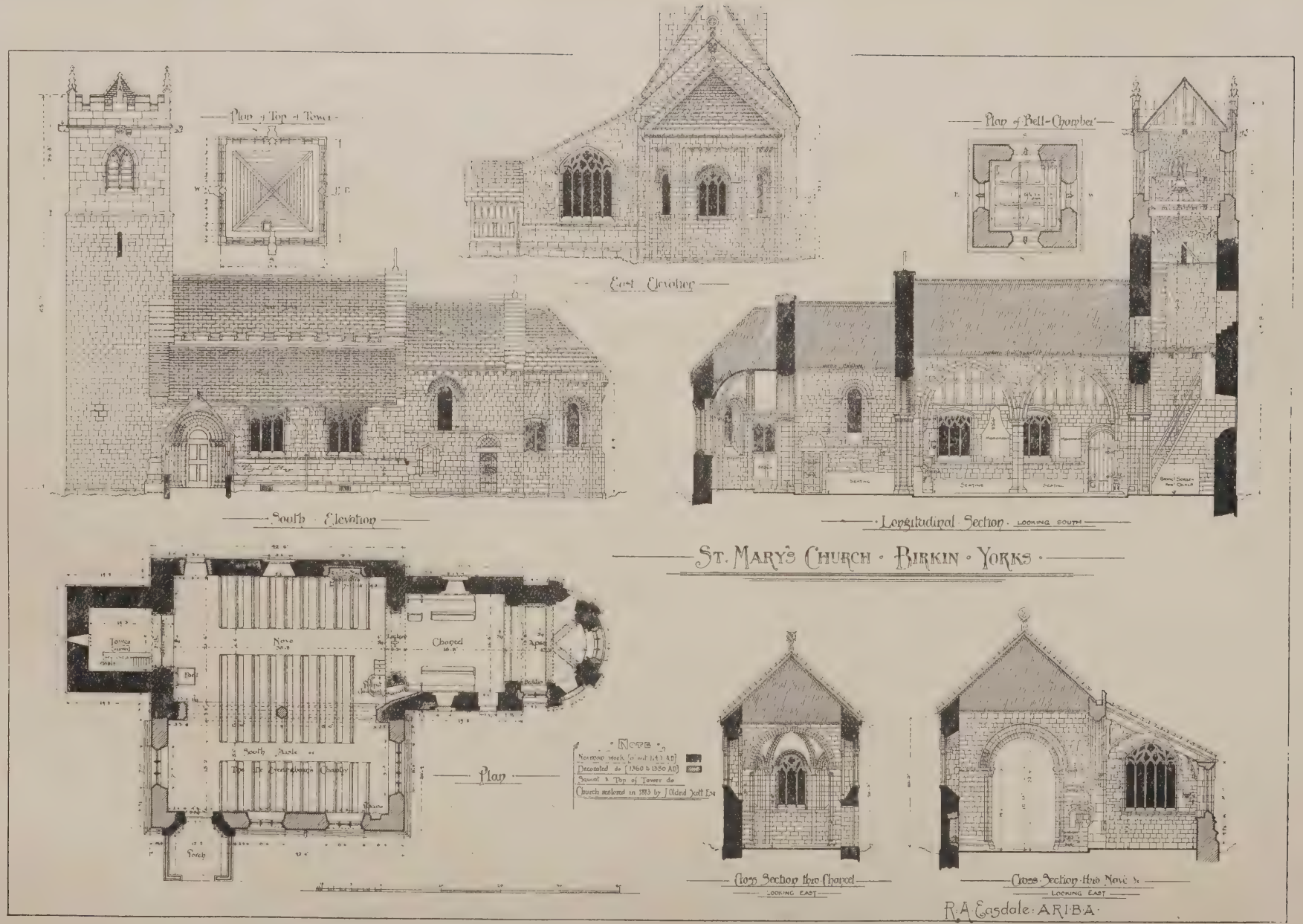
The new Church of St. Barnabas, Grimsby, was dedicated recently. The new church has cost £2,500, and has seating accommodation for 420. It is in style a simple version of the Romanesque. The bell gable at the west end is 75ft. above the roadway. The inside measurements are 98ft. long by 43ft. wide and 32ft. high.



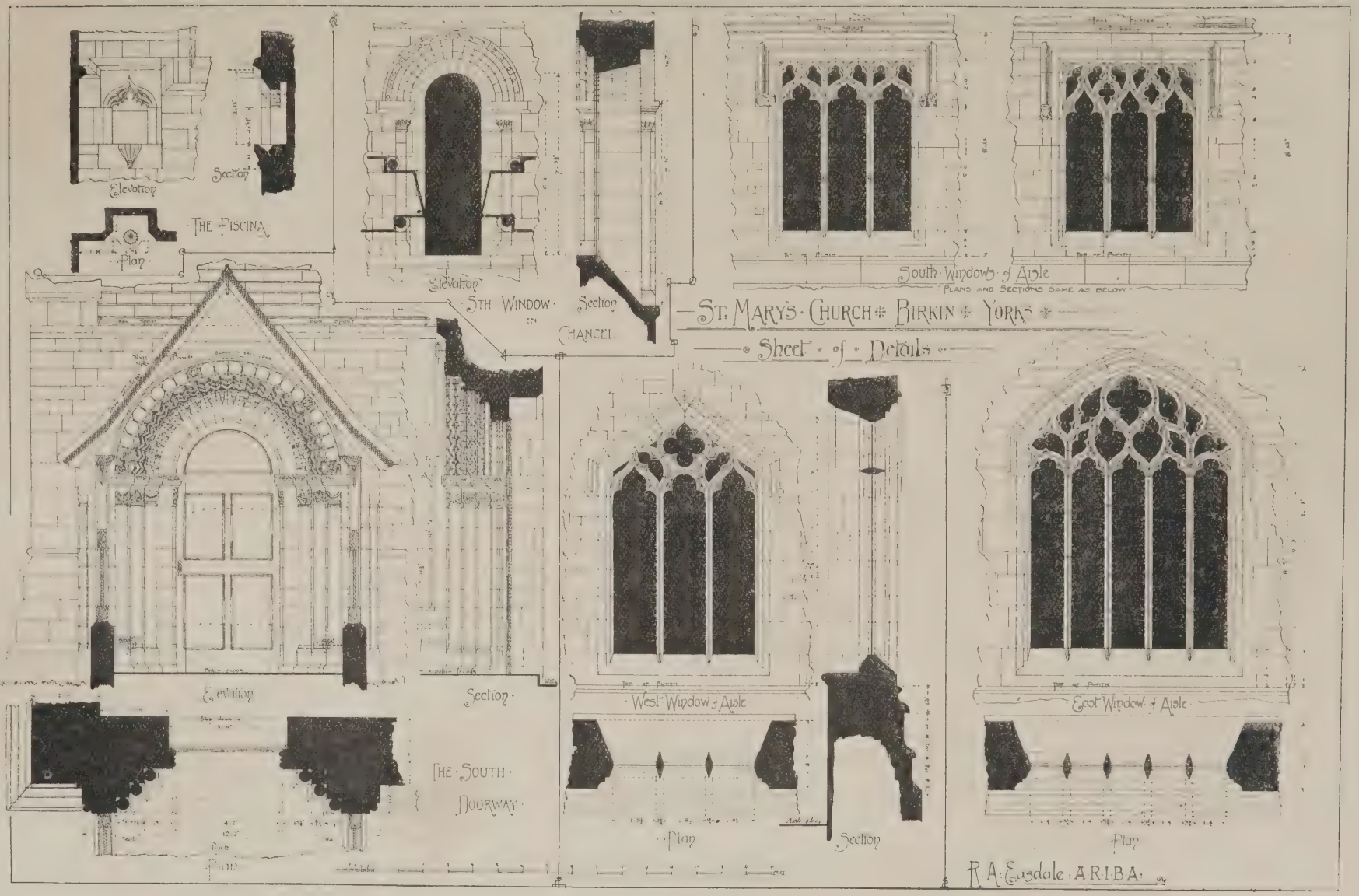
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Supplement to
THE BUILDERS' JOURNAL AND ARCHITECTURAL RECORD,
Wednesday, October 24th, 1900.

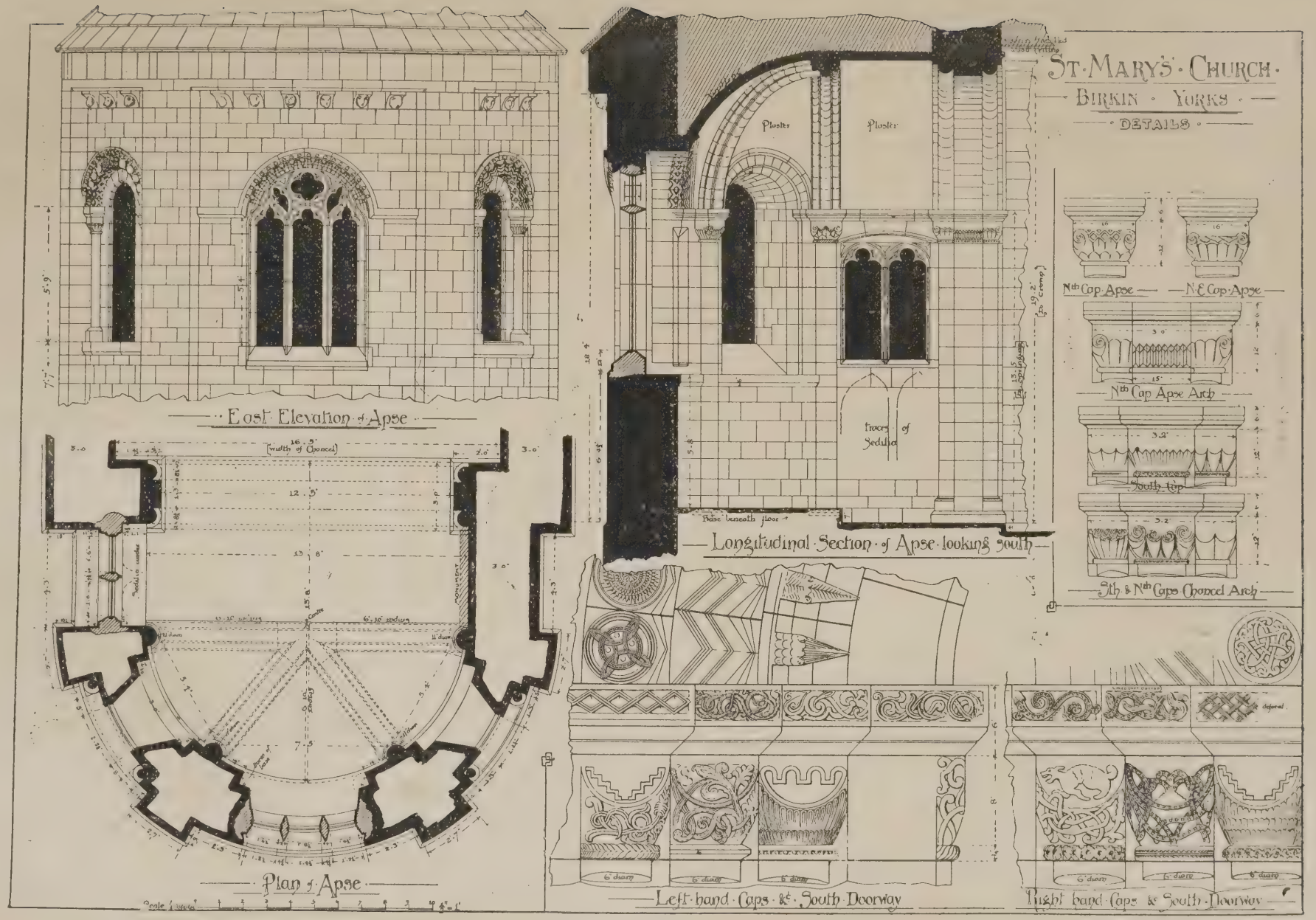


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Correspondence.

Houses of Strange Design.

To the Editor of THE BUILDERS' JOURNAL.

EXETER.

SIR,—Apropos the house planned like the ace of clubs, it may interest "J. W." to have some particulars of the building erected by Sir Thomas Tresham, about 300 years ago, near Rushton, in Northamptonshire. It may be thus described:—The house is all threes, each of its three sides being exactly 33ft. 4in.—that is 33⅓ft.—in length. There are three storeys. Each has three windows on each of the three sides, and each of the windows in two of the three storeys is in the shape of the trefoil—the three-leaved shamrock. The panes of glass are all triangles, or three-sided. In each of the other windows there are twelve panes of glass in three fours. There are three gables on each side rising from the eaves; and from the centre, where the roofs meet, rises a three-sided pyramid, terminating in a large trefoil. The smoke escapes from this chimney by three round holes on each of the three sides. On the top of each gable is a three-sided pyramid covered with a trefoil. The building is almost covered with inscriptions and carving, three Latin inscriptions, one on each of the three sides, having 33 letters in each. Three angles on each side bear shields. Over the door is a Latin inscription of three words, meaning, "There are three that bear record." Inside the house each corner is cut off from each of the three main rooms, so that on each floor there are three three-sided apartments. I have visited the building in question more than once, and consider it, from every point of view, extremely ugly.—Yours truly, HARRY HEMS.

Builders' Notes.

The Late Mr. Augustus Bird, of Eynham Lodge, Wood Lane, Shepherd's Bush, builder and brickmaker, who died on April 13, left property valued at £177,909 8s. 2d., of which the nett personalty is £68,999 9s. 11d.

The Death of Mr. James Barrow, builder, of Beech Road, Cale Green, Stockport, occurred last week. The deceased gentleman, who was 38 years of age, was very well known in the district. He was stepson of Mr. Henry Wild, builder, of Hillgate, with whom he lived, and had the management of his stepfather's business.

The Aberdeen granite firms have for many years imported upwards of 10,000 tons of foreign granite, mainly from Norway and Sweden. To supplement the local supply granite firms are now directing attention to County Donegal, which has literally miles upon miles of granite formation that only requires to be developed. The quality will compare with any imported, and the supply is practically unlimited. It is to be hoped as a result of the visit of the prospectors that the quarrying industry of the North of Ireland will be opened up on an extensive scale.

The Sheffield Building Trade continues to slacken, and the boom which prevailed up to a couple of months ago has now quite disappeared. Although there has been no such utter collapse there as is reported from other large centres of population, the failures of speculative builders have occasioned heavy financial losses to firms who supply timber, stone, slates, bricks, hardware, and other requisites of the trade. The check to building operations has not been brought about because the demand for houses is satisfied, but solely because, on account of the dearness of all kinds of materials, houses do not now provide a profitable investment for capital. Cottage houses are still scarce. Instead of keeping lists of vacant dwellings the agents have on hand lists of applicants who are waiting patiently for a vacancy. The decline in trade has appreciably relieved the scarcity of labour which had become so acute as to cause serious inconvenience and loss. Never before have the men engaged in building operations earned so much money as during the past spring and summer.

Fire Tests with Partitions.—We have received from the British Fire Prevention Committee No. 52 of their publications, giving the result of a test with a partition formed with "Mack" patent slabs, and erected by Messrs. J. A. King and Co., of London. The slabs used in the partition were 2⅜in. thick, and were made of plaster, with cocoa-nut fibre, cork dust and reeds embedded in it: the partition was plastered, and was 10ft. by 7ft. 5in. Three weeks (spring) were allowed for construction and drying. The following is a summary of the effect:—The setting coat on the fire side of the partition fell whilst heat was being applied. Part of the rendering on the fire side fell when water was applied. The fire did not pass through the partition. On the passage side no effects were apparent, with the exception of two blisters, and some hair cracks following the courses of the joints. The temperature of the outside face of the partition at no time exceeded 125° F. The plastering on the inner face of the partition was cracked and disintegrated. Upon examination after the test the face of the slabs next to the fire were found to be disintegrated for a depth of about ¾in., but the remainder was unaffected.

A Builder and the Halifax Building By-Laws. At a monthly meeting of the Halifax Rural District Council it was reported that Mr. G. Frankland, of Sowerby Bridge, had pulled down two houses at Norland to the level of the road and rebuilt one house on the site without having submitted proper plans. In doing this, Mr. Frankland had committed an offence and was liable to have his house pulled down or to a penalty. The Surveyor (Mr. F. Gordon) said that he had informed Mr. Frankland that what he suggested would be contrary to the by-laws. Councillor Whittaker remarked that there were complaints that no improvement took place at Norland, but the moment a man made an improvement the Council objected on the ground of some formality or other. The only fault to be found with this building was that there was not sufficient air space behind it, owing to the proximity of an old building at the rear of it. It was a paltry piece of business, and the Council ought to be ashamed of themselves that they did not accept this man's improvement. He had submitted two plans. The Chairman said that proper plans, accompanied by particulars, were necessary, and those had not been sent in in this case. Mr. Gordon said that the new building was undoubtedly an improvement on the old one. Councillor Sykes remarked that they ought to adhere to the by-laws; for if they let one man escape, others might take advantage. Councillor Mitchell: "If the building is an improvement, I should say pass it over. I propose that." Councillor Whittaker seconded the motion, which was carried.

A Suggestion for Builders.—It is indeed remarkable to note that in these days of progress so little is done in certain branches of the building trade to supply material on the job ready for use. It is true that, in the large blocks of buildings which are now and again erected in the larger cities, machinery is put down for making mortar for elevating the various portions of the building to their position; but in the erection of smaller houses practically everything is done on the job, excepting the joinery work, which is usually bought ready-made, and sometimes the carving of the stonework, should there be any. In Philadelphia, some years ago, a company was formed to supply mortar, and it was very successful. The mortar was made of the best materials in large quantities, and with most effective mixing machinery, and was delivered in specially-constructed carts to any parts of the city, the cost being not a little less than that which the builder would have to pay if he mixed the mortar himself. Now, says "Oils, Colours, and Drysalteries," why could not the same thing be done on a modified scale in connection with paint? "We do not now advocate the use of so-called ready-mixed paints, but by way of example we will suppose that a builder is erecting 50 houses of the suburban-villa class in lots of 10. He knows exactly the paint he will want for priming and the subsequent colour-coats. Instead of mixing them himself, at considerable expense and labour, why should he not go to a paint manufacturer and get exactly the same thing delivered to him already mixed just in the quantities he wants? He would certainly save money, and he would assuredly get as good a paint, or better. He could ask for an estimate on a paint made exactly as he would make it, and the profit would come to the manufacturer, and the lessening of price to him because of the facility with which the large quantity of paint could be mixed with machinery, contrasted with the mixing by hand. The idea is certainly well worth the careful consideration of up-to-date builders."

Mr. W. A. Shepheard, builder, of 16 Meadow Road, South Lambeth, died last week.

Strange Building Trade Failures at Bradford. At the Bradford County Court last week, before Mr. Registrar Lee, Arthur Ellis, of Hemsworth, and John Thomas Ellis, of Hull, recently trading under the style of Ellis Bros., builders, of Bradford, came up for public examination. The Official Receiver reported that the debtors began business as builders in Bradford without capital in April, 1899. Mr. F. U. Laycock, solicitor, of Bradford, made advances to them, and they commenced to build three separate lots of property successively, and did not complete any of these lots owing to Mr. Laycock's refusal to continue assistance, the work being then given by the solicitor to other builders. A private meeting of the creditors was held four months ago, and certain offers were made and not accepted. Mr. Arthur Ellis, in answer to questions put, said a Mr. Beale came to his brother and himself on behalf of Mr. Laycock, and said that if these two could borrow money from somebody else to carry buildings to a certain height Mr. Laycock and he would help them with further money They began on fifteen houses in Norman Lane, Eccleshill, on Mr. Laycock's land. They borrowed £10 from someone else to start building, and afterwards got certain moneys from that gentleman, and went on for nearly a year. Then they were told to start a job in Bowling in order to "hold Norman Lane up." He did not know how the holding-up of Norman Lane was to be done by getting into debt somewhere else, but those were their instructions, and further money was refused them unless they did so. A third lot of buildings was afterwards started in the same way, and in connection with the three they got goods of various kinds from different unsecured creditors to the amount of £800, scarcely any of these goods being paid for. Mr. Laycock had now taken possession of the whole of these properties. The reason that Mr. Laycock gave to him for taking the work from him was that he wished to keep the creditors off it. The result was that there was now nothing whatever to pay their creditors with. When the meeting of their creditors was held, three or four months since, Mr. Laycock offered to find for the creditors 4s. in the pound on the debts of the Norman Lane property if he and his brother would find 1s. Mr. Laycock also offered to find 7s. 6d. in the pound for their creditors in relation to the Bowling property. These offers were refused. From the commencement Mr. Laycock had financed them, and had financed others in a similar way who were all bankrupt like himself. He had been pressed on account of Mr. Laycock's cheques being dishonoured. He had kept promising him payments and not making them. When Mr. Laycock made his offer to his creditors it was not accepted at first, but before he had withdrawn the offer it was accepted by the only one who had stood out. He was now working at Hemsworth for 10d. an hour. Mr. J. T. Ellis stated that he agreed with his brother's answers; he was working at Hull for £1 19s. a week. The examination was closed.—Samuel Wilson and William Grundy, builders, of Norman Lane and Stonehall Street, Eccleshill, also came up for examination. It was stated that they had begun business eighteen months ago without capital, and had also passed through the hands of Mr. Laycock, under somewhat similar circumstances. The examination was closed.

Bricks and Mortar.

Aphorism for the Week.

The best architecture is the expression of the mind of manhood by the hands of childhood.

Ruskin.

Our Plates. The measured drawings of Birkin Church, by Mr. R. A. Easdale, A.R.I.B.A., form part of the illustrations to the article on this very interesting old building which begins on page 225 of the present issue.

Newcastle Town Hall. In connection with the proposal to erect a new town hall at Newcastle-on-Tyne, a writer in the "Newcastle Journal" points out that it is not for a moment to be denied that there is need for a good public hall for musical performances and other purposes. But to raise such a building is not within the province of a Corporation; and a Municipal Council that should stand in the way of private enterprise in this direction would be acting undutifully to the public. The building of the existing town hall, in respect of site, style, and accommodation was a crying blunder. It was the product of a temporary and unreasoning craze for such buildings, and was achieved in the teeth of the best architectural advice of the day, including that of the architectural reformer of Newcastle, the celebrated John Dobson.

A Liverpool Scheme. It is proposed at Liverpool to form a new street 70ft. wide from Bath Street to Leeds Street. The estimated cost is for buildings and easements £130,000, and for paving £8,000, or, say, roughly £140,000; and considering its utility, the scheme is cheap. Liverpool has been laid out without any sort of system or plan, with the result that there is insufficient access between the city and the line of docks. There are very few large thoroughfares; most of the important streets lead to nowhere. Although the line of thoroughfares parallel with the docks is very good to the north and to the south, it is very bad in the centre. The Goree, New Quay, and Bath Street are narrow guts. The memorial to the Corporation which has resulted in the present scheme was signed by about 250 important firms and associations. To a great extent the diversion of traffic from the line of docks through the city has been due to difficult gradients. The streets between the docks and Old Hall and Great Howard Streets are too steep for heavy traffic, but the proposed new thoroughfare, being cut in a lateral direction, will present an easy gradient of 1 in 55. The effect of this improvement will be to relieve the thoroughfares round the Exchange of a large part of what is strictly dock traffic; it will reduce the cost of maintaining those thoroughfares, and obviate delays in the electric tram service, which is every month swelling to more and more enormous proportions. Indirectly, the improvement will increase the necessity for widening Bath Street, New Quay, and the Goree. In regard to the last, everybody is agreed that this ancient and obstructive eyesore ought to become a thing of memory as soon as possible.

Badly-Framed By-Laws. Three years ago new building by-laws were accepted for Scarborough, and ever since very serious complaints have been made by the local builders and architects with regard to the working of these by-laws. It was found that the Corporation were enforcing restrictions which were not enforced in many other boroughs in the country, and, furthermore, with regard to timber sizes the Corporation adopted measurements which were outside all sizes stocked in Hull and Grimsby. Consequently it was found by builders that in order to come within the by-laws the cost of building property in the borough became excessive, and no doubt this retarded the building of many houses in the borough during the past two years. When the facts were known, the Council unanimously agreed to appoint a committee to consider the whole matter, and see whether the mistake—for all now admitted it was a mistake—could not be remedied. Now, at the last meeting of the Town Council, after eighteen months, the Committee recommended the adoption of the amended by-laws which the Local Government Board have approved. This was agreed to, so that the Scarborough builders will henceforth go about with a light heart.

Aylesford Bridge. Aylesford is situated upon the Medway, about half-way between Rochester and Maidstone, in charming country, and has the good fortune to have escaped most of the modern disfigurements which have quite changed the rural characteristics of most English villages. There are an old church and some old gabled cottages, but by far the most interesting object is the fine fourteenth century bridge, with its Gothic arches. This, says the "Daily Graphic," is now declared to be "inconvenient," and will probably be pulled down, unless some vigorous protest is made against such an act. The Society for the Protection of Ancient Buildings has put forward a plan which would not only obviate all inconvenience, but would save the fine old bridge and greatly improve the navigation of the river. The suggestion consists of making a "cutting" about 300 yards up the river. This will again fall into the river below stream, creating an island between the village and the railway, and forming a bow, of which the old river would be the arc, and the new "cutting" the "string." As the "string" would be almost straight (following the line of the railway), it would be a great help to navigation. In a line with the old bridge, a road would cross the island raised upon a causeway, connecting it with a new bridge over the cutting, and prolonged across the railway so as to replace the present dangerous and inconvenient level crossing. The old bridge would be increased in width by the addition of wooden footways 4ft. wide, supported upon timber staging, such as may be seen on many old bridges on the Continent. There appears to be no special difficulty in carrying out this scheme, while the advantages are obvious—especially to those who know the locality.

Changes at the G.P.O. The announcement that the old General Post Office, to the east side of St. Martin's-le-Grand, is to be demolished and rebuilt will remind antiquaries that this site was associated with the intimate daily life of Londoners so far back as the Norman age. The collegiate church of St. Martin's-le-Grand led all the other City churches in the nightly ringing of the Curfew; it being expressly ordained that the tolling of its great bell was to be the signal to every parish church, "so that they begin together and end together." The building now doomed was authorised by Parliament in the year of Waterloo, and was erected from the designs of Sir Robert Smirke. Previously the Post Office had sought accommodation in several parts of the City, including the ignoble region of Cloak Lane, Dowgate Hill. It was only when Lombard Street and Abchurch Lane threatened to burst under its expansion that the removal to St. Martin's took place. A leader dealing with the old and new post-office buildings appeared in The Builders' Journal for May 16th last.

Foundation Stones. Foundation-stone discoveries, says the "Globe," are usually unexpected, but none the less delightful. In February last there was some excitement in Paris, when the Palace of Industry was demolished, everyone engaged being eager to discover the foundation stone of the building, which was erected in 1855; for it is known to contain a casket in which repose papers of that date, various moneys and a document bearing the autographs of the third Napoleon and the only Baron Haussmann, who practically rebuilt the French capital. Some day, perhaps, like the long-lost foundation stone of the Cour des Comptes, these records will be unearthed, but so far, we believe, they are yet to be found, and will probably rest undisturbed until Paris is furnished with a twenty centime "tube," when they may turn up in the excavations, or when the new Palaces of Fine Arts are pulled or burned down years hence. For the benefit of antiquarians of the next century it is stated that when the foundation stone of the Children's Hospital at Norwich was laid, certain papers, coins, &c., were sealed up in a specially-prepared cavity. There is a brass plate, with the date and following inscription on it:—"Norwich population, 113,000. Fastest train to London, 2 hours 37 minutes. Electric tramways commenced. Price of large sheep 63s. Bricklayers' wages, 7½d. per hour." The "fastest train" paragraph will doubtless provoke mirth in that age of rapid travelling, when people will be forwarded by wireless telegraphy.





A Clerestory Window. At the church of St. Bartholomew the Great, Smithfield, a hidden clerestory window is now to be utilised. Its date appears to be about the year 1190, but when the brick tower was built in 1628 on the outside the window was bricked in, remaining hidden, though not forgotten, until the present time. It has now been decided to re-add it to the features of this interesting church, and, in order that as much light as possible may be obtained from it, the glass to be used will be plain and clear. In

any case not much light can be obtained from it owing to the close proximity of the tower; but, now that the brickwork which filled it in has been removed, it is seen that there will be sufficient light to note the design of the church floor. This window consists of two plain lights, an unadorned circle, and probably what is known as plate tracery. It is a much earlier window than those in the choir, which were all rebuilt in the fourteenth century. The window has already attracted great attention from the many visitors to St. Bartholomew's, and the authorities, naturally, are not a little proud of possessing what is undoubtedly one of the few existent specimens of the earliest architecture.

Liverpool Cathedral. THE proposal to erect a cathedral at Liverpool has been revived by Archdeacon Madden. He considers that the site in London Road is "ruled out" of consideration by the circumstance that £500,000 would be required, though, he says, "it is only the price of one ironclad and less than one half-year's drink bill for the city. There are fifty men in the diocese who could put down £10,000 each and die happier and richer men because of their gift to Almighty God." He turns with reluctance to consider what many would call the more practical scheme. This is the site of the cathedral church of St. Peter, which has advantages from the utilitarian if not the architect's standpoint. Archdeacon Madden says: "The site will probably be a gift. The patronage of the parish of Liverpool is now in the hands of the Gladstone family. When we remember that at his last visit to his native city Mr. Gladstone made an eloquent appeal for a cathedral, it is almost certain that his sons would be prepared to further their father's wishes by helping forward a cathedral scheme as far as is possible for them so to do. The site is central, and we are told it is possible to build upon it a cathedral church at a cost of £100,000 to seat 3,000 worshippers. I think it possible to build a stately cathedral on a ground area whose total frontage is 340ft., and whose width is 200ft. The limitations of the site make a noble Gothic building impossible. Belfast churchmen in building their new cathedral, limited to the space on which their parish church was situated, have accepted the advice of Sir Thomas Drew, and have chosen the Byzantine and discarded Gothic design. The total length of the Belfast Cathedral is 214ft., and total width 88ft., and there will be room for 4,000 worshippers. A building of equal size and similar design could be placed on the Liverpool parish church site for £100,000, while a Gothic church would probably cost twice that sum." The Archdeacon adds that one who has made cathedrals a life study has suggested as the best design for a twentieth century cathedral "a Romanesque style and a Basilica ground plan, because more suitable to modern needs and capable of a good auditorium for some 3,000 people." The Archdeacon has no preference for any particular site or design, but he wishes Liverpool men to see that a cathedral is possible and practicable. In our issue for April 4th last we published Mr. William Emerson's design for Liverpool Cathedral.

The Royal Exchange Frescoes. ON November 6th two new frescoes for the decoration of the Ambulatory of the Royal Exchange are to be unveiled by the Lord Mayor. The fact that a woman artist has been entrusted with part of the decoration of one of our chief public buildings is probably without precedent, and there is certainly no instance on record of a husband and wife working together on a task of such importance. The subjects chosen by Mr. Ernest Normand and his wife—known in the world of art as Miss Henrietta Rae—for the huge wall pictures they have just completed are both connected in some degree with the past history of the City. Mrs. Normand, in the picture commissioned by Mr. A. Bailey, shows one of the most famous of the City's mayors distributing alms during a time of famine to his starving fellow-townsfolk. In "Sir Richard Whittington's Charities" the hero of so many legends is seen, a picturesque figure in scarlet robes and sables standing on the snow-covered steps of his house, supported by his Mayoress, Dame Alice, and her little daughter, both richly attired. To the left foreground is a huge brazier, filled with burning logs, and surrounded by destitute Londoners; in the centre a ragged child stretches up her arms to receive alms from the Mayor's little daughter, and on the right a stalwart retainer, in red hose and jerkin, distributes to the starving crowd the bread with which he is laden. In the background is an ancient City street, with roofs and chimneys covered with snow. Mr. Normand's picture (the gift to the City of Mr. John Paddon) illustrates "King John Granting Magna Charta." The scene is laid in front of the Royal pavilion in the meadow near Runnymede, with the red standard of England, emblazoned with golden lions, floating across the blue June sky. Great care has been taken by the artist to ascertain (through the Society of Antiquaries) the correct heraldry of each individual, and in choosing the costumes and the accessories. The new pictures, which are each about 18ft. high, will be permanently affixed to the walls of the Royal Exchange by the same method employed in the case of those painted by Lord Leighton, Mr. Seymour Lucas, R.A., and the other artists who have taken part in the decoration of the building.

Discovery of a Buried House at Naples. THE excavations carried on by the De Prisco family at Bosco Real, near Naples, which not long ago led to the discovery of some magnificent frescoes of the Pompeian epoch, have proved even more fruitful than was hoped. A huge country house completely buried has been found. No objects, ornaments, nor traces of furniture have been brought to light, but in compensation all the walls are covered with splendid frescoes dating from the time of the later Roman Republic, which, from their state of preservation and the freshness of their colours, might have been painted yesterday. Some of the figures represented are twice life-size, a circumstance specially notable because hitherto no frescoes in the Pompeian style have been discovered of more than natural dimensions. Three of the paintings are particularly beautiful, one representing a guitar player, a second an old gladiator apparently telling the story of his exploits to a woman, and a third a female figure listening entranced to the sound of distant music. Not only these figures but the walls of the house have been carefully removed in order that the house may be reconstructed. It is reported that the German Emperor is negotiating for the purchase of the whole structure, but it is doubtful whether the Italian Government would permit its exportation. A Government commission has been dispatched to Bosco Reale to examine and report on the discoveries.

House and Church Designs. THE two drawings on the previous page, of a house and boathouse and a hill church, are printed on account of their novel, and to some extent decorative, manner of depicting architecture.

Electric Fittings for Bridgewater Houes, London, the town residence of the Earl of Ellesmere, recently formed the subject of competition among a number of leading manufacturers in England and France. Over a hundred designs were sent in, those submitted by Messrs. Donnison, Berlyn, Sillem and Co., of London and Liverpool, being selected, and the order placed with them. These fittings consist of massive circular dishes of elaborately cut glass, 24in. in diameter, surmounted by finely designed metal coronas, these forming the principal part of each electrolier. The coronas of wrought and chased metal are in the style of the Italian Renaissance, in keeping with the decoration of Bridgewater House. In each case the coronas, with their six crystal pendants surrounding the larger central cut-glass dish, and carrying 45 lights in all, are supported by chains and rings from metal crowns at the ceiling above. The state rooms alone will take 16 of these electroliers, and the scheme is throughout of the most costly description.

THE KING'S BASTION, PORTSMOUTH.

THE destruction of the ancient fortifications of Portsmouth forms the subject of an invective by the "Times" newspaper. Of the five complete bastions and one demi-bastion, with the usual advanced works, ravelins, and counterguards, only one bit now remains—namely, the "King's Bastion," with its counter-guard in front, called the "Spur Redoubt," or, more properly, the "Spur Battery." All the rest has gone. It has been demolished at one time or another to make way for more modern defences or to enlarge the boundaries of a growing town. The "King's Bastion" is the very centre of endless historic associations, and its grassy slopes and picturesque masonry relieve a landscape which is otherwise monotonously flat. All this is now condemned, and the "King's Bastion" and "Spur Battery" will shortly fall a prey to the military contractor. The last remnants of historic defensive interest will then have disappeared.

The history of this bastion is well known. In the time of Elizabeth it had not yet been built. The fine masonry walls are in excellent repair, but the bastion and the spur are no longer used as defensive works. The bastion was formerly called "Wimbledon's Bastion," and did not receive its present title until King George the Third walked into it one fine day after inspecting his victualling yard close by.

Some years ago the site of the "Spur Battery" was offered by the military authorities to the Corporation of the town, but the offer was for some reason declined. Probably it was accompanied by conditions which would have necessitated the removal of the battery itself; for the acquisition of so unique a specimen of ancient and beautiful fortification could not have failed to prove a source of the greatest interest to residents and visitors. The value of the relic as a work of art alone, as a specimen of a lost art, should be enough to preserve it; but to this must be added a long roll of historic associations and the exquisite beauty of the scene as the sun sets behind Haslar in streaks of gold and red or clouds of purple splendour.

To-day the destructive hand of the military engineer is laid upon the work of his own forerunners; upon work which proves the genius of those who came before him, and which they and he have preserved for three hundred years with tender solicitude. Surely a strong and imperative motive should be advanced for the sanction of such an act of vandalism. Vital necessities, such as those of Imperial defence, may sanction any act. But here the motive is of little importance. A few tons of earth are required to complete a new battery lately erected in the vicinity, and they can be obtained more cheaply by the destruction of these ancient works than by any other means. Another reason has been more lately urged for the demolition of the beautiful "Spur Battery," namely, that it interferes with the fire of guns lately mounted. This is true to a certain extent, but it is only true because these guns have been placed in a position which they ought never to occupy. The remedy lies, not in the demolition of the old work, but in the utilisation of it. For the destruction of the "King's Bastion" there is not the shadow of an excuse.

In England there are few examples of the beautiful art of Vauban and Coehorn, for the art never flourished with us, and such examples as we once had have gone, just as the old walls of Portsmouth have gone, and for similar reasons. That little which remains is worthy of the attention of the Society of Antiquaries, a society which has more than once stayed the ruthless hand of the destroyer in this very town. It is therefore no mere local interest which demands the preservation of these ancient works, but a national interest. A stroke of the pen may save them; a stroke of the pen may sweep them away.

Memorial Tablets to Sir William Molesworth and Sir Austen Layard have been placed in St. George's Library, Borough Road, Southwark. They are life-size bronze portraits, and have been executed by Mr. George Frampton, A.R.A.

Surveying and Sanitary Notes.

Mr. Edward A. Harman, M.Inst.C.E., engineer to the County Borough of Huddersfield Gas Department, was duly elected a member of the Sanitary Institute at the last meeting of the council. Mr. Harman has done a considerable amount of work in connection with the disposal of sewage. Recently he made several interesting experiments with the sludge, obtaining therefrom illuminating gas to the amount of about 6,000 cubic feet of 13 candle-power per ton of material used, the material containing 28 per cent. of moisture.

Gas from Sewage Works.—A novel experiment is being made at Chorley. It has been conceived that the sludge from sewage purification works constructed on the principle of those at Chorley, owing to the oil and vegetable matter it contained, was rich in gas, and it has been thought possible that the material of this kind at Common Bank may be turned to profitable account as an illuminating agency. Consequently, a laboratory has been fitted up at the works. The gas gives a very brilliant light. Experiments on an extensive scale are in progress at the Corporation Gasworks, under the direction of the manager, Mr. J. McCubbin, who up to the present has demonstrated that 4,000 cubic feet of gas of 20-candle illuminating power can be produced from 1 ton of the sludge. So far, the experiments have been confined to small quantities of the sludge, and it has yet to be determined whether similar results can be produced from the material in bulk. Another problem to be solved is whether, supposing this latter difficulty is got over, the economic results will be such as to warrant the use of the sludge as a substitute for coal, or as supplementary thereto. Besides this, it has yet to be ascertained whether its odoriferous properties will operate against its general adoption, either as an independent supply or as a mixture with coal gas. If further experiments show that no serious hindrance to its use arises on those grounds, no difficulty will be experienced in utilising it, as no separate plant will be necessary, for it can be dealt with by the present retorts and clarifying apparatus, and admitted to the holders now in use. If the experiments prove successful, it would mean a considerable saving in the cost of the sewage works, as the sludge is now disposed of to farmers at the low rate of about 1s. per ton.

Street Improvements in Sheffield.—The City Council has sanctioned a scheme of street improvement, the great importance of which has for some years been clearly apparent. The streets leading to the Victoria Station are admittedly far too narrow for the traffic which passes over them, at certain times during the day the traffic along Furnival Road being very heavy. The next city Bill promoted will include clauses empowering not the widening of a single street, but the making of two entirely new streets, which will converge at the foot of the station approach and will give access to the railway from two points in the centre of the city. One of the new streets will begin at the junction of Exchange Street, Waingate, the Haymarket and Castle Street—at the Royal Hotel corner, in fact. That hotel will come down, and the street will run, in a straight line (its direction almost making it a continuation of Castle Street, as it is to be when widened), to where Blonk Street and the Victoria Station approach join. The street will be 70ft. wide. The second part of the scheme is the continuation of Bridge Street. The street is to be almost entirely carved out of that large market area known as the "killing shambles," which is at present in a most insanitary condition. Practically all the land between the two new streets already belongs to the Corporation, and the effect of making broad roads through an area that is at present almost inaccessible, or only to be reached by narrow lanes, will naturally be very beneficial. The improvement will also have the effect of clearing away a good deal of slum property at the back of Exchange Street and Furnival Road. The nett cost of the improvements is estimated at £75,000.

A COUNTRY HOUSE ELECTRIC-LIGHT INSTALLATION.

BY K. S. MACKINLAY.

THIS article is written to give architects, who have hitherto not given the subject much consideration, an idea of the requirements and approximate cost of a country house installation.

As the whole arrangement of an electric-light installation depends upon the number of lights required, a start may be made in one of two ways. Either a rough allowance may be made for each room, or the position, if not the nature, of each fitting may be fixed throughout the house. To obtain the best results the latter way is preferable; the former applies more in such a case as that of an architect who is designing a building which is to have an electric-lighting plant, and must therefore arrange for the space to be occupied by the engines, accumulators, &c. The number of lights having been settled, the next thing to be considered is the kind of motive power to be employed to drive the dynamo. If there is water-power that can be conveniently utilised, of course this affords the cheapest working, though the initial outlay is in some cases more; otherwise, if the installation is a large one, steam is the most practicable; if moderately large, there is the option of a gas or oil-engine plant. For small installations the choice is practically between these latter, and depends principally upon the price of gas in the neighbourhood; a small steam plant is quite practicable in this case, but it requires constant attention, which is, as a rule, undesirable in small installations.

I have here taken a country house as an example for a small installation, and have arranged for 75 lights, rather the maximum than the minimum number that would usually be required in a house of this size.

More than 40 of these would rarely be burning at one time, and if allowed for as 16-candle power 60-watt lamps, a battery capable of discharging 25 amperes at 100 volts for about six hours would be necessary. (100 *is the most convenient voltage for small or moderate-sized installations under ordinary circumstances.*)

There are many excellent types of accumulators on the market; I have taken here a battery of the "D. P. Battery Co.'s" cells which will answer my purpose, and are certainly as good as any. These are made in various sizes, of which the battery capable of discharging 25 amperes for six hours will fulfil the above requirements.

For supplying current at 100 volts fifty-three of these cells are required, and a current of 18 amperes is necessary to charge them. A dynamo giving 20 amperes is, therefore, very suitable for working with such a battery, and should be shunt-wound for 135 volts.

By running the dynamo in conjunction with the battery (when fully charged), the total number of lamps could be kept burning for six hours, or rather more. Where no accumulators are employed a 105-volt compound-wound dynamo would be used. A dynamo giving (20 amperes at 135 volts) 2,700 watts, which is 3·61 horse-power, would require a 4 or 5 break-horse power engine to drive it (the distance between the centres of the engine flywheel and the dynamo pulley must be $2\frac{1}{2}$ times the diameter of the flywheel).



ELEVATION OF ENGINE HOUSE.

In this example I have taken an oil-engine plant, and have shown an engine-house built, say, 40 or 50 yards from, and in a similar style to, the house.

The engine-room is 17ft. 6in. by 8ft., the accumulator room 13ft. 3in. by 6ft. $4\frac{1}{2}$in., and the building being thus only about 15ft. wide would not dominate its surroundings in an undesirable way, but, on the contrary, with a few trees or a shrubbery planted in front of it, it need not look in any way ugly or inartistic. I have shown an elevation to give some idea of what the general effect might be.

The engine and dynamo are indicated at A and B respectively, having a drive of 11ft.

The engine is fixed by Lewis bolts to a concrete bed, the dynamo to a wooden bed, or stand, and fixed in its turn to the concrete. The wooden bed is to insulate the dynamo from "earth," in accordance with fire-insurance requirements.

All gas and oil engines require a circulation

of water through the cylinder to keep it cool; a galvanised iron tank is used to supply this. One of these of the requisite size is shown at C; it is supported by planks, which rest upon brick piers, and is connected to the cylinder by a pipe, D, which is fixed at a slight incline. As the heated water passes out by this pipe the cooler water from the bottom part of the tank flows into the cylinder by the pipe E, which is laid immediately under the concrete floor. The cock at F is for emptying the cylinder and pipes when the plant is not working, lest the water in cold weather should freeze in the pipes and cylinder, and thereby burst them (of course, it is necessary to empty the tank, and the stop-cock G must be shut off before opening the cock F).

The bad gases, caused by the explosions of the oil, are carried through a pipe, H, and may be disposed of in various ways. Different firms have their own ideas as to the best method of treating the exhaust. The switchboard I have shown in detail to a larger scale. For lighting the engine-room I have indicated three pendants and a wall plug for a hand lamp.

As the fumes of sulphuric acid which are given off by the accumulators are deleterious to metal, this should be used as little as possible; and where the engine-room adjoins the battery room it is convenient to have a fixed window between the two rooms. I have shown two of these.

The fifty-three accumulators are arranged on two tier stands along each side of the room, twenty-two on the M side, eleven on the upper, and eleven on the lower tier, and on the N side sixteen above and fifteen below, thirty-one in all.

Where the plant is being put into an existing building, and there is large battery-room accommodation, single-tier stands would afford perhaps greater convenience, but in other cases these double-tier stands serve all practical purposes, and reduce the necessary size of the room by one-half. As the acid fumes would cause the wood to rot after a very short time, the stands should be treated with anti-sulphuric enamel.

A portable voltmeter for taking the voltage of each cell, and a hydrometer for testing the strength of the acid, though not fixtures, are indispensable accessories.

To light the accumulator room I have indicated two pendants and a wall plug for a hand lamp.

The seven lights in the engine-house form a circuit. I have not indicated a light in the porch, as I have shown doors with glass panels.

The mains to the house are of No. 19/16 armoured cable, which may be laid straight into the ground without piping or other protection.

It should be noted in connection with the switchboard that the circuit through which the current passes when the accumulators are being charged is termed the "charge" circuit, that which takes in the lamps the "discharge."

The switchboard is of enamelled slate. I have shown it in two pieces, encased in an oak or mahogany frame, which adds to the finish of the board and covers the battens to which the slates are screwed.

The shunt resistance and switch for regulating the pressure of the current from the dynamo are made both separately and combined; if not used in the latter form the switch is put on the switchboard, and the resistance somewhere near. I have shown the switch in this way at F.

The dynamo main fuses should be placed in circuit as near to the dynamo as possible, either on a board or on the casing conveying the leads to the switchboard.

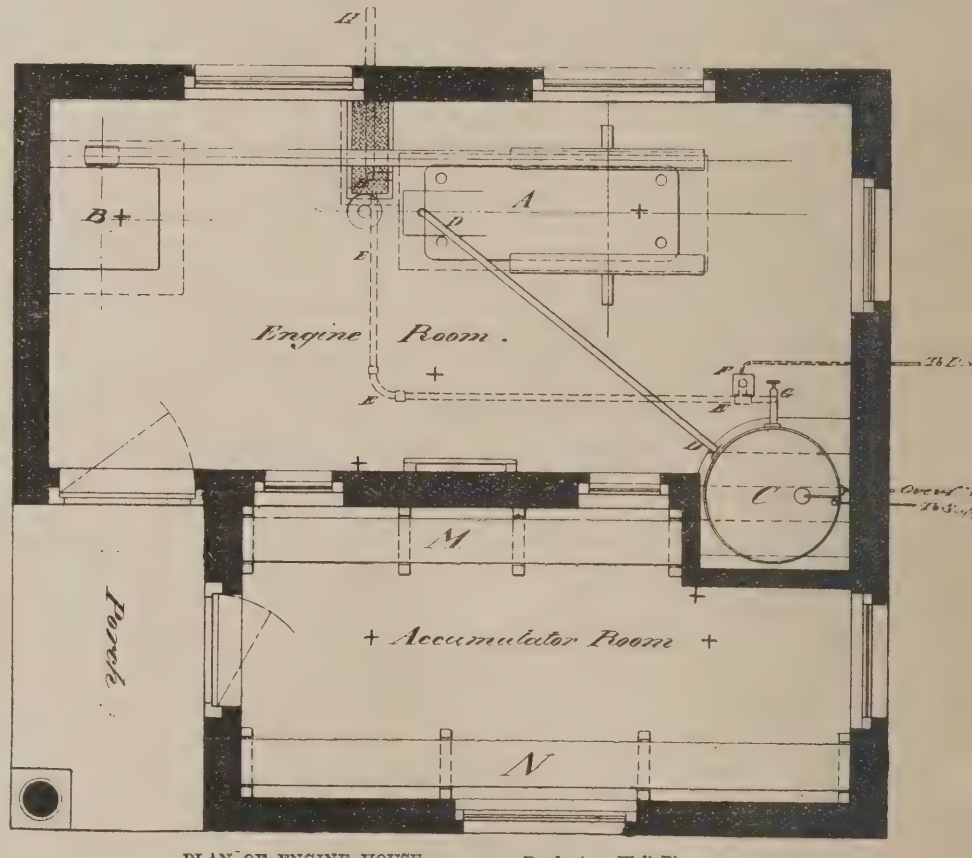
The regulator, J, is for regulating the voltage of the battery, as the shunt resistance does that of the dynamo. The end thirteen or fourteen cells are connected to the regulator in such a way that either all or part of them may be cut in or out, as required.

The automatic battery switch, S, is a most useful device, which should never be omitted in an installation of this kind. It is inserted in the "charge" circuit, and if at any time the E.M.F. of the accumulators exceeds that of the dynamo, even if only by one or two volts, it immediately breaks the circuit, and causes the bell shown at O to ring until the charge switch is opened. The bell can be prevented from ringing by keeping the switch at L open.

Two ammeters, one on the "charge" and one on the "discharge" circuit, are used by some firms, but perhaps the majority use one ammeter and a two-way switch. I have, however, shown two here, at B and C. The voltmeter key is really a species of two-way switch, which enables the reading to be taken on the "charge" or "discharge" at will. The voltmeter is shown at A. The switch D is for controlling the "charge" circuit; E that controlling the "discharge." G is the main fuse protecting the "positive" end on the battery.

Cost.

The initial cost of an installation may vary between pretty wide limits. For this example I have not made economy my principal aim. There are many necessities generally supplied by the builder, and a certain amount of work must be done by him in addition to the actual building of the engine-house, which all adds to the real cost of the installation, but this is not, as a rule, in the electrician's estimate.



PLAN OF ENGINE HOUSE. + Pendant or Wall Plug.

The following figures may be taken approximately to represent the cost of the part of this installation treated in this article, exclusive of the builder's contract, the prices allowed being those generally prevalent amongst the best London electricians:—

	£	s.	d.
Engine	119	10	0
Additional flywheel	7	0	0
Dynamo	38	10	0
Bolts, &c.	2	2	0
Accumulators	103	15	0
Cable, &c., for battery connections	5	0	0
Switchboard	29	10	0
Shunt resistance	3	0	0
Belt	2	10	0
Piping for engine			
Labour on engine and piping			
" " dynamo	30	0	0
" " switchboard			
" " accumulators			
" " wiring for eight lights			
Main cables to house, and laying same	7	10	0
Five plain pendants, two wall plugs, and four switches	1	10	0
Eight lamps	0	17	0
Two portable hand lamps	1	7	0
Portable voltmeter and contact rod	2	2	0
Hydrometer	0	2	0
	£354	5	0

To the item of labour, &c., the travelling expenses and lodgings of men must be added as the travelling expenses, and the charges for the carriage of goods, depend entirely on the locality of the installation, these must be added to the above figures. The plans of the house for which this plant is designed, showing the system of wiring and the positions of the various fittings, will be given in the concluding article.

(To be concluded.)

Professional Practice.

Aberdeen. — Considerable alterations have been commenced in the building comprising 115 to 119 Union Street with the object of converting the numerous offices and shops which formerly occupied the building into an extensive emporium for Mr. R. K. Smith, hatter and clothier. The scheme of reconstruction, which is being carried out according to the plans of Mr. R. G. Wilson, shows that the ground floor in the Green will be converted into a packing-room, goods being received there. On the first floor a spacious saloon will be constructed. The main entrance in Union Street will be of an ornate character, the ornamental façade including also the floor above Union Street. While the main floor will be devoted entirely to sale-room purposes, the first storey above Union Street will constitute the tailoring department. The four floors will be communicated with by means of an electric elevator situated at the rear of the building. The upper floors are to be set apart for offices, &c.

Liverpool.—A new sanatorium for consumption is being erected at Delamere Forest as an accessory to the hospital in Mount Pleasant. The main block contains doctor's rooms, matron's rooms, and small sitting-rooms for special cases, with accommodation on the first floor for a limited number of patients. Directly behind this block comes the dining-hall, to which there will be no means of approach except through the open air; and behind that, again, the block containing the kitchen and servants' accommodation, similarly approached. The bulk of the patients are to be housed in small detached blocks containing four or six bedrooms apiece, with the requisite baths, &c. These small blocks will be dotted about the estate in such positions and numbers as may be felt to be

required. Attached to the main block, and to each of the smaller blocks, will be verandahs with a south or south-west aspect, so as to afford opportunity for rest and shelter in small companies, and each bedroom in the main block communicates with a balcony upon which the bed may be placed. Since it is a principle of the treatment to keep patients as far as possible in one temperature fireplaces in the rooms are not required. Everything is arranged for the free circulation of the fresh air outside. In order to avoid opportunities for the lodgment of dust mouldings and irregularities of surface have been carefully eliminated, and all corners and angles are rounded. It is proposed to utilise electricity very largely in the working of this sanatorium, to light, do what little heating may be required, and provide any necessary power by its means. A pure water supply can be got from various sources, including the Vyrnwy main of the Liverpool Corporation, which will pass within a mile of the site, on its way to Wallasey. The designs for the buildings have been prepared by Messrs. Willink and Thicknesse, of Liverpool. The contractors for the buildings are Messrs. J. Gerrard and Sons, Swinton, Manchester; and the clerk of works is Mr. James Hibbert.

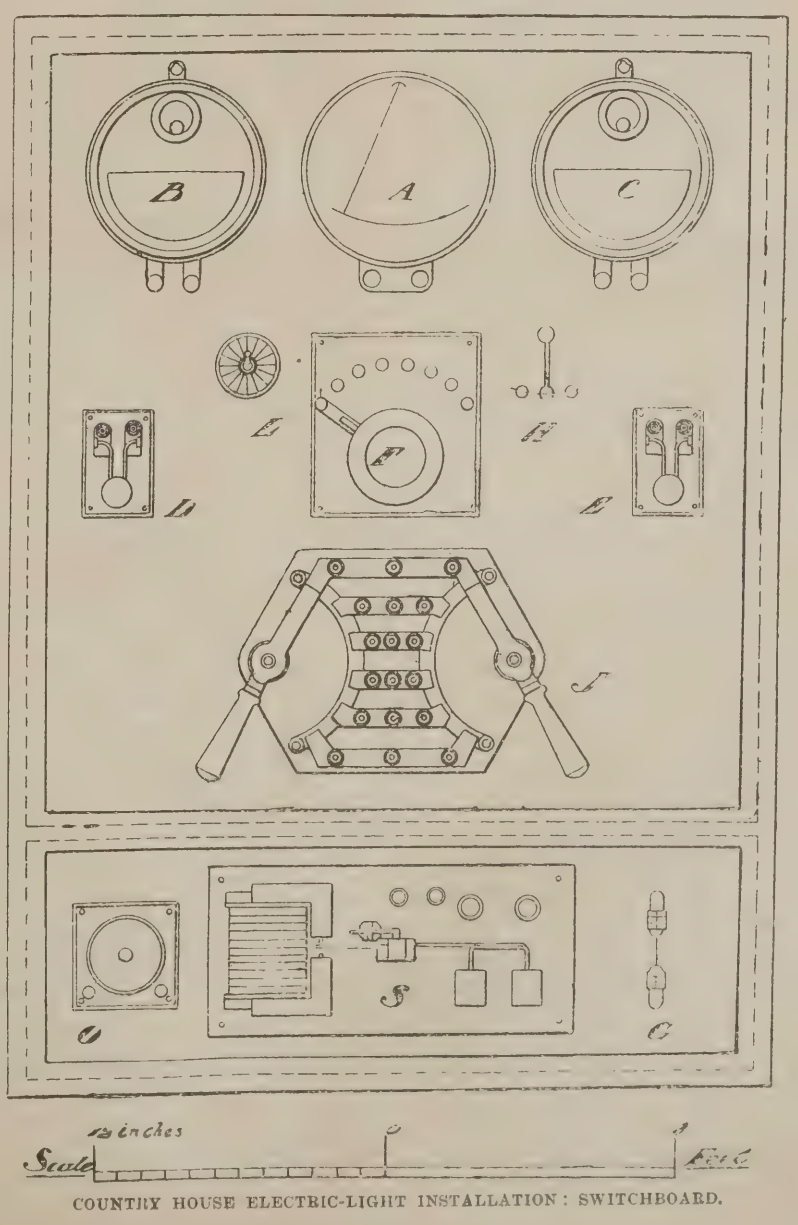
Newcastle.—The foundation stone of the new Presbyterian church for Blackett Street was laid last week. Messrs. Badenoch and Bruce were selected architects for the new church in a limited competition in July, 1899. The hall is well forward and will probably be ready for occupation about Christmas. The church is planned with a wide nave, narrow aisles and transepts, and will have seating accommodation for about 620 on the ground floor, and about 180 in a gallery to be erected at the main entrance end. A spacious porch and vestibule will give access to the church and to ladies and gentlemen's cloak rooms opening to right and left. To the gallery fireproof staircases will ascend at each side. The means of exit will be ample, and are to include the main entrance porch, a porch in the side street, a porch to the hall and two other doors at the north end of the church. The hall entrance is from College Road. The accommodation is for about 500. The block of buildings immediately in front will have upon the ground floor a committee room and an infants' classroom. On the first floor there will be a session room and ladies' room with bay windows overlooking Barras Bridge. The caretaker's house will consist of the second floor above. At the rear of the hall on the ground floor there are to be a retiring room, a large kitchen, with boilers, a china closet, &c., for use at tea meetings. The place assigned to the minister's vestry is behind the church, with entry from a private door and corridor communicating with the church and hall. The building throughout is being walled in local stone with chiselled dressings, and is to be heated by low-pressure hot water, with pipes and radiators, the heating chamber being placed under the hall vestibule. The ventilation will be by fresh-air inlets, the vitiated air being drawn off from the roof and exhausted by a fan placed in the tower. The illumination will be by electricity, though a supplementary gas service will be furnished. The area of the site is about a quarter of an acre. Mr. G. H. Mauchlen is contractor for the building. The heating will be done by Dinning and Cooke, and the electric lighting by Messrs. Falconar, Cross and Co.

Stratford, E.—St. Matthew's Mission Church, in Vicarage Lane, was dedicated recently. The style adopted is the early period of Gothic. The main gable of the church is flanked on either side by bold pilasters, one terminated with a gabled canopy, the other being carried up as an open bell turret terminating in a spirelet carried by four dwarf stone columns with carved caps. The spirelet is covered with oak shingles, and finished with a wrought-iron weather-vane. A five-light centre traceried window forms a feature in the front gable. A narthex containing two main entrances relieves the front elevation. The chancel arch of Bath stone is carried on columns of the same material. The roof is of open timber hammer-beam construction, with boarded ceiling, and the timber is stained dark walnut. The vestry is arranged by the side of the chancel. Class-rooms, kitchen, and other conveniences are placed in a basement. The building has been erected from the designs, selected in competition, submitted by Messrs. George Baines, F.R.I.B.A., and Reginald Palmer Baines, architects, 5 Clement's Inn, Strand, W.C. The builders were Messrs. Battley, Son and Holness.

Woolwich.—The new Grand Theatre was opened last week by Sir Henry Irving. The theatre occupies a central position in the town, has a frontage of 80ft. and a depth of 160ft., and is one of the largest suburban theatres. It is built of red brick, with Bath stone pilasters and dressings, side turrets, and a central domed roof, having a handsome iron corona. In the front are four powerful arc lamps, and the interior is lighted with 1,500 electric lamps. The stage measures 43ft. by 80ft., and the height to the grid is 56ft. The auditorium has a width of 62ft. and a depth of 75ft., the entire seating accommodation being for 3,000 persons. It is built on the cantilever principle, with not a column or pillar anywhere in the place; and is claimed to be the widest theatre, if not the widest building, ever erected on that principle. The decoration of the auditorium is in the style of the First Empire. The exits are very numerous, being duplicated in every part of the house. The bars, lounges, and retiring rooms are all of a very commodious type. The architect is Mr. B. Crewe, and the contractors are Messrs. W. Johnson and Co.

ENGLISH MEDIÆVAL ARCHITECTURE.

AT Owens College, Manchester, last week Professor Simpson began a course of six lectures on English mediæval architecture. He said it would be a mistake to start straight away with Gothic work in England, because its development would be very difficult to understand without some slight knowledge of the different styles that preceded it. It must be remembered that a history of architecture was a history of evolution. Thus the Greeks learned from the Egyptians, Assyrians, and Persians; the Romans learned from the Greeks; the older Italian builders, whose style was commonly called Romanesque, learned from the Romans; and the Gothic men in turn learned from the Romanesque builders. It was not till the Renaissance in the fifteenth century that any change in this procedure took place. Then for the first time builders harked back to the style of a period many centuries before the age in which they lived. All building, the lecturer went on to say, could be divided under two main heads. There were only two methods of bridging over an opening—one was by a lintel or beam and the other was by an arch; and it was either of these two methods of construction brought to perfection that constituted a great style. So the two great styles of architecture were the Greek and the Gothic, because it was in these two styles that the two different methods of construction were brought to perfection. He thought the title of "great" could not be given to the Roman style. The Roman work was no doubt magnificent, but its magnificence was owing more to constructive skill than to architectural style, and its ornamentation did not, as in the case of Gothic work, arise out of the method of construction adopted. Professor Simpson proceeded to deal with the early Christian work in Italy, for it was from this work, he said, that Gothic architecture, though perhaps indirectly, sprang. The lecture was illustrated by lantern slides.



COUNTRY HOUSE ELECTRIC-LIGHT INSTALLATION: SWITCHBOARD.

New Patents.

These patents are open to opposition until November 26th.

1899. — Plastering. — 19,921. J. BASSETT, Sherbourne Street, Ladywood, Birmingham. The object of this invention is to avoid the necessity for lathing, and to hasten the work of plastering. Slabs (preferably 3ft. by 2ft. 3in.) are employed, consisting of a coarse adamant plaster with a strip metal skeleton moulded within. These slabs are fastened in place by nails, and the wall surface is then in a finished state, or in the condition known as "rendered, floated and set."

Water Taps.—19,955. M. J. ADAMS, Park Lane Sanitary Works, Leeds. A tap made according to this invention will deliver hot and cold water from a nozzle by simply screwing down one spindle. This opens its own valve, and presses on a lever which lifts and admits water through the other valve.

Sawing Machinery.—21,173. G. PICKLES and J. T. PICKLES, Royd Iron Works, Hebden Bridge, York. This invention consists in applying to the cranks of wood-cutting and sawing machines balance weights (attached to, or made integral with, the cranks), for the purpose of obtaining more regularity and greater smoothness in action.

Lift Wells.—22,141. F. TOYE, 3 Maryland Road, Chitt's Hill, Wood Green, London, N. The wells in which lifts work naturally constitute a source of danger in case of fire by reason of their acting as chimneys. To obviate this, the invention under notice arranges at each floor-level a hinged flap which can be shut down when needed. All the flaps can be operated simultaneously.

Cutters for Wood-working Machines.—22,893. R. PERRIN, 26 Landseer Road, Breck Road, Everton, Liverpool. The cylindrical block in which the cutters are mounted forms a bearing against which the timber rests when being cut or moulded, even though there be a mortise or hole in the guiding surface of the wood. In ordinary apparatus, when the mortice or hole was arrived at, there would be no support and the cutters would cut into the wood and spoil its evenness of surface.

Sanitary Pipe Machines.—24,408. J. STALEY, Albert Village, Church Gresley, Derby, and J. PARKER, Moira, Leicester. By a device of slides passing through suitable stuffing-boxes above the die, operated by means for obstructing the passage of the clay, it is possible to form in the machine a pipe with a sharp bend, or with double bends.

Wall Plugs.—24,883. R. HADDAN, 18 Buckingham Street, Strand, London (communicated by I. Friedinger, Upper Austria). The plug consists of a wooden cylindrical body with a wedge-shaped hole in it at one end. It has a ring at the outer end. The plug is placed in the wall and a wooden wedge is then driven in, expanding the plug and making it grip the sides of the hole—independently of the nails, hook, or screw which it is to receive.

The following specifications were published on Saturday last, and are open to opposition until December 3rd. A summary of the more important of them will be given next week. The names in italics within parentheses are those of communicators of inventions.

1899.—14,350, LOWE, manufacture of bricks. 19,193, DUNCAN, NEW SUNLIGHT INCANDESCENT CO., LTD., & BARNETT, apparatus for lighting gas. 19,557, THWAITE AND ALLEN, acetylene gas generators. 20,489, VON BIELINSKI, bricks and paving blocks. 21,427, HOLLOWAY AND B. DELLAGONA AND CO., LTD., apparatus for spraying colour, slip, glaze, and enamel. 21,530, BARR, apparatus capable of being used as a ladder, an extensible ladder, a pair of steps, or a trestle. 21,726, MARSHALL, bricks for building flat arches. 22,895, PODMORE, screw fasteners for doors and windows. 23,064, JOSEPH PLACE AND SONS, LTD., AND PLACE, gullies and traps for them. 23,076, HOUGH, arrangements of fire bars for boiler and other furnaces, domestic fire-grates, &c. 23,451, HARLEY, window sashes. 23,463, GIBSON, tile-like decoration suitable for fireplaces. 23,510, EDWARD WOOD AND CO., LTD., AND BUTLER, staircases constructed wholly or partly of metal. 23,576, BROPHY, radiators for warming buildings. 23,758, PETTERSON, method of producing acetylene or similar gas. 23,892, BURGESS, bucket water lifts. 24,092, WATHIER, tube cutters. 24,247, HADFIELD AND JACK, tramway points.

1900.—848, LINKLETER, cowls for chimney tops. 5,895, GOLBY (*Groegor*), means for fixing ornamental plates on walls. 6,608, BOULT (*Sauvan*), gas or vapour burners. 6,993, FELL, disinfecting appliances for water closets. 11,945, VOGELAAR, nails and means for driving them. 12,335, SLOCUM, manufacture of gas. 12,501, PAGE, devices for supporting persons in windows while engaged in painting or similar occupations. 13,703, CHANTRY AND MILBANK, syphon water-waste preventing apparatus. 14,486, MÜLLER AND THOMAS, steam radiator for buildings. 14,672, DEAN, casement fastener. 14,944, CLOSMANN, filters. 14,957, SUGG, incandescent gas lighting. 15,322, LAKE (*Mönnig*), adjustable skylights.

NEW LAMBETH BRIDGE.

IN a letter to the "Daily Chronicle" Professor G. Baldwin Brown, of Edinburgh, decries the proposal to apply to some leading authority on Gothic architecture to clothe the piers of the new bridge at Lambeth with appropriate detail. He says: "If the bridge is to be a good one it will harmonise well enough with its surroundings; and if it is a bad bridge no amount of Gothic detail licked over ugly piers will be of any real artistic value. The bridge will presumably be of steel. It is perfectly possible for a structure in this material to be artistic, both in general form and also to a great extent in detail, but this can only be the case if the material is frankly used, and does not pretend to be something else, or hide itself away behind screens or shams. . . . As to stone piers, they need not trouble about special historic styles in details—least of all about Gothic details, which might harmonise with a building a quarter of a mile away, but would be woefully incongruous with the actual structure to which they belong. If the piers are made to do their work, and are seen to do their work, a very little artistic modification of their forms, and the emphasising of these by some well-considered tectonic features, would be all that is required. The idea of the co-operation in undertakings of the kind of the engineer and the architect is at best a lame sort of compromise from which there is little to hope. The art of the structure should be a development from within, and this is in the hands of the man who controls the material and the manner of its use. . . ."

Views and Reviews.

Defects in Plumbing and Drainage Work.

The new and enlarged edition of this useful little book, by the well-known Medical Officer of Health for Cheshire, is a meritorious work. It is written in such an easy and simple manner that laymen should have no difficulty in understanding whether their sanitary fixtures are or are not in a safe and proper condition. Apart from this, however, the book will afford technical readers, and especially students, much useful information about faulty work, the author having written up and illustrated a large number of faulty pieces of work which came under his jurisdiction and notice. A study of these pages will perhaps save some of the older workmen from perpetuating the old time-honoured methods of work which, in the light of our increased sanitary knowledge, are dangerous and obsolete. Altogether a book to be bought and studied.

"Defects in Plumbing and Drainage Work." Described by Francis Vacher. New and enlarged edition. With 120 illustrations. 1s. nett. John Heywood, Manchester.

Law Cases.

Dispute about Skylights.—At the Clerkenwell County Court last week Messrs. R. Bristow and Sons, builders and contractors, of 35 Red Lion Street, W.C., brought an action against Henry Holmes, of 3 Leicester Road, Moreland Road, Croydon. In this action the plaintiffs claimed £11 5s. 1d. for making two skylights, reglazing a skylight, and other work at the defendants' premises, Goswell Road. Counsel explained that according to the original specification the plaintiffs had to make water-tight certain skylights on the premises in question; but in the course of stripping they were found to be absolutely useless, and it was impossible to make them water-tight. This was pointed out to the manager of the defendant, and new skylights were put up. An objection was not made until months afterwards, when it was complained that the skylights were not water-tight, and that they had to be put right. The manager to the plaintiff firm gave evidence in support of this statement; but it was contended in defence that skylights had been broken by the plaintiffs' men. The Judge said the work had been carried out, and how the defendant could defend the action he did not know. He gave judgment for £10 12s. 10d.

A Mortar Mill and an Engine.—At the Bristol County Court last week, before his Honour Judge Austin, Messrs. W. H. Coward and Co., engineers, of Bath, sued Messrs. H. A. Forse and Sons, builders, of Bristol, for £90 in respect of a second-hand mortar mill and engine supplied by them to the defendants. The mill was sold as having a 7-ft. pan and was priced at £40; the engine was of 8 horse-power, and was sold at £50—about a quarter of its value when new. The defendants found that the mill had only a 6-ft. pan, and the plaintiffs offered to take it back; defendants replied that plaintiffs would have to pay carriage; the engine they declared to be unfit for use. In giving judgment his Honour said that the delay of the defendants in repudiating the machine as not according to contract was unreasonable, and both in this particular and in the fact that the defendants had the mill repaired, he must hold, confronted as he was with the Sale of Goods Act, 1893, that the defendants must stand by the result. As regarded the engine, he had felt more doubt, but must come to the conclusion the defendants must take that as well. It was unfortunate there was not some legislative interference with dealings in machines of this sort. Probably there were few things more dangerous than an elderly portable engine, pretty well worn out, and patched up; a thing which cost £200 to buy new, but which was purchased for £50. He gave judgment for the plaintiffs for £90, but without costs.

Fire-resisting Construction between Trade and Private Premises.—The New Westminster Brewery Company appealed to Mr. Kennedy at Southwark Police Court on Wednesday last against a notice of objection, served by the district surveyor on behalf of the London County Council, to the rebuilding of the "Horse Shoe" beer and wine-house, Old Kent Road. Mr. Gates (for the appellants) said the case raised a very important point under the 74th section of the Metropolitan Building Act. The plans for the rebuilding of this house had been approved by the licensing justices, but the County Council raised an objection that the living rooms on the upper floors ought to be protected and separated from the lower portion of the premises by the use of fire-resisting materials. A Divisional Court had already decided that such a separation or precaution was not required in a fully-licensed house, and he could not understand how a beer-house was to be made the subject of a different ruling. Mr. Avory (for the County Council) replied that the Council were not satisfied with the decision of the Divisional Court in the case referred to, and desired to have it reviewed. They held that the provisions of the Act, requiring the use of fire-resisting materials between the part of the building which was used for trade purposes and the part which was used for private occupation, did apply to publichouses and beer and

wine-houses, and they hoped they would not again be checkmated in getting a decision on that very important point from the very highest Court. For the present, however, they must accept the decision of Justices Day and Lawrence, that as liquors might be sold in the bedrooms of an inn the trading and the private portions of the premises could not be distinguished. Beer-houses, however, were simply shops for the sale of beer, and the upper part was entirely private. Mr. Kennedy reserved his decision.

Keystones.

A new Church at Swinton, near Rotherham, is being erected at a cost of £2,400.

A Parish Hall for St. James's Parish, Dover, is to be erected between St. James's Street and Russel Place.

Lintale Church has just had a new stained-glass window added, the work of Messrs. Shrigley and Hunt.

A Fever Hospital for Perth is proposed to be erected upon a site at Hillend, subject to the Local Government Board's approval.

Competition for New Asylum at Cardiff.—This competition will not be decided until the end of this year or the beginning of next.

New Cottage Homes for the Poor at Dewsbury have been opened in Dewsbury Park at a cost of £8,000. Mr. F. W. Ridgway is the architect.

Mr. Mark J. Lansdell, F.R.I.B.A., of 38 Bow Lane, E.C., has had his plan for a new cemetery lodge accepted by the Bexhill Urban District Council.

Lupton Church, Kirkby Lonsdale, has, under the superintendence of Mr. Curwen, architect, been redecorated by Messrs. Croft and Baines, of Kirkby Lonsdale.

The Site for the Gladstone Statue at Edinburgh is to be in the garden facing Coates Crescent, and the execution of it is to be entrusted to Mr. Pittendrigh MacGillivray.

At Flookburgh New Church an organ has been built by Messrs. Brindley and Foster, of Sheffield. A peal of four bells from Taylor's, Loughborough, is also being placed in position. The altar frontals and hangings have also arrived: they have been designed by Watts, of London.

Messrs. Yamanaka & Co., of Osaka, Japan, have opened a branch establishment at 68 New Bond Street, London, for the sale of Japanese art work, both ancient and modern. Consignments of artistic work will be received direct from Japan from time to time, and collectors interested in any special classes of art-work will be regularly advised of shipments, provided they notify to the firm particulars of their requirements.

The New Union Church at Lynn is being erected in Wisbech Road. The church will be in the Early English Gothic style, in red brick with white Costessey-ware dressings. It will be cruciform with nave aisles, transepts, and an organ and choir gallery behind the pulpit, the dimensions being 60ft. by 40ft. with accommodation for 320 sittings. The windows will be mainly lancets, and the nave will be divided from the aisles by arches and pillars. The main entrance will be at the end farthest from the school. The architect is Mr. J. L. Carnell, and the builder Mr. W. F. Smith.

Presentation to a Stockport Architect.—At a meeting of the Stockport Lads' Club a presentation of a silver spirit flask and a silver cigarette case was made to Mr. A. G. Wilkinson, architect, of St. Petersgate, who has taken a great interest in the Lads' Club since its inception, and has on many occasions given the committee the benefit of his professional experience in structural alterations. Recently a new roof has been added to the gymnasium and other important alterations done to the building under the superintendence of Mr. Wilkinson, and so grateful were the committee for the help thus given that they decided to mark their appreciation with this gift.

A Bust of Chaucer is to be placed in the City of London Guildhall.

A Stained-glass Window is to be placed in Christ Church, Wycombe.

The Parish Church of Ripley, Surrey, has had a stained-glass window added.

The Parish Church of Chalfont, St. Giles, has just had a new east window and reredos added.

A Free Library for Bow is being erected in Roman Road. Mr. S. B. Russell is the architect.

Mr. Joseph Goddard, a well-known Leicester architect, died on October 10th, in his sixty-first year.

The Duke of York Inn, Great Yarmouth, is being rebuilt from plans by Messrs. Harrington and Ley, of 65 Bishopsgate Street Without, E.C.

A New Public Library and Reading Room at Hawick is to be erected at a cost of £10,000, which money has been given by Mr. Andrew Carnegie.

Some good Drawings of Architecture, by Mr. Fulleylove, are to be seen at the exhibition, now open, of the Royal Institute of Water Colour Painters.

A Free Library for Limehouse is being erected at the corner of Norway Road, fronting Commercial Road East, at a cost of about £8,000. Mr. W. Clarkson is the architect.

The Passmore Edwards' Museum at Stratford, in Romford Road, was opened last week. It has cost about £4,000. The architects are Messrs. J. S. Gibson and S. B. Russell.

Albrecht Devriendt, Director of the Belgian Royal Academy of Fine Arts, has just died. He was born at Ghent in 1843, and was famed for his decorative pictures in the City Hall at Bruges.

St. Sidwell's Church, Exeter.—The vestry of this church have approved the plans of Mr. E. H. Harbottle, the cathedral architect, for the renovation of the western tower. Application is to be made to the Chancellor for a faculty.

The New Church of St. Luke at Grayshott, Hindhead, was consecrated last week. It has cost about £8,000, seats 300 persons, and is in the Early English style. The architects are Messrs. I'Anson and Son, of Laurence Pountney Hill, E.C.

Housing Question at Woolwich.—In consequence of the unprecedented activity in the Royal Arsenal in connection with the South African and other wars, the Royal Arsenal Co-operative Society are about to erect 4,000 additional dwellings for artisans, on their estate at Bostal.

The Birkbeck Institute has, during the summer vacation, had several additions and improvements made. The rooms have been fitted with the electric light, enlarged and refurnished, while a new reading-room, new magazine-room, and a social room have been provided for the use of the students. A new metallurgical laboratory has also been founded and fitted with every modern appliance.

The Architectural Association's Conversazione was held last Friday evening at the Holborn Restaurant. Mr. W. Howard Seth-Smith, the president, and Mrs. Seth-Smith received the members and guests, who numbered about 500. The prize drawings by students of the association and the work done in the studios and school of design were exhibited. During the evening Mr. Richard Kerr and Miss Kerr gave demonstrations in connection with wireless telegraphy and the X-rays. Instrumental music was provided by the Bijou Orchestra.

Annuities from the Royal Academy.—The president and council of the Royal Academy of Arts will proceed on November 6th to elect one Cousins annuitant and one or more Turner annuitants. The Cousins annuity, which is of the value of not more than £80, is for deserving artists, painters in oil and water-colours, sculptors, architects or engravers in need of aid through unavoidable failure of professional employment or other causes. The Turner annuity, of which the value is £50, is confined to artists of repute in need of aid from the same reasons.

Seven Tenements in Edinburgh are to be erected in Comely Bank Street.

A Monument to Chopin has been erected in the Luxembourg Gardens, Paris.

A Flagstaff at the Royal Courts of Justice has been erected on the Clock tower, and is most displeasing in effect.

The new Artizans' Dwellings at Hull, illustrated in our issue for October 3rd, are now being erected, the foundation-stone having been laid last week.

For Emitting Black Smoke from their chimney shaft the New London Brewery Company, Limited, of Durham Street, Vauxhall, has been fined £10.

A new Wing at the Victoria Infirmary, Glasgow, has been opened to provide additional accommodation in the Nurses' Home for twenty-eight beds.

A Pulpit in Tuxford Parish Church has just been erected by Messrs. Harry Hems and Sons, of Exeter. It is in marble and alabaster, and is in the Perpendicular Gothic style.

For the Erection of a new Workhouse at Wolverhampton £100,000 at 3½ per cent. has been borrowed by the town guardians. The Public Works Loan Commissioners are to advance this sum.

A new Mission Church at South Lynn, dedicated to St. Michael and All Saints, is being erected at a cost of £2,000. A school is also being erected at a cost of £1,500. Mr. L. F. Eagleton is the architect and Mr. R. Dye the contractor.

A Pulpit in Stratford-on-Avon Church has been erected, at a cost of £1,000, by Sir Theodore Martin as a memorial to his wife, Helen Faucit. The pulpit, of dark green marble and alabaster, is Perpendicular Fourteenth Century in style, and was designed by Mr. G. F. Bodley, A.R.A.

A new Mission Church at Roundhay, Leeds, is being erected on a site in Lidgett Park. A vicarage and parochial hall is also to be built. The new building, for which Mr. Carby Hall is the architect, is designed to accommodate 250 persons, and will be substantially built of stone. It will cost about £1,500.

Proposed Public Library and Museum at Chatham.—A Local Government Board enquiry was held recently with reference to the application of the Town Council for sanction to the appropriation of a site at the rear of the Technical Institute, New Road, for the erection of a public library and museum, and to borrow the sum of £2,500 for the erection of the same. Mr. G. E. Bond has prepared the plans.

A new Baptist Congregational Church at Woking is to be erected, with a lecture hall, at a cost of about £6,000. The hall is to be built first, with the necessary adjuncts of a kitchen, vestries, classrooms, church parlour and kitchen, at a cost of about £2,500. The hall is to seat 250 persons, and the church 450, with provision for enlarging the latter. The architect is Mr. W. Howard Seth-Smith, F.R.I.B.A., President A.A.

The Holborn-to-Strand Street.—The County Council authorised its Improvements Committee to spend fifty guineas in obtaining expert advice upon the designs for the new street. The committee now report that Mr. R. Norman Shaw, R.A., has readily accepted their invitation to advise upon the designs, in association with the Council's architect, but has expressed his desire not to accept any fee, as he states that he is anxious to place his services "at the disposal of a body engaged in the congenial occupation of beautifying the architecture of the city in which one dwells." A scheme has been drawn up for rehousing the 3,700 persons whom the scheme will displace. On the Duke Street site and Marquis Court site accommodation will be provided for 250 (in addition to 750 displaced by the Clare Market clearance); in a lodging-house at the corner of Kemble Street and Drury Lane, 799; on Reid's Brewery site, 1,681; on the Herbrand Street site, 680; and on the Millbank site, 290. We are relieved to hear that the new homes are to be ready for occupation before persons are turned out of their present quarters.

A new Organ in Alyth Parish Church has been erected by Messrs. E. F. Walcker and Co., Ludwigsburg, to the specification of Mr. David Stephen, Dundee. The case was designed by Messrs. Johnston and Baxter, architects, Dundee.

New Technical Institute for Burnley.—The Burnley Town Council have accepted the plans of Mr. Thomas Bell, of Burnley, for the proposed new technical institute to be erected in Piccadilly Gardens, the cost of which will be about £40,000. There were three sets of plans sent in, this being the second competition. Mr. W. S. Cross, of Manchester and London, acted as assessor on the plans.

Thwing Parish Church, East Yorkshire, has been reopened after restoration at a cost of about £2,100. As a memorial of Archbishop Lamplugh a new porch has been erected by Mr. C. E. Lamplugh. The ancient features of the church have been preserved. The old font, which was found in a garden in a neighbouring parish, has been transferred to its original place.

A new Mission Room at the New World, Doddington, has been erected. The building is in the Gothic style, and is capable of seating comfortably about 90 persons. It has been built from plans prepared by Mr. Robert Wade, of Doddington, the contractor being Mr. T. W. Dack, of the same place. The site adjoins the main road from Doddington to Benwick. The estimated cost of the work is £160.

The Late Mr. Hanstock of Batley.—We regret to announce the death of Mr. Walter Hanstock, architect and surveyor, of Branch Avenue, Batley, which occurred on October 13th, at Harrogate, where deceased had been staying for the last nine weeks. Among his designs are about 30 chapels up and down the country, the Batley hospital, mission hall, public baths, the Leeds baths (five in number), Leeds abattoir, most of the Board schools in Batley, several mills, an hotel at Ashover, in Derbyshire, besides many private villas and the plans for the restoration of several churches. Quite recently designs prepared by the deceased's firm, Messrs. W. Hanstock and Son (Mr. Arthur Hanstock succeeds to the business), for the Belfast Church Institute and for the proposed new covered market at Leeds have been awarded the second prize in competition.

The Midland Dairy Institute, Leicester, has opened a new block of buildings, which will afford facilities for the study of science with a view to its practical application to agricultural and dairying on the farm and in the dairy of the institute. The new buildings consist of a chemical laboratory, where the students will be taught how to analyse feeding stuffs, their application to different soils, and their effect on certain crops. A laboratory has also been provided for the testing of milk, and the isolation and control of germs which have been proved enemies to the dairy farmer. A hostel has been erected in which will be housed the the male students, and a manager's house has been built. The cost of these extensions to the governing body is about £1,200, exclusive of the manager's house, which has been erected by Lord Belper at a cost of £600, and is rented to the institution.

Proposed Municipal Buildings at Leigh.—The Town Council of Leigh have approved the recommendations of the Surplus Lands Committee—that the architect be instructed to prepare plans and sections of the proposed new municipal buildings to be erected in Market Street for the Local Government Board, in connection with the application by the committee to the Board for sanction to borrow the money necessary; and that the committee visit a number of town halls with the view of ascertaining the sizes and disposition of the various rooms therein; and that the mayor, chairman, town clerk and architect draw up a list of the halls visited. The recommendation of the Technical Instruction Committee that Mr. J. H. Stephen be requested to prepare quantities and get tenders for the proposed extension of the technical school and library, including £968 for an additional reading-room and £2,100 for class-rooms and physical laboratory, was approved.

The Edinburgh City Chambers are to be extended north-westerly at a cost of about £16,000.

The Yorkshire Home for Chronic and Incurable Cases is erecting a new building at Harrowgate at a cost of about £15,000.

A Mission Church at Churchill, Bristol, has been built by Field-Marshal Sir Lintorn Simmons as a thankoffering. It will accommodate 120 persons, and will be an adjunct to the parish church.

The Sandal Board Schools, Wakefield, are being warmed and ventilated by means of Shorland's patent Manchester grates, patent exhaust roof ventilators and special inlet panels, supplied by Messrs. E. H. Shorland and Brother, of Manchester.

New Church School at Oxford.—The Sisters of the Convent of the Holy and Undivided Trinity, Woodstock Road, Oxford, have long carried on a middle-class day school for girls. In order to meet an increasing demand for a higher-grade day school they have just opened a house at Bevington Road to be known as St. Faith's School.

A New Workhouse at Chandler's Ford, Hursley, has been opened. The new building has been built of bricks made in the locality, the builders being Messrs. Musselwhite and Son, of Basingstoke, and the architects Messrs. Cancellor and Hill, of Winchester. The cost of the new building is about £9,000; the land has cost another £1,000; and drainage, furnishing, and other matters will bring the total up to over £12,000. The building stands on high ground, approached from the Hursley Road.

New Companies.

Steel and Iron Improvement Company, Limited.

This company was registered on October 5th with a capital of £1,000 in 1s. shares to acquire any inventions by J. Mackintire or others, relating to the manufacture and production of steel and iron, and to carry on the business of ironmasters, iron and steel makers, engineers, &c.

A. Barfield and Company, Limited.

This company was registered on October 5th with a capital of £10,000 in £1 shares to acquire the business carried on at Fareham, in the county of Southampton, under the style of Mayling's Brickworks, and to carry on the business of brickmakers, pipe and tile manufacturers, stone, sand, lime, timber and hardware merchants, &c. Registered office Clun House, Surrey Street, Strand, W.C.

London Fireproof Plate Wall Company, Limited.

This company was registered on October 6th with a capital of £10,000 in £1 shares to carry on the business of builders, contractors, engineers, iron and brass founders, wire drawers, millwrights, metal workers, &c., and to execute, maintain, and control any public or other works. The first directors (to number not less than three nor more than five) are G. H. Robinson, A. Peel, E. Setzer and W. Apetz. E. Setzer is the nominee of the Fireproof Plate Wall Company, Limited, and may retain office until removed by that company. Registered office: 23 Leeds Road, Bradford.

Brimmell and Miller, Limited.

This company was registered on October 8th with a capital of £10,500 in £10 shares (300 preference) to acquire the business now carried on at Hastings and Bexhill, Sussex, or elsewhere, under the style of Brimmell and Miller, and to carry on the business of timber merchants, timber and slate importers, sawmillers, dealers in stone, sand, lime, bricks, hardware and other building materials, &c. The first directors are W. Brimmell and J. Miller, each of whom may retain office for life. Registered office: East Sussex Sawmills, Station Wharf, Devonshire Road, Hastings, Sussex.

Owing and Keating, Limited.

This company was registered on October 8th with a capital of £1,000 in £5 shares to acquire the business carried on at Inkerman Street, Collyhurst Road, Manchester, under the style of Owen and Keating, and to carry on the business of carriers, forwarding agents, carmen, cannel, coke, lime, brick, gravel, stone, sand, cement and mineral merchants, &c.

Cwmgelly Colliery, Limited.

This company was registered on October 8th with a capital of £2,000 in £5 shares to carry on the business of colliery proprietors, miners, patent fuel manufacturers, brick makers, gas makers, coke manufacturers and merchants, manufacturers of coal tar and the products thereof, iron and steel converters, smelters, electrical and mechanical engineers, suppliers of electricity, &c.

F. R. Pratt and Company, Limited.

This company was registered on October 10th with a capital of £10,000 in £1 shares to acquire the business now carried on as F. R. Pratt and Co., and to carry on the business of manufacturers of and dealers in China, porcelain, earthenware, stoneware and other ceramic wares, bricks, tiles, &c. The first directors (to number not less than two nor more than five) are J. R. Pratt (chairman), W. E. Piercy, A. J. F. Pratt and J. E. Piercy; the two first named may retain office for life.

Trotter, Haines, and Corbett, Limited.

This company was registered on October 10th with a capital of £15,000 in £10 shares (600 preference) to acquire the business carried on at Brettell Lane, Staffordshire, as Trotter, Haines and Corbett, and to carry on the business of brick, tile and pipe manufacturers and merchants, clay merchants and dealers in building materials of every description. The first directors (to number not less than two nor more than five) are G. A. Trotter, E. S. Haines and W. Corbett (chairman), all of whom may retain office for life.

Standard Acetylene Gas Company, Limited.

This company was registered on October 11th, with a capital of £20,000 in £1 shares, to acquire certain patents for improvements in acetylene gas generators; to adopt an agreement with the London and Northern Syndicate; to manufacture and supply generators, lamps, and installations for acetylene gas, and to deal with carbide of calcium, oxides, &c. The first directors (to number not less than three nor more than five) are to be appointed by the subscribers. Registered office: 32 Great St. Helens, E.C.

Marple Brick and Tile Company, Limited.

This company was registered on October 12th with a capital of £6,000 to acquire the business carried on by E. M. Tymm and T. R. Slack at Cross Lane, Marple, Cheshire, as the Marple Brick and Tile Company, and to carry on the business of brick and tile manufacturers, lime burners, builders' merchants, dealers in coal, &c. The first directors (to number not less than two nor more than five) are T. R. Slack and E. M. Tymm. Registered office: Marple Brick and Tile Works, Cross Lane, Marple, Cheshire.

Thistle Hall Company, Limited.

This company was registered on October 13th with a capital of £12,000 in £10 shares to acquire the business carried on at East Wharf, Cardiff, Glamorganshire, by C. J. Thistle, Jane E. Thistle, S. Hall and Annie S. Hall as Thistle, Hall and Co., and to carry on the business of dealers in timber of all kinds, brick, sand, lime, coal, iron, stone, and mineral merchants, and dealers in joinery and building materials of every description. C. J. Thistle and S. Hall are permanent managing directors. Registered office: East Wharf, Cardiff.

COMPLETE LIST OF CONTRACTS OPEN.

DATE OF DELIVERY.		WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
		BUILDING.		
Oct.	26	Warwick—Disinfecting Houses	Guardians	F. P. Trepess, 8 Jury Street, Warwick.
"	26	Elswick, near Preston—Hospital	Hospital Committee	E. C. H. Maidman, 13 South Charlotte Street, Edinburgh.
"	26	Birmingham—School Extension	School Board	Martin and Martin, 106 Colmore Row, Birmingham.
"	26	Birmingham—Altering, &c.	School Board	Martin and Martin. 106 Colmore Row, Birmingham.
"	27	Avington, Hants—School	School Board	Colson, Farrow, and Nisbett, 45 Jewry Street, Winchester.
"	27	Dolmerydydd, Llandwrog—Alterations, &c.	John Jones	H. Thomas, 8 Thomas Street, Carnarvon.
"	29	Waltham Abbey—Alterations	School Board	Clerk, School Board Offices, Waltham Abbey.
"	29	Kendal—Engine-house	Corporation	T. N. Ritson, Gas Offices, Kendal.
"	29	Chorley—Extensions, &c.	Guardians	Jolly and Buckley, Architects, High Street, Chorley.
"	29	Partick, Scotland—Destructor Works	Commissioners	Burgh Surveyor, 17 Peel Street, Partick.
"	30	London, E.C.—Stores	Electricity Supply Department	J. Rush Dixon, Town Hall, Old Street, E.C.
"	30	Walsall—Nurses' Home	Hospital Committee	Bailey and McConnal, Bridge Street, Walsall.
"	30	Skipton—Premises	Arthur R. Stockdale	J. Hartley, Architect, Exchange Buildings, Skipton.
"	31	Lymm—Public Offices and Fire Station	Urban District Council	S. P. Pilcock, Architect, Warrington.
"	31	Middlesbrough—Offices	North Eastern Railway Company	W. Bell, Architect, York.
Nov.	1	Lisnaskea, Ireland—School	Board of Public Works	B. L. Winslow, Solicitor, Lisnaskea.
"	1	St. Athan, near Cardiff—Dwelling House		T. Matthews, Barry Hotel, Barry.
"	1	Tunbridge Wells—House	Corporation	Borough Surveyor, Town Hall, Tunbridge Wells.
"	2	Nantymoel, Wales—Institute		J. Rees, Architect, Pentre.
"	3	Dirk Cove, Cork—Coastguard Station	Board of Public Works	Carpenter-in-Charge, Queen's College, Cork.
"	3	Burnley—Two Fever Pavilions, &c.	Joint Hospital Board	F. S. Button, Blannel Street, Burnley.
"	8	Sligo—Post Office		Office of Public Works, Dublin.
"	14	Petersfield—Filter Bed	Urban District Council	Surveyor, Council Offices, High Street, Petersfield.
"	19	Spennymoor—Isolation Hospital	Urban District Council	G. W. Rogers, Surveyor, Silver Street, Spennymoor.
"	19	Wolverhampton—Car Depôt	Tramways Committee	J. W. Bradley, Town Hall, Wolverhampton.
"	30	Port of Recife—Works	Federal Government	Commercial Department, Foreign Office, S.W.
		ENGINEERING.		
Oct.	26	Lowestoft—Removal of Old Outfall	Corporation	G. H. Hamby, Town Hall, Lowestoft.
"	26	Lytham, Lancs—Steam Roller	Urban District Council	A. J. Price, Council's Surveyor, Lytham, Lancs.
"	27	Waterloo, Lancs.—Lighting	Urban District Council	F. S. Yates, Town Hall, Waterloo, Lancs.
"	29	Ilford—Heating	School Board	C. J. Dawson, 7 Bank Buildings, High Street, Ilford.
"	29	Henley-on-Thames—Boiler		A. R. Lloyds, 1 Post Office Buildings, Henley-on-Thames.
"	30	Clevedon, Somerset—Main	Water Co.	J. Mansergh, 5 Victoria Street, London, S.W.
"	31	Kendal—Gasholder Tank	Gas, Water and Electricity Committee	T. N. Ritson, Gasworks, Kendal.
"	31	Durham—Viaduct	North Eastern Railway Company	C. A. Harrison, Central Station, Newcastle on-Tyne.
"	31	Glossop—Steam Roller	Corporation	Borough Surveyor, Glossop.
Nov.	1	Dundrum Bay, co. Down—Harbour Works	County Council	County Surveyor, Court House, Downpatrick, co. Down.
"	3	Cowes—Boiler	Urban District Council	J. W. Webster, Council Offices, Cowes, Isle of Wight.
"	3	Stourbridge—Gas Engine	Main Sewerage Board	Marten and Fiddian, Engineers, Stourbridge.
"	5	Willenhall, Staffs.—Fire Engine	Urban District Council	R. Tildesley, Town Hall, Willenhall, Staffs.
"	6	Grimsby—Refuse Destructor		H. G. Whyatt, Town Hall, Grimsby.
"	6	Grantown-on-Spey, Scotland—Electric Light	Commissioners	W. Forsyth, Town Clerk, Grantown-on-Spey.
"	10	Jassy, Roumania—Water Supply		Technical Department, Communal Council Hall, Jassy, Roumania.
"	14	Lahore, India—Tramway Materials	Municipal Committee	Secretary Municipal Committee, Lahore.
"	15	Newcastle-upon-Tyne—Widening Bridge	Corporation	Town Clerk, Town Hall, Newcastle-upon-Tyne.
"	23	Belfast—Plant	Gas and Electric Committee	V. A. H. McCowen, City Electrical Engineer, Belfast.
Dec.	17	Cienfuegos, Cuba—Electric Lighting	Municipality	Secretary, Municipal Offices, Cienfuegos, Cuba.
Jan.	2	Christiania—Transmission of Electric Power	Stavanger Corporation	E. Berentsen, British Vice Consul, Stavanger.
April	10	Rosario—Harbour Works	Argentine Government	Commercial Department, Foreign Office, S.W.
		IRON AND STEEL.		
Oct.	26	Walthamstow—Corrugated Iron Buildings	Urban District Council	Engineer, Town Hall, Walthamstow.
"	31	London, N.E.—Fencing	Hackney Vestry	Surveyor, Town Hall, Hackney, N.E.
Nov.	10	Christiania—Steel Materials	Inspector of Shipbuilding, Horten	Marinens Skibsbygnings Inspector, Horten.
		PAINTING AND PLUMBING.		
Oct.	29	Southwick, Sussex—Painting and Repairing	Urban District Council	G. W. Warr, Council Offices, Southwick, Sussex.
"	31	Littlehampton, Sussex—Painting, &c.	Urban District Council	H. Howard, Town Offices, Littlehampton.
		ROADS.		
Oct.	26	Bexhill—Granite	Urban District Council	Clerk, Council Offices, Bexhill.
"	27	Swindon—Street Works	Urban District Council	H. J. Hamp, Regent Circus, Swindon.
"	29	London, N.—Road Works	Hornsey Urban District Council	E. J. Lovegrove, Southwood Lane, Highgate, N.
"	29	Windsor—Roadmaking	Rural District Council	Mr. Menzies, Surveyor, Englefield Green, Surrey.
"	29	Halifax—Road Works	Improvement Committee	J. Lord, Town Hall, Halifax.
"	30	Clifton, near Manchester—Lanework	Barton-upon-Irwell Rural District Council	C. C. Hooley, Engineer, Clifton, near Manchester.
"	31	Litherland, Lancs.—Passages	Urban District Council	W. B. Garton, 25 Sefton Road, Litherland, Lancs.
"	31	Erdington, Birmingham—Repairing	Urban District Council	H. H. Humphries, Public Hall, Erdington.
"	31	Oswaldtwistle, Lancashire—Works	Highway and Drainage Committee	R. N. Hunter, Town Hall, Oswaldtwistle.
"	31	Porth, Wales—Road		T. Rees, Corn Exchange Chambers, Newport, Mon.
Nov.	2	Handsworth, Staffordshire—Paving	Urban District Council	Surveyor, Council House, Handsworth
"	14	Barnsley—Kerbing	Town Council	J. H. Taylor, Borough Surveyor, Barnsley.
		SANITARY.		
Oct.	27	Aughnacloy, Ireland—Drainage		G. P. Hatton, Church Street, Dungannon.
"	29	Guildford—Sewerage Works	Rural District Council	J. Anstee, Commercial Road, Guildford.
"	29	Long Crendon, Thame—Sewers	Rural District Council	Taylor, Sons and Crimp, 27 Great George Street, London, S.W.
"	29	Rugeley—Removal of Nightsoil	Urban District Council	W. G. Rogers, Council's Surveyor, Rugeley.
"	30	Llandaff—Scavenging	Rural District Council	W. Fraser, Llandaff Chambers, 35 St. Mary Street, Cardiff.
Nov.	5	Little Sutton, Chester—Sewers	Wirrall Rural District Council	Beloe and Priest, 13 Harrington Street, Liverpool.
"	6	Ewell—Scavenging	Parish Council	Clerk, Council Offices, Ewell.
"	8	Northwich—Sewers	Rural District Council	H. Bancroft and Son, 88 Mosley Street, Manchester.
"	14	Dartmouth—Drainage Works	Urban District Council	T. O. Veale, Surveyor, Castle View.
		TIMBER.		
Nov.	1	Wanstead—Fencing	Urban District Council	Surveyor, Council Offices, Wanstead.

COMPETITIONS OPEN.

DATE OF DELIVERY.		DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	BY WHOM ADVERTISED.
Oct.	30	Devizes—Hospital	£20, £10	O. Sheppard, Clerk to Joint Committee, Devizes.
"	30	Musselburgh—Town Hall	£26 5s. and £15 15s.	Town Clerk, Council Offices, Musselburgh.
Nov.	15	Newcastle-upon-Tyne—Bridge		H. Motum, Town Clerk, Town Hall, Newcastle-upon-Tyne.
"	30	Swansea—Harbour Offices	£100, £50	T. Strick, Harbour Offices, Swansea.
Dec.	1	Bridlington—Parade Extension	£36 5s., £15 15s.	A. E. Matthewman, Town Hall, Bridlington.
"	31	South Shields—Municipal Buildings	£200, £100, £50	J. M. Hayton, Town Clerk, Court Buildings, South Shields.
March	25	Basford—Sewerage Scheme		C. J. Spencer, Clerk, Public Offices, Basford.

Dover Mutual Plate-glass Insurance Society, Limited.

This company was registered on October 9th with 100 members, each liable for 5s., with objects as indicated by the title. The first officers are J. L. Bradley, W. P. Kennet, J. Falconer, J. Scott, jun., H. F. Edwin, H. Leney, G. W. Chitty, M. Pepper and H. Hayward (secretary).

Pontardawe Collieries Company, Limited.

This company was registered on October 15th with a capital of £5,000 in £1 shares to acquire certain mineral estates and collieries known as the Cwndu and Cwmnantllencu Collieries, at Pontardawe, Glamorganshire, and to carry on the business of mineowners, shale, fireclay, brick, earth, ore, and mineral merchants, &c. The first directors (to number not less than three nor more than five) are to be appointed by the subscribers. Registered office: Exchange Buildings, Swansea.

Spanish Kern Burner Company, Limited.

This company was registered on October 13th with a capital of £15,000 in £1 shares to acquire certain patents relating to the manufacture of incandescent gas burners for Spain, Cuba, Porto Rico, and Portugal, and to carry on the business of manufacturers and suppliers of gas burners, incandescent lights, and other apparatus for increasing the illuminating or heating power of gas. The first directors (to number not less than three nor more than six) are G. A. Maurel, J. Cuesta, and L. R. de Fonblanque. The Kern Burner Company, Limited, may, while holding 5,000 shares, appoint one-third of the directors.

TENDERS.

Information from accredited sources should be sent to "The Editor." Results of tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the Work.

CHESTER.—For the erection of the buildings for the Children's Homes at Chester, Dodleston, Saughall and Upton, for the Chester Board of Guardians:—

	Central Home in Wrexham Road, Chester.	Dodleston Home.	Saughall Home.
Moreton Browne	£2,600	—	—
John Jones	—	—	—
W. W. Freeman	2,810	£1,725	£1,720
Thomas Brown	2,800	1,540	1,600
H. Sumpter	—	—	—
Parker Bros.	2,687	1,893	1,451
John Mayers	2,456	1,865	1,454
Peter Edwards	2,485	1,335*	1,390
McLellan Bros.	2,350*	1,350	1,360*

	Upton Home.	Total.
Moreton Browne	—	—
John Jones	£1,350	—
W. W. Freeman	1,710	£7,965
Thomas Brown	1,500	7,440
H. Sumpter	—	£6,820 (for all the homes combined)
Parker Bros.	1,350	6,681
John Mayers	1,357	6,632
Peter Edwards	1,350	6,560
McLellan Bros.	1,260	6,320

* Recommended for acceptance. [The building of the Upton Home is postponed.]

ERITH, Kent.—For the erection of forty-eight cottages, Brook Street, Belvedere, and a lodge at the recreation ground, for the Urban District Council. Mr. Harold Hind, surveyor, Erith Urban District Council:—

	Twenty-four Cottages, Class A, Containing Six Rooms. With Stock Bricks.	Twenty-four Cottages, Class B, Containing Five Rooms. With Stock Bricks.	Twenty-four Cottages, Class A, Containing Six Rooms. With Place Bricks in Internal Walls.
Martin, Wells & Co.	£10,250	£9,250	£10,200
Frank Parsons	9,390	8,790	9,150
Gunning & Son	7,300	6,600	7,080
O. H. Evans	6,384	6,600	6,840
Enness Bros.	6,576	6,024	6,420
H. J. Evans	6,390	5,790	6,200
W. Richardson & E. Woodley, S. Wimbledon	6,000	5,040	5,760*
J. T. Jarvis	—	—	—
G. Wyman	—	—	—
Spencer & Son	—	—	—

	Twenty-four Cottages, Class B, Containing Five Rooms. With Place Bricks in Internal Walls.	Superintendent's Lodge.
Martin, Wells & Co.	£9,225	£750 0
Frank Parsons	8,550	575 0
Gunning & Son	6,480	420 0
O. H. Evans	6,456	—
Enness Bros.	5,868	485 0
H. J. Evans	5,622	—
W. Richardson & E. Woodley, S. Wimbledon	4,800*	300 0*
J. T. Jarvis	—	498 0
G. Wyman	—	398 15
Spencer & Son	—	394 10

* Provisionally accepted.

EXMOUTH.—For the erection of a new dispensary building. Mr. Ernest E. Ellis, architect, Exmouth:—

	Building.	Plumbing.	Total.
T. Abell	—	—	£1,062
G. Hooper	—	—	914
H. Dart	£849	—	—
A. Hayman	799	—	—
W. J. Stokes	795	—	—
J. J. Lacey*	740	—	—
Webster	—	£105 0	—
G. Bennett, Salterton	—	86 10	—
Hubber & Son, Exeter†	—	85 0	—

* Accepted for building, £740; † accepted for plumbing, £85; total, £825.
Architect's estimate, £864. [Rest of Exmouth.]

HERTFORD.—For the erection of a fire-station house, stables, &c., Mill Road, for the Corporation. Mr. J. H. Jevons, C.E., Town Hall, Hertford:—

Stims & Co.	£2,000 0 0	Norris & Son	£1,855 0 0
Laurance & Son	1,994 0 0	E. R. Kemp, Hertford*	1,889 12 8
E. West	1,985 0 0		

* Accepted. [Engineer's estimate, £1,850.

LIMERICK.—For the erection of an electric generating station, Frederick Street, for the Town Council. Mr. J. J. Peacocke, surveyor, Town Hall, Limerick:—

Gough, Colooney Street, Limerick £3,925
Bourke, Carr Street, Limerick 2,650

LONDON.—For the erection of licensed premises, stores, stables, &c., on site of old Crown Brewery, Loampit Vale, Lewisham, for Messrs. Thorne Bros. Messrs. Douglas Young & Co., architects, 51 Coleman Street. Quantities by Mr. Frederick G. Fletcher, 61 Chancery Lane:—

		Extra for Jarrah Wood in lieu of Staffordshire Paving.	Two Extra Shops.
H. Groves	£3,079	£56 16	£1,304
W. Rowe	3,935	40 0	1,292
F. & H. F. Higgs	3,830	80 0	1,240
Turtle & Appleton	3,760	80 0	1,235
G. Parker	3,745	50 0	1,249
Marsland & Sons	3,675	48 0	1,195
Matthews Bros.	3,568	49 0	1,147
Holliday & Greenwood	3,497	51 0	1,115
Foster Bros.	2,478	9 0	1,224
Jerrard & Sons	3,373	47 0	1,068
H. Line*	3,126	64 0	1,000

* Accepted, omitting two extra shops.

LONDON.—For alterations to sanitary arrangements at Westville Road Board School, for the London School Board. Mr. T. J. Bailey, architect:—

Martin, Wells & Co.	£2,500 0 0	R. P. Beattie	£2,037 12 7½
Unsigned	2,488 0 0	G. Neal*	1,977 0 0
Johnson & Co., Ltd.	2,168 0 0		

* Recommended for acceptance.

LONDON.—For alterations to sanitary arrangements at Woodland Road Board School, for the London School Board. Mr. T. J. Bailey, architect:—

Burn Bros.	£2,980 0 0	J. & C. Bowyer	£2,492 0 0
Martin, Wells & Co.	2,973 0 0	R. P. Beattie	2,457 19 0
Falkner & Sons	2,687 0 0	Johnson & Co.*	2,416 0 0
Johnson & Co., Ltd.	2,540 0 0		

* Recommended for acceptance.

LONDON.—For adapting the building in Brunswick Road for a day industrial school for 150 children, for the London School Board. Mr. T. J. Bailey, architect:—

T. L. Green	£5,467	Stevens Bros.	£4,628
Glover & Son	4,764	Lawrance & Sons	4,562
Wall & Co.	4,725	F. & F. J. Wood*	4,489

* Recommended for acceptance.

LONDON.—For the erection of a new Board school in Hanbury Street to accommodate 274 boys, 274 girls, and 274 infants, and schoolkeeper's house, for the London School Board. Mr. T. J. Bailey, architect:—

		†
Leslie & Co., Ltd.	£27,275	£347
T. L. Green	26,415	—
J. Longley & Co.	26,390	350
Clarke & Bracey	25,990	380
Treasure & Son	25,865	244
Kirk & Randall	25,761	365
Perry & Co.	25,697	430
F. & F. J. Wood	25,656	400
J. Grover & Son	25,421	363
C. Cox	25,401	360
E. Lawrance & Sons*	25,267	310
Miskin & Sons	24,264	300

* Accepted. † If walls of classrooms and halls are plastered *add*.

LONDON.—For the erection of Industrial School, Hither Green, Catford, to accommodate 150 boys, with following buildings for this and Truant School:—Manual training-room, swimming-bath, gymnasium, with dressing-rooms, bandroom, bakery, large and small washhouse and ditto laundry, boilerhouse, and coal store. Infirmary building—Receiving ward (one bed), two sick wards (six beds each), day and night rooms for nurse, dispensary, and clothes store, &c. Out-buildings—Two drill sheds and band stand, for the London School Board. Mr. T. J. Bailey, architect:—

Martin, Wells & Co.	£96,752	E. Lawrance & Sons	£86,534
Leslie & Co., Ltd.	95,691	Treasure & Son	85,626
W. J. Mitchell & Son	95,270	Holliday & Greenwood	84,777
Spencer, Santo & Co., Ltd.	89,980	W. H. Lorden & Son	84,444
McCormick & Sons	89,853	C. Miskin & Sons	83,448
Killby & Gayford	89,696	F. & H. F. Higgs	83,322
S. Hart	88,186	G. E. Wallis & Sons	83,273
J. Grover & Son	87,989	J. & M. Patrick	81,990
Kirk & Randall	87,902	J. Garrett & Son	81,472
Stimpson & Co.	87,472	J. Smith & Sons, Ltd. Norwood*	81,472
W. Johnson & Co., Ltd.	86,536		

* Recommended for acceptance.

LONDON.—For improvements and enlargement of Marlborough Road Board School, for the London School Board. Mr. T. J. Bailey, architect:—

Wallis & Sons	£19,796	Lathey Bros.	£18,760
Lorden & Son	19,352	Lawrance & Sons	18,285
Treasure & Son	18,968	Stimpson & Co.	18,200
Leslie & Co., Ltd.	18,884	Miskin & Sons	18,023
Patman & Fothering-ham, Ltd.	18,771	C. Cox*	17,900
		Garrett & Son	17,242

* Recommended for acceptance.

LONDON.—For the erection of a new Board School to accommodate 306 boys, 306 girls, and 306 infants, in Northwold Road, for the London School Board. Mr. T. J. Bailey, architect:—

T. L. Green	£26,967	Treasure & Son	£24,631
Patman & Fothering-ham, Ltd.	25,163	W. Shurmur	24,498
Leslie & Co., Ltd.	26,103	Miskin & Sons	24,427
J. Grover & Son	25,917	Johnson & Co., Ltd.	24,344
E. Lawrance & Sons	25,465	W. M. Dabbs	24,317
		C. Cox*	23,918

* Recommended for acceptance.

LUTON.—For the erection of residence, Studley Road. Mr. A. Wilkinson, architect, Inkerman Street, Luton:—

T. Field	£1,360	G. Kingham	£1,270
A. Attwood	1,260	G. Smart*	1,200

* Accepted. [All of Luton.]

LUTON.—For residence, Hart Hill, for Mr. J. Martin. A. Wilkinson, architect:—

G. W. Pryer	£1,223	J. Crew*	£1,097
G. Angel	1,190	* Accepted. [All of Luton.]	

SALTASH.—For the execution of drainage work on the Path Field's Estate, St. Stephen's-by-Saltash, for Mr. J. Bennett. Mr. Edgar M. Leest, architect, Public Hall, Fore Street, Devonport and Saltash:—

W. H. Rothery	£202 0 0	W. R. Deacon	£129 10 6
Jenkin & Son	160 0 0	Smith & Son	124 15 0
T. Shaddock	143 8 8	Taylor & Mutton*	113 0 0
Wm. Shaddock	139 12 0	* Accepted.	

SOUTHAMPTON.—For new schools at Shirley, for the Southampton School Board, to accommodate 1,500 children. Mr. John H. Blizard (Messrs. Lemon & Blizard), Southampton, Surveyor to the Board. Quantities by the surveyor:—

Rashleigh & Sons	£19,810	Jenkins & Sons*	£19,467
Stevens & Co.	19,720	Architect's estimate	19,776
Goulding & Ansell	19,500	* Accepted.	

[All of Southampton.]

TUNBRIDGE WELLS.—For the erection of chimney shaft, &c., 180ft. in height, for the Corporation. Mr. W. H. Maxwell, A.M.Inst.C.E., Town Hall, Tunbridge Wells:—

Foster Bros.	£5,495 0 0	R. B. H. Neal	£4,713 0 0
Tinkers, Ltd.	5,125 3 8	Myles & Warner	4,385 5 10
Anderson & Co.	4,928 9 4	J. Jenkins, Swansea*	3,835 2 4
Wilson Bros.	4,789 0 0		

* Accepted.

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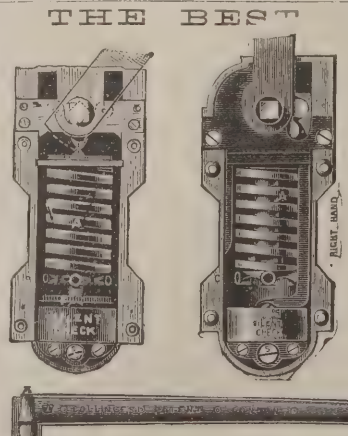
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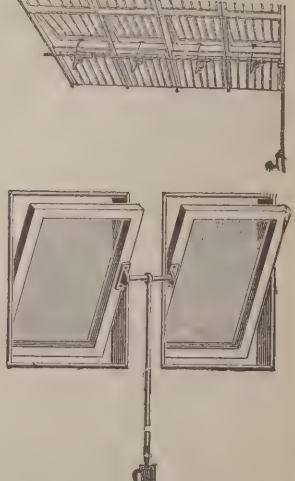
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THE BUILDERS' JOURNAL & ARCHITECTURAL RECORD

October 31, 1900. No. CCXCIX.

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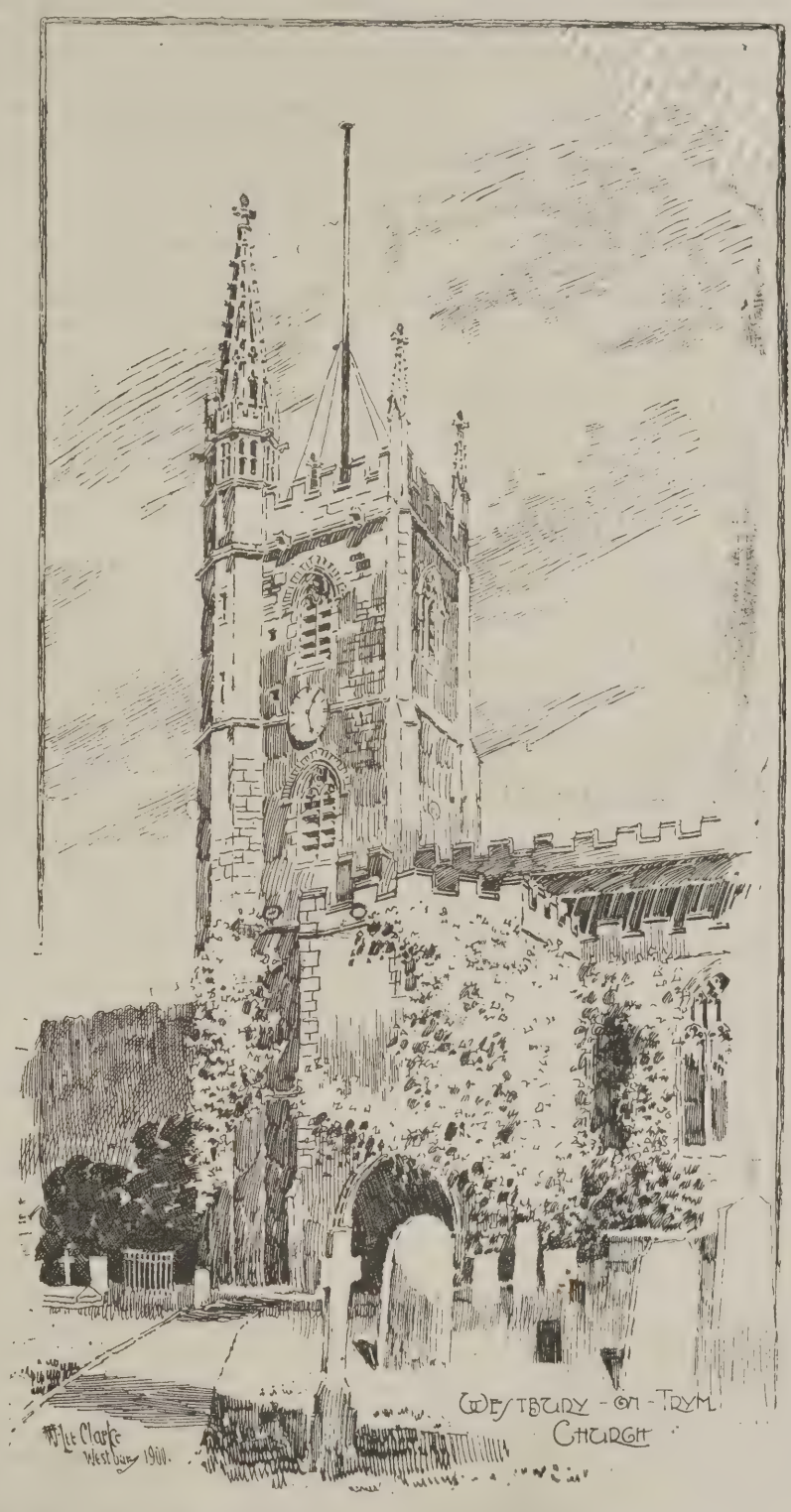
An Architectural Causerie.

The Relation of Bunting to Architecture.

There are very few subjects indeed, in any way related to architecture, which Ruskin has not dealt with in some portion of his many works. And one of these few subjects is the proper significance of bunting as an attribute to architecture. At first thought it may be a trivial matter, but recent national events have given us extraordinary evidence of the striking effects which bunting can produce in conjunction with the simplest buildings. The public spirit which has prompted these lavish displays of colour is not, it must be confessed, in every case very happy in its resultant schemes, while some of the "flags" that have done duty cannot be called bunting in any sense of the word. But there has been enough demonstration to show that a striking national character can be imparted to buildings by a judicious and tasteful employment of bunting. It is very remarkable to think of the entire absence of colour from most of our important buildings of the past—massive and stately piles of grey and worn stone. How pleasing the addition of colour becomes we see at once when there is any form of vegetation applied to the walls; in the most beautiful instances, masses of red, brown, and golden creepers, and in more sober cases, plain dark and light green patches. But it is hardly satisfactory to see the form of a cornice completely enveloped by leaves, and Ruskin's principles would lead one to class vegetation as a harmful and "illegitimate" attribute to architecture, seeing that its presence tends to decay, and its culminating influence is reached in the scope it has in our ruined abbeys and monasteries.

If, however, there is no such debasing influence on the walls themselves all vestiges of colour in the building itself are gone, and it really seems desirable for the eye to have some relief from the mass of neutral tint. And the simplest way of achieving this—of giving the building at once a stately character of its own and a totally different aspect—is to erect a mast on the roof of the main wing and run up an English Standard; when this is floating over the pile the necessary "piquancy" is added that prevents the eye from being morbid in contemplation of the house without such attribute. As instance of this effect attention might be drawn to St. Martin's Church in Trafalgar Square; while fully appreciating the noble aspect of the church it is eminently heightened when the flag is flying from the "spire"; and how stately such piles as Chatsworth and Stoneleigh Abbey look when our flag is flying over them! I have not forgotten window boxes and the colours they can add to an elevation; and in country houses where flowers are plentiful and easily grown they give an air of freshness to the house which bunting does not. But the real love of flowers leads one to the garden and glass-house, and it would seem to be more satisfactory to try to do without bringing the garden into the house. The curious fact that some fronts present a more cheerful appearance when the house is empty, on account of the drawn blinds adding colour to the scene, suggests that the curtains and window draperies should have some part in the colour effect of the exterior.

We do not want to see a flag flying from each window, nor any lavish display in bunting; but after natural stones it would seem to be the only other way of adding touches of colour without any such expensive and apt to be gaudy schemes as mosaic work or distempering; and it is only the finishing touch that is required, the culminating point to which the eye directs itself; and this point is the flag. A large part of the grand effect of the interior of Henry the Seventh's Chapel at Westminster is due to the presence of those tattered shreds over the stalls—still showing gold and vermillion—and the addition of linen of any sort is far better than a pedantic imitation of it in the stone. M** J.



London's Lost Opportunities

Washington has been described as "the city of magnificent distances"; London may be called "the city of lost opportunities." Many circumstances have combined to make it the gigantic place it is; its growth was foreseen, and the opportunity was presented when railways were first introduced of improving its great thoroughfares and laying

out new ones upon a systematic plan, of planting trees in them, and of laying out squares and circuses at their intersections. Something has been done no doubt since then, but, on the whole, the modern growth of London has been coincident with a separation of use and beauty. One of the greatest opportunities for dignifying and beautifying the town was lost when Victoria Street, Westminster, was built. Here was a great terminus in the heart of a residential district; within a mile stood the Abbey and the Houses of Parliament; to connect the two neighbourhoods by a great street was not a task presenting insuperable difficulties. The road was made, but the result is a failure. Incredible as it seems, the street is not straight; but even the turn might have been utilised to make the eastern section debouch upon the Abbey in such a way that it should appear at the end of a vista. Nothing of the sort was done; the street, moreover, was not designed with sufficient width; it is consequently very gloomy. Its City namesake, Queen Victoria Street, is much better in this respect, but again a great opportunity was lost in not bringing it out directly upon the Royal Exchange, whose fine portico would have grandly closed the vista. The removal of one half of the circus at Piccadilly should have been the occasion for a better arrangement than what we see; it is impossible to imagine anything more ungraceful, to say nothing of the neglected and usually waterless fountain. It is pleasanter to turn to the future. What are its prospects? Two great schemes are sanctioned, and will soon be commenced. One is the opening-up of a wide road and embankment beyond the Houses of Parliament; the other is the great street from the Strand to Holborn. What opportunities we have here for adding to the convenience and beauty of London; but will these also be lost? The former can only fail by hopeless mismanagement, but the latter scheme is beset by dangers, artistic and municipal. Here again architectural success depends greatly upon the treatment of the two ends; the crescent rising from the Strand especially. There is hope, however, here and for once, that genuine architectural effect is being considered by the powers that be.

It is considered by some critics that an opportunity will be lost by not utilising Gibbs' beautiful church of St. Mary-le-Strand to close the vista, though in fairness it should be said that the side view of it thus presented would not be as effective as that now seen when approaching it from Charing Cross. If the criticisms and suggestions of artists and professional men were supported in all cases of this kind, as they would be in Brussels or Paris, by a public keenly interested in the appearance of their city, we should not see so many lost opportunities; but Londoners differ from the people of other capitals in never taking any serious interest in an architectural question until it has been settled. Then they grumble. J. C. P.

Westbury-on-Trym Church.

REFERRING to the drawing by Mr. Lee Clarke on the previous page, Westbury-on-Trym Church is situated in a charming little village that lies in a valley about two miles distant from Bristol. The church is for the greater part of a comparatively late period, though some Early English work may be found in the windows of the south aisle. The view shown is taken from the churchyard.

On Reflection.

Holborn-Strand Designs.

THERE are designs now on exhibition at the gallery of the Royal Society of Painters in Water Colours which merit the closest attention and consideration, and afford suggestions for an excellent architectural composition. We publish a critique of these designs on another page, but it is now desired to make a few general remarks about them. It has hitherto been a matter of much speculation as to exactly what arrangement would be adopted in the disposition of the buildings, but it is now seen that the curve at the end of the straight portion of the new thoroughfare (see our issue for February 21st last) will have at its western end the "Morning Post" office, and at the other end Carr's Restaurant—with commercial buildings along the frontage—while the block between the curve and the Strand will probably consist of a central hall for the County Council, with the Gaiety Theatre on its western side and another building (an opera house is suggested) on its eastern side; at each side of the central hall there is a passage-way with a flight of steps at the end leading into the curved street. Such is the general disposition of the buildings. Many of the designs show archways over the ends of the several streets, an arrangement which produces an exceedingly fine effect. In some cases the main entrance to the central hall is provided from the Strand, preserving an unbroken line on the south side of the curve, and in others the reverse has been done. But, taken on the whole, it may be considered that the Council has the opportunity of effecting a great architectural improvement. The eight competing architects are Messrs. Reginald Blomfield, William Flockhart, Ernest George, Henry T. Hare, Mervyn Macartney, E. W. Mountford, Ernest Runtz and Leonard Stokes; but the designs are only numbered, and the names of their various authors will not be announced till after the close of the exhibition—on Saturday next.

The Steps of St. Martin's.

IT is only a short time since a protest was being made against the proposal to build over the western forecourt of St. Dunstan's Church in Fleet Street; but that protest was ignored, and, as shown in the photograph which we published in our issue for October 3rd, the extensions are now in progress, and we shall soon be able to see how successful the scheme has been in spoiling the lines of the tower. Now we have fears about Gibbs' beautiful old church at one corner of Trafalgar Square. It is pretty generally known that the Improvements Committee of the London County Council proposes to take away some of the steps of St. Martin's in order that the footway may be widened to about 9ft. On the south side of the church at the western end there is first of all a flight of six steps, then a landing about 10ft. wide, and then some more steps extending to the portico. The lower flight of steps tapers away to the slope of the ground, and finishes level with the pavement on the north side of the building. The Improvements Committee wishes to take away this lower flight of steps and the landing, and to form one continuous flight to the portico. It is true that St. Martin's first had a continuous flight of eight steps, but there was then no Duncannon Street, and that makes all the difference. As Mr. Thackeray Turner, the secretary of the Society for the Protection of Ancient Buildings, very truly points out, one flight of, say, twenty steps is not as dignified as two flights of ten steps each, separated by a landing, nor is it as safe. St. Paul's Cathedral would, indeed, lose in dignity if there were no landings in the steps leading to its western front. Moreover, the steps of St. Martin's carry on the level of the churchyard (which is shoulder-high in Duncannon Street), and so greatly improve the setting of the building. The proposal is not a mere passing fancy, but has been developed to such an extent that plans for reconstruction have been prepared, and Mr. Shaw Lefevre is therefore to be congratulated for having carried an amendment at last week's meeting of the Council to the effect that expert architectural opinion shall first be taken. But we are not yet without fear, for the "improvement" spirit is fiery nowadays. In this particular instance, however, there is little need for improvement. It will be noted that the pavement only is proposed to be widened, but there is no pressing need for this; while, if the carriage-way is deemed to be too narrow, the first thing is to prevent omnibuses stopping outside the church. When these have been made to stop in the lay-by on the north side of the building, it will be found that there is sufficient width of road; and even if there were not, it would be better to take a strip off the forecourt of the National Gallery than to remove the steps and landing which are so important to the architectural setting of St. Martin's Church.

Liverpool Cathedral Scheme.

LIVERPOOL has a cathedral scheme which has been mooted from time to time, and at the present moment it is again before the public, Archdeacon Madden having raised the ghost this time. It need hardly be said that the proposal finds strong advocates and bitter opponents, the former urging that the threshold of the twentieth century is an opportune time for erecting a great cathedral, the latter being equally convinced that this is not the case. Besides the main question, there are a number of side issues which are the subject of much discussion. Of these the most important is that relating to the site. Some (including the Archdeacon) declare that the enclosure of St. Peter's Church will form the best site; others are for Abercromby Square; others, again, for Monument Place, George's Dock site, and so on. The first-named is perhaps the site mostly favoured, but it is insufficient (being only 340ft. by 200ft.) for what is proposed to be a large cathedral. We have dozens of instances of the effectiveness of a building being lessened because of the limitation of the site—the London Law Courts, for example—and it would be better for the Liverpool authorities to wait till they had sufficient money at their disposal to obtain an ample site for their building. Then there is the style of architecture to be adopted—one advocating a Romanesque style of building with a Basilica ground plan, and another urging the adoption of Gothic. This we will leave alone for the present. As to cost, the idea of building a fine cathedral for £100,000 is surely absurd: it could never be done; and if there is not sufficient money forthcoming, it will be better to leave the project alone until there is. The cathedral is not a necessity, and it would be foolish to erect a building which showed in every part a lack of funds, resulting in a mimicry of what it might have been.

STOKESAY CASTLE.

BY F. H. CHEETHAM.

STOKESAY is pretty well known on paper by those who have given any time to the study of Domestic Gothic Architecture in England. It may be questioned, however, whether one in a hundred who know it from the pages of Mr. Hudson Turner has ever taken the trouble, or has had the opportunity, to make acquaintance with the building at first hand.

I can say nothing new about Stokesay from an architectural standpoint, for few of us have the opportunity to make that "much more careful examination" of the parts of this, or indeed any other, building that Mr. Turner recommended. I merely put down these few notes about this beautiful old Shropshire house in the hope that there may be some who, learning for the first time how easy it is to get to Stokesay, will not rest till they have paid it a visit.

The house is so commonly called Stokesay Castle that it would now be pedantry to call it by any other name. It is not, of course, a castle at all, but a fortified mansion. As an example of a purely domestic building which has been fortified it is, perhaps, unequalled by any other mediæval building in England; and it is so simple in its parts, and on so small a scale, that you can, so to speak, grasp the meaning of the building at a glance. This, I take it, should be a recommendation to young architectural students to visit Stokesay.

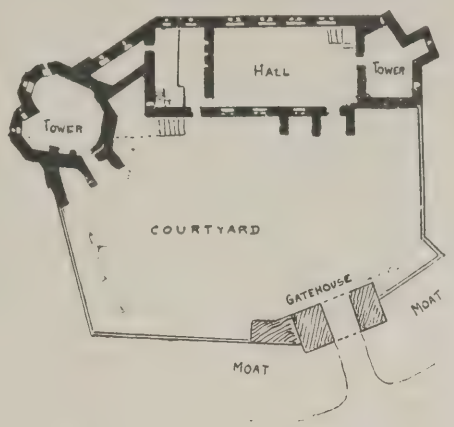
To get there you go to Craven Arms Station, on the Great Western line, between Shrewsbury and Hereford. From the station the house is distant about half a mile. It lies quite close to the railway. As you go south from Craven Arms you can get an excellent view of Stokesay Castle from the railway carriage window to your left. Few persons notice it, I fancy. It does not make itself conspicuous, and for my own part I must have passed it more than once before I was aware of its proximity.

If you are a cyclist and are touring in Shropshire you will probably visit Ludlow. Ludlow lays claim to be the most picturesque town in England, and with some reason. When you have satisfied yourself with the reasonableness, or otherwise, of this claim, push on about seven miles along the road towards Shrewsbury, and you will come to Stokesay. In Leland's *Itinerary* we read, "Aboot V miles owt of Ludlo, betwixt Ludlo and Bishop Castle, Stoke Say belonging sometime to the Ludlos, now to the Vernons, builded like a castell." Leland's five miles are now seven.

The house is beautifully situated. It lies in a valley with gently rising hills around it. A pond lies between it and the railway, and the road runs between the house and this pond. But in all probability you will approach the house from the churchyard, and the first view seen from that point will strike you with a cheering restfulness, and a sense of unique beauty. What is the peculiar charm of Stokesay Castle it would be difficult to say. I think colour and proportion are the keys to the puzzle. Seen for the first time on a summer's evening just before the sun disappears, the picture left on your mind is one that will not pass away for many a day, not even should it be weakened for a moment next morning in a blaze of Shropshire sunshine.

By all means see Stokesay first in the late afternoon. The somnolence and lethargy of Shropshire seem to have settled down there. You enter through the black and white Elizabethan gate-house into a grass-covered court. You pay an entrance fee of sixpence, and then can wander about as you like. There are no "guides" to bother you, and to tell you that Queen Elizabeth slept here. But that is probably because there is no bed to be pointed to. You can, if you wish, for another sixpence purchase an excellent little handbook to Stokesay by the late Mr. Thomas Wright, F.S.A., and thus armed you can examine the old house at your leisure. There is another handbook sold in the district, written by the Rev. J. D. La Touche, vicar of Stokesay. Both these little books are to be recommended to anyone wishing to understand the building. They give its history, and point out all its architectural features.

The house occupies the whole of the western side of the courtyard, and is immediately opposite to you as you enter from the gate-house. The whole site is about 150ft. square (a very irregular "square" however) and is entirely surrounded by a moat about 20ft. wide. The moat was formerly supplied with water from the neighbouring pond, but is now dry, and is used as a kitchen garden. The Elizabethan gate-house recalls the black and white houses of Shrewsbury. It is a richly ornamented timber



SKETCH PLAN OF STOKESAY CASTLE.

building of two storeys, the upper one of which projects considerably over that below. The photograph shows the side of the gate-house facing the courtyard. Did this old house stand quite by itself, it would doubtless receive more attention from the wandering tourist than it is ever likely to do as a mere appendage to Stokesay Castle.

The house itself falls naturally into three parts. The hall in the centre, the northern tower, and the curious polygonal tower at the south end. The two towers are each of three storeys, though the roof of the northern tower is not higher than that of the hall, of which, indeed, it is now a continuation. This northern tower was in all probability originally finished with a stone battlement, which has been removed to make way for the picturesque overhanging timber structure which forms so prominent a feature in the view of the castle from the north-west angle.

The licence to crenellate Stokesay is dated 1291. The south tower must have been built subsequent to this date, and the hall and north tower are no doubt much earlier. The house, then, was not built all at one time. Indeed, the three parts into which it naturally falls would appear to have been built at three different periods.

The great hall is 53ft. long by 31ft. wide. It is a fine specimen of thirteenth-century architecture, and has not been spoiled by over-restoration. It is lighted by four large windows on the western side, and three similar windows overlooking the courtyard. They are two-light pointed windows with a plain circle in the head. Over each window is a gable, which breaks up the long line of the hall roof in a very happy fashion. The hall is lofty, and has a fine collar-beam roof with curved braces. The steps of the staircase on the north end, leading to the rooms in the tower, are cut out of solid blocks of oak.

The south tower, which forms so remarkable a feature in all views of Stokesay, is detached from the rest of the house, being connected with it by a passage-way only. Access was also obtained by means of a covered way on the courtyard side, from the withdrawing room at the southern end of the hall. This covered way no longer exists, but the line of the roof may be seen on the wall following the rake of the steps.

The tower is very unusual in form. It is described as "an irregular polygon of twelve sides and about 30ft. in diameter, and presenting externally the appearance of a double octagon tower." It is divided into three storeys, and lighted by narrow loop-hole windows, which have all had interior shutters and fastenings. The roof is now a lead flat, from which a most delightful view of the surrounding country may be obtained. Looking down on the old house beneath you, the colour of the roofs is something to rejoice over.

At the south end of the great hall, on a "first-floor" level, is the withdrawing room, an erstwhile handsome apartment with a very fine seventeenth-century chimneypiece in carved oak. This room has two small windows looking into the great hall.

The chief interest of Stokesay is that it remains to-day so perfect an example of a fortified domestic building. Haddon Hall is perhaps the best place in England to study the gradual growth of domestic architecture. The changes from Norman to Jacobean times can all be followed there in the arrangements and details of the house. Stokesay is a smaller and much more modest building. But it had a licence to crenellate, which Haddon never had. It has a history of battle and deeds of war, for which we look in vain at Haddon, where the sound of fighting was never heard.

There was some connection between the two houses at one period. The Vernons, mentioned by Leland, were a branch of the family of Haddon. For many years Stokesay belonged to the Ludlow family. John Ludlow, the last of the male line, who succeeded in 1498,



STOKESAY CASTLE AND CHURCH FROM THE SOUTH-WEST.

left two daughters, co-heiresses, one of whom, Anne, was married to Thomas Vernon, son of Sir Richard Vernon, of Haddon. She received Stokesay as her portion, and the Vernons made the house their residence for three generations.

What the house looked like in the middle ages we can only surmise. The wall round the courtyard would be high enough for defence, as we now see it against the south tower. There were other buildings in the courtyard itself, which have now disappeared. And the gate-house, if gate-house there were, would be something very different from the picturesque building of to-day.

From the south-west, looking at the castle from the railway or from across the pond, the tower of the parish church fastens itself on to the old house in a not unpleasing fashion. This is the best known view of Stokesay, though I venture to think that the view from the churchyard, embracing as it does the gate-house and the full extent of the building, is more striking and impressive.

Nowhere, perhaps, is a building more in harmony with its surroundings than is Stokesay Castle. It seems to have grown naturally from the soil, and the sleepy drowsiness of Shropshire is in its stones. The days of battle are over, and the old house is having a long rest. But time has touched it with so kind a hand that we feel no regret for past glories and present decay, but only thankfulness that we can enjoy the picture of so noble an old age.



STOKESAY CASTLE: NORTH-WEST ANGLE.

HOUSING AT BIRMINGHAM.

BUILDINGS ON THE MILK STREET SITE.

In Milk Street, Birmingham, the Estates Committee of the Corporation have just finished a number of labourers' cottages, the cost of which, calculated upon the basis of living rooms only, works out at about £62 per room; but if the sculleries, &c., are included the cost is reduced to £45 per room inclusive—figures which are regarded as most satisfactory. The site has a frontage to Milk Street of 294ft., and to Little Anne Street of 185ft., and upon this area 56 labourers' cottages and five artisans' dwellings have been erected, which, with those already built in Ryder Street and Lawrence Street, bring the total number of such dwellings now in the possession of the Corporation up to 164. The labourers' cottages are two storeys high, each house being self-contained, with living room, bedroom, and the necessary offices on the same floor. Those on the upper storey are fronted by a substantial balcony with iron railings, and are approached by a stone staircase 4ft. 6in. wide. Twenty-four of the cottages have each one living room, averaging 13ft. by 14ft. and 8ft. 6in. high, and bedroom averaging 12ft. 2in. by 9ft. 6in.; the remaining 32 houses having a living room 13ft. 4in. by 14ft., one bedroom 8ft. 2in. by 14ft., and an additional bedroom 9ft. by 9ft.—all of the same height, 8ft. 6in. Each tenement has its own scullery, food pantry (with ventilation by means of air-bricks), and other necessary accommodation, and the houses in the upper storey are fitted with dust-shoots, so that there is no necessity to leave the dwelling for ordinary household work. Each tenement is divided by a 9in. brick wall, the walls between the living room and the bedroom being constructed of 4½in. brickwork. This scheme is maintained throughout with the exception of the five artisans' dwellings, which have each two bedrooms, the division walls of which are either of plaster and metal lathing, or of lath and plaster. The cottages front on Milk Street and Little Anne Street, whilst at the rear is a large open space, 30ft. wide, paved with blue bricks. Each house has its own closet, with flushing cistern, the sewers are ventilated, and the general sanitary arrangements excellent. There is a concrete foundation under all the walls, and the latter, of unpressed bricks, are built in Flemish bond. The buildings have been erected by Messrs. B. Whitehouse and Sons, of Monument Road, to the designs of Mr. J. Tart, the manager of the Estates Department. The cost of the site was £6,000, and the buildings, including sewers, drains, roads, concrete foundations, &c., £10,100. The houses let at an average rate of 1s. 6d. per week per living room, and the gross annual income is estimated at £659 2s., from which there will be the customary one-third allowance for rates, water, and voids and repairs. The new houses have materially improved the character of the neighbourhood.



STOKESAY CASTLE FROM THE COURTYARD.

THE DRAINAGE OF A HOUSE.*

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The subject of this evening's lecture is the "Drainage of a House." In dealing with the drainage arrangements of a new house more than one type must be considered. The detached house, standing in its own ground, usually met with in the country; the semi-detached house, with a more or less narrow passage on one side; and the regular terrace house common to London and most large towns. The detached or semi-detached house offers in most respects the easiest problem for a perfectly satisfactory drainage treatment, and we may profitably consider it first in detail and afterwards deal briefly with the special difficulties imposed by the unavoidable conditions of city life.

I do not propose to consider this evening such exceptional methods of drainage as are advocated by Professor Poore, which, however successful, are only capable of being adopted in somewhat exceptional circumstances, but shall confine my remarks to the methods of drainage generally accepted as suitable to a water-borne sewage system, whether it be connected with a discharge on to open ground, with cesspool, or a public sewer.

Properly, the question of drainage is one of the first points to be considered in the planning of a new house, and it is a question that may affect its construction materially, and should be considered in conjunction with the situation and fitting up of the various sanitary conveniences.

A house cannot be satisfactorily built in such a situation that it is impossible to drain it properly, and the question of proper drainage will depend very largely on its destination, which, if it is to be discharged into a public sewer, is rigidly fixed and has an important bearing on the level of the lowest storey of the house. This must be constructed as a rule at such a level that the drainage may be conveyed away by gravitation by means of a drain having a certain definite fall as a minimum.

It is most undesirable that even cellars used only for storage purposes should be constructed to such a depth that they cannot be properly

* Lecture delivered at the Carpenters' Hall on October 25th, 1900.

drained by gravitation; but this cannot be always avoided, and in many cases such cellars, if care is taken to make them water-tight, may be satisfactorily used; but if constructed carelessly, or if the waterproof lining is ruptured by a settlement, such a cellar may cause an infinity of trouble and expense. The first consideration, therefore, in arranging the drainage of any building is to ascertain the destination of the sewage and the level at which it must be delivered. It is then possible, making allowance for distance and proper fall, to arrive at the level of the lowest point that can be properly drained and to make the necessary disposition of the building accordingly; but I would impress upon any of you the importance in dealing with a new building of considering the drainage at an early stage, and of the extremely awkward results that may ensue from first constructing a building, and only when it is erected considering how it shall be drained.

But assuming that these matters have had proper consideration, and that the internal fittings are well arranged and well grouped, we have still to consider the actual planning of the drainage and various arrangements connected with it. In arranging a system of drainage we have to provide, firstly, for conveying away from the building—the liquid refuse from W.C.'s, sinks, baths and lavatories which is subject to putrefaction, and also the rainwater collected in wet weather by the roofs, and conveyed to the ground level by means of rainwater pipes; secondly, for preventing the sewer gas which is generated by the decomposition of the foul matter, which may be extremely injurious to health by finding its way back into the house; thirdly, for arranging that in the event of a stoppage occurring in any part of a drain it shall be possible to exactly locate it, and remove it with the least possible delay, and without interfering with the general drainage system.

These ends, remember, must all be attained without rendering the cost oppressive to the owner of the house, and the various appliances must be of such a character that, even if they are neglected for long periods or even misused, they will in the main still continue to act efficiently, as it is only rarely that householders can be induced to give regular attention to the cleansing of their drains.

What, then, are the materials at our disposal for the solving of this somewhat complex problem?

Take first of all the channel by means of which the liquid or semi-liquid matter is conveyed. This is of necessity in most cases some form of pipe, as apart from other objections, it would be often impossible to obtain a sufficient and regular fall with an open channel. These pipes require to be true and even, impervious, and of a material not liable to be acted upon by the acids contained in sewage, and at the same time readily handled. Glazed earthenware or stoneware are the most suitable for ordinary works, though iron pipes are sometimes employed, and are excellent except from the one point of view of expense.

Drain pipes are usually made circular in form and about 2ft. long, with a socket at one end in one piece with the pipe, though in certain exceptional cases loose bands are made for jointing pipes. Such pipes are made in several sizes from 3in. in clear internal diameter upwards. They are usually salt glazed, that is to say, the thin sheet of glass which renders them impervious is formed during the process of burning the pipes in the kiln. This is done by throwing salt into the kiln, which becomes volatilised and forms a glaze on the surface of the pipe, both internal and external, and has the great advantage of reaching all parts of the pipe. It is of great importance that this surface should be even, free from lumps which would tend to check the flow of sewage, or form cracks or pinholes, which would allow the liquids to escape, and the pipes employed for the highest class of work are usually tested under hydraulic pressure and stamped with a T by the manufacturer. The thickness of material in such pipes, if made of stoneware, is usually $\frac{9}{16}$ in. for 4in. drain, $\frac{11}{16}$in. for 6in. drain, for larger diameter $\frac{1}{12}$ of internal diameter.

In addition to ordinary straight pipes of uniform diameter, diminishing pipes are made so that when required the diameter of the drain may be reduced or enlarged from one size to another, and the sockets are provided as required at the large or small end of the pipe. On no account should a pipe of small diameter be jointed to a pipe of large diameter, except by means of a taper pipe. Various bends are made to curves of various radii in order to avoid abrupt changes of direction, but these should only be employed in the construction of rainwater drains; Y junctions also should only be employed in such drains. These are arranged to bring branches into the main drains or to bring two branches together, and are of various forms, but should be in all cases so arranged as not to discharge either stream of water at right angles to the flow of the pipe which it joins, as this is liable to cause a deposit of any solids carried along and an obstruction in the pipe. They should be joined to the main pipe at a rather acute angle, so that the two streams may unite and flow together. These Y-pipes do not necessarily have both branches of the Y of the same size, and they may vary considerably; thus a 4-in drain may be brought in to join one of very much larger diameter.

For all drains conveying solids such junctions are to be avoided, and connections should only be made by means of open channels in chambers specially arranged for the purpose; the reason being that all such drains are liable to stoppage, and if they are branched into another drain by means of a closed junction the difficulty of locating the stoppage is increased.

It may be well to point out that even drains conveying only rainwater are not absolutely free from solid matter, droppings from the mortar joints of parapets and chimneys, the droppings of birds and soot—all get washed off into the gutters, especially in heavy rains, and find their way into the drains, and if these have so slight a fall that the flow is very sluggish, they may be deposited in the drain and gradually block it. I have seen a drain taken up after a lapse of about a dozen years when more than half the sectional area of the pipe was choked with such deposit.

The open channels already referred to are also arranged so as to bring the sewage they carry into the main channel in such a manner that the flow may be checked as little as possible and may be delivered in the right direction, and they, like the bent pipes, are made to various curves of different radii. In many cases where the radius is small and the change of direction is therefore rapid; these are not merely half channels, but three-quarter channels, the edge in the outside of the curve being raised and curved over to prevent the stream of water shooting over; but it is desirable to avoid, if possible, very sharp curves in pipes carrying soil.

There are various methods of jointing such pipes so as to make a continuous drain: the old method used to be to place the two pipes together, the spigot end of one pipe inside the socket of the next below, and then make good the joint with clay. Such a joint is quite unable to withstand the severe tests to which drains are now subjected, and would therefore be liable to fail if the drain at any time was under pressure. A clay joint, moreover, is liable in many soils to dry up and crack and become leaky even within a few weeks of its formation.

The simplest form of joint now used is the cement joint, and if carefully made this is perfectly efficient. The two pipes to be jointed are placed in their true position, carefully centred, and the cement, which must not be so liquid as to run easily, is filled in round the joint—an operation requiring much care if it is to be well and uniformly filled all round; the joint is finished off externally with a sloping face.

Care must be taken to ensure that no cement is forced up between the two pipes so as to form a ridge, which might check the flow of sewage in the pipe, and when cement joints are used a badger is generally employed to clear them. This is a circular piece of wood smaller than the pipe, with a rubber edge, and having a wire handle attached; it is inserted before the joint is made and afterwards withdrawn, removing all cement that may have been forced up between the joint. Sometimes this is wiped out with a cloth. For this reason it is most undesirable to joint up two pipes before laying them in the trench, as the section thus formed is too long to allow the internal joint to be reached.



THE GREAT HALL, STOKESAY CASTLE.

Other joints depend on the previous preparation of the spigot and socket by coating them with a preparation of asphalt cast on by means of dies, and so arranged that the pipes are self-centreing. Of these the best known is Stanford's joint, the patent for which has expired. In this joint the material (which is formed of 1 part of clean sharp sand, 1 part of boiled tar, and $1\frac{1}{2}$ part of sulphur) is made conical in form. It requires greasing before the joint is made, and care must be taken that the spigot is driven well home into the socket. This joint is sometimes finished externally with cement.

Another similar method of jointing is supplied by Messrs. Doulton, and is termed an adjustable joint, the band on the spigot having a carefully-formed curved surface; this joint also is fortified by an external ring of cement applied outside the joint.

Sykes' joint has the composition cast on in the form of a screw and nut, the two pipes being screwed together, a thin layer of cement composition being used, which is forced into all interstices by the screwing up of the joint.

There are more elaborate forms also used; a useful one, especially in wet situations, requires an extra deep socket and provides two

bands of such asphaltic composition with a clear space between them. After the joints are put together this space is filled up with liquid cement from a hole above, and provides a very strong and watertight joint.

There are some other points to be considered in relation to the laying of a drainpipe; but before touching on them I must point out that all we have done at present is to consider the formation of a pipe to carry away rainwater or sewage.

Sewage begins to decompose very rapidly, and in the process it gives off a gas that may prove extremely injurious to health, especially if it is introduced into an enclosed space such as a building. One of the objects to be attained in arranging a system of drainage, is to prevent this gas entering the house or other building. This is done by the use of traps; the oldest form of trap is the dip trap. This consists of a rectangular box inserted in the length of the drain with a division running across the upper half, and carried down low enough to dip into the water that will always be retained in the lower part of the box. This is the principle of all traps, and consists, you will see, in placing in the course of the drain an obstruction which, while it allows the sewage to pass under it, interposes an obstacle to the return of air from the lower part of the drain.

The principle is correct, but the special form above described is in practice to be condemned; the box form offers a receptacle in which any solids contained in the sewage are apt to be deposited; it checks the flow of sewage, and if not very well constructed is apt to be leaky.

The intercepting trap is a development of the same principle but with all the drawbacks of the dip trap eliminated as far as possible. It is made of the same material as the ordinary drain pipe, and constructed so that its lower end can be jointed into the drain below; the upper end has a flange or half socket to receive an open channel from the drain above. The trap is usually made to dip sharply and to rise with a more gradual slope, and where there is no difficulty about falls, it is desirable that the upper side should have a cascade; that is to say, the upper arm is kept at a slightly higher level than the lower to give increased impetus to the flow so as to clear the trap well.

Between the outlet and inlet the upper part of the trap dips down somewhat in the form of a lip, to a considerable depth below the level of the outlet, so that it is at all times submerged to a depth of at least 2 to 3in. by the water which is retained in the dip, thus "sealing" the trap as it is termed and performing the part of the dipper in the old trap. It is usual to add to this form of trap a cleaning eye, so that rods can be passed down the drain from above in case of an obstruction, and this eye is closed by a stopper hermetically sealed.

The very best of such traps inevitably put some check on the flow of sewage, and it therefore happens that obstructions, if liable to occur, generally take place at the trap, and under these conditions, the chamber in which the trap is placed may become charged with sewage and much difficulty experienced in clearing the obstruction. To meet this, in some of the best traps an additional opening is provided above the cleaning eye, closed by a heavy stopper with a chain attached, which is secured to the top of the chamber so that it can on occasion be raised when the chamber is full, allowing the contents to flow away through the cleaning eye.

Such a trap as has been described is used in the main lines of drainage to intercept the return of the sewer gas from the main sewer into the drainage system; but within the system itself such gas may be given off or the intercepting trap may fail to act on some occasion and further safeguards are required.

These are supplied by gullies, which are traps of varying forms arranged to disconnect the rainwater and other pipes from direct communication with the drains. Though differing in form in many different directions, the principle of all is the same; they consist of a chamber open at the top to the outer air and covered by an open grating and adapted to receive the water discharged from one or more rainwater pipes or wastes which may be connected to apertures in the body of the gully, arranged so as to be above the water level or may be simply discharged above the grating covering the chamber.

If the gully is to receive liquid matter only, it is formed something like an intercepting trap, the outlet being at the bottom with an arm rising sufficiently to secure an efficient seal. Such a gully should be self-cleansing, and therefore free from any square angles. One form of such gully much used now is the channel gully, which has a large head forming a channel into which the down-pipes and wastes may be discharged, the object being to remove the discharging pipes from a position immediately over the body of the gully, so that in case of its failure from any cause to intercept the sewer gas, it will be less likely to find its way into the pipe and thence into the house. Such a gully, and some other forms also, are made in two pieces, allowing of ready adjustment both to the drain and the rainwater pipes and wastes.

If solids are liable to be brought down with the liquids it is often desirable to prevent them from entering the drain, excepting, of course, in dealing with soil pipes, and in that case the body is deepened to form a pocket into which they will be deposited—the outlet and trap being placed at one side. This is the principle of the road or yard gully where a large chamber is provided to catch the grit washed off the roads, which is from time to time dug out.

A special form of receptacle and trap is required to receive the waste from scullery sinks which is apt to be charged with grease, as, if allowed to enter the drain, this is liable as it cools to congeal and clog the drain. The simplest form of trap for such a position has a central sinking in which stands a dipper, in the form of a metal box with a long handle, and a very deep seal is provided. The trap is larger than most, contains a considerable body of water which will normally be cold, and as the warm discharge from the sink enters rapidly chills it, the grease, or most of it, floating in the centre of the trap, and not passing into the drain. It is removed by raising the dipper which fits the gully and brings out the refuse with it, and after cleaning is returned. This form of trap is open to the objection that it requires frequent attention to remove the grease that collects, which rapidly becomes putrid, and it cannot therefore be considered as by any means a perfect arrangement.

A better but more expensive arrangement is the flushing grease trap. This consists of an earthenware chamber with a deep seal trap at the outlet, and with a loose top capable of being securely fixed but removable for occasional cleansing, and provided with a flushing rim and inlet, as well as inlet from sink. A flushing tank, 20gals. at least, with a head of water not less than 7ft., should be provided and fixed, if possible, inside the house, and should be made to discharge automatically at fixed intervals, say twice a day, or oftener if the sink is much used. On discharging part of the water is conveyed to the flushing rim, part conveyed direct down to scour out the bottom of the trap. The action here is that the flush breaks up the congealed scum into small pieces and forces it through the drain, and being already congealed it is not liable to adhere to the sides of the drain.

Another somewhat simpler form of grease trap is also used, which has also a flushing rim, but with a grating over it; this is made in two or three pieces, and the receptacle being circular the different parts can be adjusted separately to accommodate the drain, the inlets from sink or sinks, and the inlet from flushing tank.

I would remind you of what was told you about the traps used by plumbers and their liability to failure from—1st forcing of seal, 2nd syphoning out, 3rd evaporation.

The first may happen to the intercepting trap; but, as already stated, should not occur to any gully in a well ventilated drainage system, neither should syphoning; but circumstances may arise under which either of these causes of failure will come into action.

The most frequent danger of failure, however, in the traps connected with a system of drainage, as distinct from those in a system of plumbing, is the failure from evaporation. Such traps have a rather large water area directly open to external air, and in cases where they happen to have no discharge from rainwater pipe or waste through a considerable period, the water may evaporate to such an extent as to destroy the seal. This may easily arise from the disuse of some internal fitting or from a long spell of dry weather.

With one exception the most dangerous position for such a gully is a small external area to a window which can at no time receive much rainfall, and it is desirable in any such position to take into the same gully the discharge from a bath or lavatory in constant use. The most dangerous situation of all is that in which a gully is required to be placed inside an internal cellar or basement to drain it when occasionally washed down. Such gulleys should be avoided if possible; if this cannot be done some special precautions should be taken, the best being to cut off the drain by means of a valve only opened when the cellar is cleaned; but even this is not perfect as its utility depends upon the valve being properly closed.

We have still to consider the methods to be adopted for locating any stoppage, and removing it, before we consider the actual laying of the drain. This is provided for partly by the use of manholes, and partly by taking care that all connections are made in such manholes, and that the drains between them are laid to perfectly even falls and in truly straight lines.

A manhole is a chamber usually built of 9-in. brickwork on a concrete foundation, and should not, if more than 1ft. 6in. deep, be of less clear internal size than 2ft. 6in. by 3ft., or it becomes difficult to use cleaning rods; and if many connections are required it may be considerably larger. Such chambers are of two kinds, 1st the intercepting chamber, 2nd the inspecting chamber.

An intercepting chamber is always placed between the drainage system and a public sewer or cesspool; it is always on the land belonging to the house to be drained, but as near the sewer as this condition will allow. In the wall next the sewer is inserted an intercepting trap already described, and through the manhole the main drain is conducted in an open channel. This is usually half round in section, and of glazed earthenware, but is sometimes formed in the concrete and rendered, but the first is more cleanly. This channel, which may with advantage be laid to a sharper fall than the drain itself, is made good to the trap at one end and at the other to the drain, and above the channel the concrete is banked up steeply and rendered in fine Portland cement, which should be continued for 12in. up the walls at least, unless the chamber is lined with glazed bricks. If additional drains have also to be brought into this chamber, they are conducted by means of the curved channels already described so as to discharge into the main channel. They should on no account be brought into the manhole high up and allowed to discharge in a cascade. Specially-made earthenware bottoms to the whole chamber are now sometimes used, thus avoiding any cement work, and ensuring greater cleanliness. If the chamber is deep, climbing irons must be built in for access—either purpose-made iron steps or a length of iron gaspipe built in diagonally across one angle. The chamber is usually roofed with a slab of stone carefully bedded and jointed all round, and perforated and fitted with an air-tight manhole cover which can be locked in position where access is not required. Such a chamber must have a fresh-air inlet, which will be referred to later. In a country house, where the intercepting chamber is a long way from the building, it sometimes has an open grating instead of an air-tight cover. An inspection chamber is similar in all respects except that it has no trap and no fresh-air inlet. Such chambers are placed wherever most convenient, and are provided wherever the principal drain changes its direction, or where it is desired to collect together several single pipes. They may with advantage have at the outlet a special pipe with an enlarged end to facilitate the use of cleaning rods. Such chambers should not in any case be more

than 80yds. apart unless an intermediate lamp-hole is provided. In towns such distances are rarely encountered, but they may well occur in dealing with a country house. Lamp holes, which must only be inserted in straight lines of pipe—never in bends—consist usually of an upright pipe of the required length, 6in. diameter, and with an iron frame at the top; they are merely used for lowering a lamp or candle when it is desired to examine the drain.

We have now dealt with the various component parts of the drain; let us look at the method of bringing them all together into a complete drainage system, first of all on paper in planning them, and afterwards in construction.

Take an ordinary double frontage semi-detached house. The first thing to do is to ascertain the position and level of the sewer, and the level of the lowest point of the premises you have to drain, and ascertain the length of run approximately; if there is an amply sufficient fall for your purpose, say 1ft. in 40 or upwards, you may start from the head of the drain, and lay out your levels without any anxiety.

It is not essential that a drain should have a uniform fall throughout its entire length, but it is essential that the fall of each separate length be uniform from manhole to manhole; and bearing this in mind the drain should be laid out so as to entail the least amount of digging possible, and with the smallest efficient fall. It is important to start with an inspection chamber near the head of the drain. The invert may be arranged about 2ft. or a little more below the ground, unless it is liable to be exposed to moving loads above it; fix the level as so much below the level of ground floor or some fixed datum. Then lay out the drain to the next manhole, allowing a fall of 1 in 40 for a 4in. drain, or 1 in 60 for a 6in. These falls are enough to maintain a flow of 3ft. per second, and to render the drain self-cleansing, and should not be increased beyond 1 in 35 for 4in., or 1 in 45 for 6in., or the result will be for the liquid to run off too fast and deposit solids in drain instead of carrying them along; but as already stated, the channels in the intercepting chamber may be given a more rapid fall, say 1 in 12, to give extra velocity to the sewage before it enters the trap. The exact level of each manhole should be calculated, in reference to the datum first used, and figured. When the intercepting chamber is reached, the remainder of the drain may be given a steeper fall from this point direct to the sewer.

If you have, on the other hand, little to spare in height, it is well to start from the intercepting chamber and work backwards to the head of the drain. In laying out the drains of such a house they must be so contrived as nowhere to pass under the building itself. It is necessary also to provide for ventilating the drain. If this is not done gases may collect in the drains, and will exert a pressure upon the traps, and if the accumulation continues, and the pressure increases, may force the seal of one or more of them.

The usual system is to provide for letting in a current of fresh air at the intercepting chamber and providing, at the head of the drain, a ventilating pipe, carried up the full height of the building, and at least 3ft. above the level of the eaves, or, if there are dormers, 3ft. above the top of the highest window. If this soil pipe comes within 10ft. of head of drain, this may be used as the ventilating pipe, otherwise a special pipe must be provided. The inlet usually has a square boxhead, closed by valves of mica, to prevent its acting as an outlet. The outlet should have a wire dome fixed to the top, in order to prevent birds from building in it, and stopping its action. With such an arrangement in working order it is impossible for gases to accumulate so as to exert a pressure upon the traps, as they would escape from the outlet at a point where they would be innocuous to the inhabitants, but the inlet in particular is liable to get out of order, if not attended to, as the pivot on which the mica valves work may corrode and stick.

The fresh-air inlet is usually kept low down, while the ventilating shaft is carried up to above the roof level; and the theory of this arrangement is that the difference in the length of the two pipes will stimulate a flow of air through them and the intermediate drain. If it is possible to fix the ventilating pipe on the south side of the house, where it catches the sun and is warmed, such action is no doubt assisted during the periods of sunshine; the column of air in the pipe will at such times be heated, and tend to rise, but this action cannot be relied on in all weathers; it does, however, at all times provide a free outlet for any vapours arising in the pipes. In some special cases it is permissible to reverse the positions of the fresh air inlet and the ventilating pipe.

The actual construction of a drain is not a very difficult matter, but requires care and supervision. The necessary excavation must first be made, and the levels at the various points tested. A layer of concrete not less than 4in and usually 6in. thick, is spread over the floor of the trench, and is made from 9in. to 12in. thick under the manholes; the syphons, channels, and inlets to the manholes are then placed in position and bedded and the walls afterwards built up and the laying of the pipe drain between manhole and manhole is proceeded with. It is of great importance that pipes should be laid not only in a straight line on plan, but to a true fall in section, otherwise it would be impossible to look through the drain to detect obstructions, and in addition to the levelling of the concrete-bed each pipe is adjusted with a level. This may be an ordinary level placed on a special gradient block, the lower edge adjusted to the required edge, or an adjustable gradient indicator may be used. The pipes should be blocked up with bricks, or better, with special blocks, while the joints are made, and when a length is completed between two manholes it should be tested and afterwards concrete should be carefully filled in around the pipes, care being taken not to jar them or crack the joints. When concreting is finished and set a further test should be made.

The whole of the drains are thus laid; the end of each should terminate at a manhole or at a gully or be connected direct without any trap to the soil pipe or ventilating pipe. Any drain so laid is capable of being cleaned throughout its whole length by means of jointed rods worked from the manholes; if, on the other hand, one drain is jointed into another and an obstruction arises, it cannot readily be reached for cleaning without breaking up the ground. Where a drain runs between two manholes, a light may be lowered into one and from the other it will be possible to look down the drain and detect any obstruction.

In arranging the plan of drainage it is necessary to determine the size of drains to be used in various positions. It used to be customary to put in needlessly large drains, but it is now well understood that the smaller the drain, provided it will accommodate the maximum flow, the better. It is found in all respects better for a drain of small diameter to run nearly full than for the same amount of sewage to very partially fill the lower part of a drain of larger diameter, and at most times a "4-in." drain would suffice for even a large house were it not for the consideration of storms of rain.

The daily supply of water per head for all purposes is reckoned variously according to the class of house, from 8 or 10 gallons up to 50 or 60, and may be taken as a rule at about 30 gals., so that in a house containing ten inmates the daily flow of sewage would amount to about 300 gals. A 4-in. pipe, in which the sewage flows at the rate of 3ft. per second, will, when flowing half full, carry 50 gals. per minute, and a 6-in. pipe, at the same velocity and half full, will carry 115 gals.

If we consider the rainfall in addition, and assume we have to provide for draining a plot 25ft. by 80ft., or an area of 2,000ft. super., we find that an inch of rain will result in a downfall of 1,040 gallons in this area. In a heavy thunderstorm in England such an amount of rain may fall within half an hour, but a 4in. pipe flowing only half full should suffice to discharge this amount of water in 21 minutes, and would do so in the case of a straight pipe without obstruction, but in practice the interruption caused by manholes and changes of direction check the flow considerably, and where such a volume of water is to be dealt with a 6-inch pipe would be desirable. It may happen that with the utmost care in setting out the work circumstances make it impossible to secure enough fall to insure a velocity of 3 feet per second; in that case the drain cannot be relied on to be self-cleansing, and it is desirable to provide for periodically flushing it out. In some of the suburban districts round London and elsewhere a separate set of sewers is provided for rainwater, and the rainwater drainage is kept distinct from all sewage and soiled water, and in such cases a similar arrangement is equally necessary for dealing with the sewage.

This is done by constructing a chamber at the head of the drain so as to form a cistern that is discharged automatically when the water in it reaches a certain level by syphoning out. The flow of water into the tank is regulated so as to occupy so many minutes or hours as the case may be, and the tank should have an outlet equal in diameter to that of the drain to be flushed, so that the discharge may practically fill the drain, and carry all obstructions before it. The water from a bath and pantry sink, but not from a scullery sink, may be used with many forms of flushing tanks as a supplementary flush, or in place of a supply from the main, or one or two rainwater pipes may be taken to discharge into such a tank, but such a supply can only be supplementary, as its regularity cannot of course be depended upon. In dealing with long-drainage systems a penstock may be usefully employed at



STOKESAY CASTLE: THE GATEHOUSE FROM THE COURTYARD.

intervals, especially at the inlet of intercepting chamber. This is a stout metal disc, which, when in use, closes the inlet, and is worked by a screw or by a spindle. If this is closed while the upper part of the drain is flushed the water will be retained, and banked up in the lower part of the drain, and can be released by raising the penstock; a compact body of water of considerable volume will then be discharged, and will efficiently flush the intercepting trap.

In dealing with terrace houses which are so constantly met with in London, even in the best parts of the West End, we are confronted with the difficulty that we are not able to drain the back of the house except by a drain passing under the house itself, save in those comparatively rare cases where there is a sewer at the back as well as the front, or where a system of combined drainage at the back is resorted to.

In such a case an inspection chamber should be formed at the back collecting the various drains, and a straight line of drain taken through to the front intercepting chamber. No connection whatever must be permitted within the house itself, and it is desirable that an arched opening should be formed in all walls through which the drain has to pass, so as to avoid any rupture of the drain-pipe in case of a settlement occuring to the walls. The pipe must be entirely cased in cement after it has been tested in the usual way.

In some cases of this kind the pipe running between the two chambers is constructed of heavy cast-iron socketed pipes, caulked with lead at the joints, as these are less liable than the best protected stone pipes to crack under a settlement and allow sewer gas to escape into the house.

Complete systems of iron drainage are now arranged for, with pipes, traps, inspection and intercepting chambers all constructed in heavy cast iron, jointed with sockets or flanges. In this system brick inspection chambers are formed as usual for access, but the actual chamber for connecting the drain pipes is quite small, merely a rectangular or circular enlargement of the pipe, with an air-tight cover, the junctions being cast on at the required angles. Such an arrangement is cleanly, which the best contrived chamber cannot always be; it offers no large receptacle in which sewage may lodge and decompose, and at the same time is easy of access; but the cost is higher than that of ordinary drainage.

We have assumed that in all cases our drainage is to be connected to a public sewer, but even within short distances of London cases are to be met with where there is no such public sewer in existence, and in many such cases a cesspool must be resorted to. A cesspool is an undesirable neighbour to a house, and should not be constructed within 100ft. of it; if used, great care must be taken in its construction and in providing for its cleansing.

It is most undesirable that such a chamber should be built dry, that is to say, without mortar, as this allows the liquid to soak into the surrounding land, contaminating it, and if there are any wells or streams in the district, such a cesspool may be the means of poisoning the water at a very considerable distance. Cesspools are best constructed of impervious bricks set in cement and backed with clay puddle; they should be easily accessible for cleansing, and of a form that is adapted to this end, all sharp angles being avoided.

All rain and surface water and bath wastes should be carefully excluded; but drains from soil pipes, lavatories and sinks, and laundries, if any, must be provided for, and sometimes stables and cow houses; exclusive of the two last items, the daily amount of sewage per inmate may be taken at 12gals., say 2 cubic ft., and the size of the cesspool required to contain the necessary amount of sewage for a household of so many inmates for a week may be readily calculated. Such a cesspool is best cleaned weekly, the contents being distributed as manure in land away from the house.

A cesspool must be cut off from the drainage of the house by an intercepter, and the house drain thoroughly ventilated. The cesspool also, if it has an air-tight cover, should have an outlet pipe to allow of the escape of air as it gradually fills, otherwise it must of necessity be forced through the trap into the drain. Care must be taken that such an outlet terminates where no harm can result from the escape of sewer gas.

In dealing with a large country house where no sewer is accessible, the sewage may be treated by land filtration or precipitation in certain circumstances, but such methods hardly come within the scope of this lecture.

I must refer briefly to the method of testing drains usually employed. The two most usual and important tests are the water test and the smoke test. The former is applied to all new drains, and consists in closing the lower end of the length to be tested by means of a stopper; this is sometimes in the shape of a disc with an india-rubber ring round it, which can be forced out so as to come in contact with this pipe all round; sometimes a bag is employed which is inserted into the drain and then extended by pumping in air.

The drain is then filled with water as high as the level of the lowest gully connected with the length, or as far as the next manhole if there is no connection, but the head of water should in no case exceed 10ft.; if this be exceeded the length of drain must be subdivided and tested separately. Care must be taken in filling that the gullies do not become air-locked, as a cushion of air is then formed which makes the test unreliable; this is prevented by inserting into each gully a piece of bent tube so as to connect the internal air-chamber with the outer air, giving it a means of escape as the water rises in the pipe.

When the drain is filled it is left for not less than half an hour, the level of the water being marked at the commencement of the test and again noted at its close. There should be no perceptible loss of water beyond an extremely trifling one, due to absorption by the new cement in the joints, which sometimes occurs. If any loss is noted the length of drain must be carefully examined for any dampness, and it is on this ground that it is so important that the pipes should be well above the concrete level during the test, as it makes any leak so much easier to observe. Any joints that show failure must be marked and made good, and the test repeated. Every joint-pipe must be thus tested. In a small system of drainage one test may suffice for the whole if the level of the gullies is uniform; but in many cases several separate tests are necessary.

The smoke test is applied partly to test the efficiency of the ventilation of the drain and partly the efficiency of joints made above ground, particularly those in the soil pipe. In the first case one or two smoke rockets are placed in the intercepting chamber and ignited, the cover being at once replaced; in a short while, if the system is efficient, the smoke will be seen issuing from the top of the ventilating pipe.

When the test is made for the purpose of determining if there are any unsound joints, the top of the ventilating pipe may be closed by a damp cloth or a drain plug, and all traps filled with water; the soil pipe is then charged with smoke by means of a rocket if short, or by forcing smoke in from a larger apparatus if required, care being taken that no smoke escapes except into the pipe. The smoke used has usually a strong, pungent smell, and if there is any escape it is at once detected, but may be difficult to locate unless it escapes in sufficient volume to be seen.

For testing old soil pipes to which there is no access without breaking open the drain, ferrets are often used; they are small vials containing a substance emitting a strong, pungent odour; they are attached to a string and passed through one of the traps with the flush from a W.C., an arrangement being made for breaking them in the pipe, when any leakage is quickly detected by the odour.

You may be called upon to inspect and report upon the drainage of an existing house, and I may perhaps usefully conclude with a few remarks on such duties.

You will have little difficulty in recognising whether the drainage system you are called in to inspect is modern or of an antiquated type. In the first case inspection will be easy, as manholes will be provided, and it should not be difficult to locate any stoppage or leak by careful observation in the first case and by the water test in the second. In the case of an obstruction it should be capable of removal without disturbing the drain by means of rods. In the case of a leak it is not possible to exactly locate it without opening the ground, but you can fix with certainty the limits within which it is to be searched for.

If on the other hand you find indications of an antiquated system—including an utter absence of manholes and no proper ventilation—a mere ventilating pipe to the soil pipe, without the provision of a fresh-air inlet, is not efficient, your task will be more difficult. It will be necessary to have the ground opened to reach the drain in order to test it, and you will be fortunate if in such a case you find any plan of the drains to assist in the search. You may expect to find that the drains will not stand the water test, and in that case to comply with modern requirements, it is necessary to have them grubbed up and relaid. It does not necessarily follow that a drain that will not stand this test is, if in other respects well-designed under ordinary conditions, defective, but it is not a drain that can be relied upon, and if at any time a stoppage occurs in this drain and the sewage is thereby banked up and retained in the pipes the conditions become similar to those under which the test is applied and leakage is sure to occur.

Whenever drains are relaid care should be taken to make them comply with modern conditions. Not only should manholes be provided, but irregularities in the line and fall corrected; but in such a case the level of the lowest part of the building and of the sewer is rigidly fixed, and the drain must be laid out so as to secure the best fall compatible with existing conditions.

With an old drainage system you are liable to encounter pipes branched into other pipes, not by means of a proper eye, but by means of a hole cut into the pipe and made good with cement. This is almost sure to be a right-angle junction and defective. There may also be a dip somewhere in a pipe, otherwise sound, which will cause a deposit and ultimate blocking of the pipe.

Examine carefully all traps throughout; ascertain that the intercepting trap and also the gullies have a proper depth of seal, and that there is a proper provision for preventing the gullies becoming unsealed by evaporation. If a grease trap is used for scullery, ascertain what means of flushing it is used; and if there is none, if any provision is made for cleansing it at regular intervals.

Satisfy yourself that the ventilating system is properly designed and is in efficient working order, and that the connection between the soil and drain pipe is properly made, and that all rainwater pipes, bath, lavatory and sink wastes and overflows are disconnected by means of gullies.

Remember that redraining a house is a costly and troublesome process, and be quite clear that there is good reason for requiring the execution of such work; but, on the other hand, do not forget that bad drainage may mean bad health and loss of life, and that you are not doing justice to the owner or occupier, and may incur serious personal responsibility, if actual defects are overlooked in such an inspection.

The Hall of Fame of New York University, which is built in the form of an open colonnade in the university grounds at Morris Heights, overlooking the Hudson, is approaching completion, and the judges, consisting of justices, publicists, professors, and university presidents, have already begun to select the immortals who are to occupy this noble hall. One of the conditions is that they must have been dead at least ten years.

A new Wesleyan Church, at Herne Hill was opened recently. Accommodation is provided for over 600, and there are two vestries and a large church parlour for classroom and tea meetings. The church is of red brick and stone dressings. The architects are Messrs. Gordon and Gunton, of Finsbury House, Blomfield Street, E.C., and the builder is Mr. W. V. Goad, of Camberwell Road, S.E. The general foreman of works was Mr. T. C. Dickinson, of Albert Road, Peckham, S.E.

HOLBORN-STRAND STREET.

CRITICISM OF THE DESIGNS.

THE drawings submitted by the eight selected architects for the Holborn to the Strand street are now on view at the Royal Water Colour Society's Gallery in Pall Mall, and will well repay the trouble of a careful inspection.

The problem for which a solution was desired is of a complex nature, the portion selected for treatment being the base of the new street, where the avenue bifurcates and leaves a great island opposite St. Mary's Church. All the competitors have naturally selected this latter position for the proposed County Buildings, while a portion of this has already been allocated by the Act of Parliament for a specific purpose contingent upon the improvement.

The plan then roughly presents a vast crescent, dividing the traffic and giving a noble entry into the Strand, westerly to Waterloo Bridge and easterly by St. Clement Dane's Church. It will thus be readily seen that a very great opportunity was given to originality of design, but this had to be chastened by practical and consistent regard for commercial considerations.

All that was asked for were elaborations of the façades and a block plan. To our junior professionals this would open a pleasurable vista, but to the matured architect a very grave aspect was added to the problem in the alteration of elevation from plan, a dictum which will not hold good even in these days of Classical revival; hence much difficulty was experienced.

The result of this "concours" can therefore only be of a tentative and suggestive nature, and affords but a general idea of what the ultimate result may be. Several reflections present themselves to the visitor, one the enormous amount of work which has been done and the clear presentation of the several individualities of the several competitors, although only designated by numbers. Looking at the exhibition as a whole, it will be, no doubt, considered that the majority have failed to grasp the great civic idea. It would be comparatively easy to foresee what eight selected Parisian architects would have proposed, and the complete sympathy that they would have expressed as compared with any attempt which could be made in London.

The architectural character which was suggested was "Palladian," and it is somewhat curious to note what this term conveys to the minds of some of our men of light and leading. We note the wisdom of the London County Council in thus formulating their wishes; but the term with our architects seems to be somewhat elastic, and very great latitude has been assumed by several competitors, while the general term covered by all would be nearer being "Palatial."

Conditions were laid down as to draughtsmanship, as a flat wash of ink for the window and door openings; but No. 29 gives a pretty washed effect, and No. 27 varies his tones and adds body-colour to a pen-and-ink sketch effect, both taking an unjust and uncalled-for advantage over conductors and competitors.

Entering the gallery on the left hand is No. 23, whose personality stands at the top of his profession; and it is reported that this is the first competition he has entered for since his R.A Gold Medal days. This gentleman breaks his plan up into various blocks. The public building has the look of a ducal abode, the others grouping around. The new street does not seem to come happily into the scheme: two avenues are provided, and the theatre treatment is good. The whole scheme is uncivic, and there is an amount of freedom which the individuality of the author has expressed in a general disregard for the conventionalities of proportion; the drawings are clear and free from any affectation of display, and may be designated as clear and plain.

No. 26 is the work of one of our most successful men known to everybody, and the design is generally admitted as the most satisfactory exposition of the problem. It is, in fact, the civic idea focussed with great skill in appropriate surroundings, the whole in one key. The character is in harmony with Somerset House and St Mary's Church. The principal entrance to the County Building is, however, at the bottom of the new street, which, when fully considered, will be found to be from every consideration the most desirable and, in point of vista, the most notable.

This has been admirably conceived by the skilful introduction of a grand quadrant flanked by towers and united by a fine screen wall, a dome—the only one introduced—being in the centre. Two avenues lead into the Strand, and these are connected with the main front by fine colonnades over wide spanning arches.

The Strand front is broadly treated, the buildings on either side of the avenues corresponding, but differentiated from the County Building. This latter has pedimented wings, and the central portion is a great flat curve which again brings out the dome as the dominant feature. In the County Building there is a broad and pleasurable feeling of wall space; the lighting spaces may in some instances be considered small, but as plan must govern and limit future possibilities, it is needless to criticise any separate features which can only be considered as suggestive. In this particular case, however, the whole lay out is admirable, and a definite idea is presented. It is needless to say, as always, the author of No. 26 has given drawings beautifully rendered, clean, crisp, and free from affectation.

In No. 21 we come to the commendable effort of one of our distinguished literary architects, who is strong both with pen and pencil. In the plan no definite line has been adopted beyond the inclusion of two avenues.

The treatment is brick and stone of the school of Wren, and the full advantage of height has been made use of. This was put as a limit, and it would not appear to have been a *sine quâ non*. The civic note is, however, lacking, notwithstanding the interest of parts, and a feeling of monotony supervenes, with a suggestion of first-class dwellings decoratively treated.

From the commercial aspect, however, No. 21 will certainly commend itself, notwithstanding the aggregation of rows of sash windows supervening without band or string, while the frequent repetition of certain defined decorative features will not yield the happiest result.

The drawings are thoroughly worked out, and the author's well known hand feelingly employed.

In No. 19 we have no doubt the architect of the Sessions House, and we find corresponding character. The plan is well arranged, with an internal court entered from the Strand, and parted therefrom by a colonnade; two avenues are provided on either side. The whole is treated in a severe phase of the Sessions House manner, and would make excellent Courts of Justice. Needless to say a fine dome occupies the centre flanked by noble campaniles, and smaller domes at each end of stunted proportions. Long straight lines have been maintained, but the tone is lost on the other buildings in which the wall surface is overloaded with arches and coupled pilasters. The whole is set upon a sparrow-pecked rusticated base; the character of the design is Chambersesque, and is the most severe in the gallery.

No. 29 is a brilliant effort by a clever Gothicist; the draughtsmanship is also clearly by another well-known hand, who is facile at this character of work.

The plan is decidedly striking, and provides a great quadrant to the Strand front, with a carriage drive recessed from the street. Two avenues give access from the new road, with steps down; and a fountain is placed at the parting of the road, with terraces upon either side. St. Mary's Church is shown upon the Strand elevation, and a fine horizontal treatment is maintained throughout.

The character is that modern rendering of Palladian which is finding favour, while parts are reminiscent of a former competition design for the Royal Insurance Offices, Liverpool. No central feature is shown beyond the indication of a dome in outline.

The drawings are admirably rendered with much spirit, and the fine and vigorous sculpture is very pleasing.

The elevations have been projected, and must have given great trouble, though this is a dubious advantage.

No. 17 is the work of an architect who has made theatre design his own: a small block plan shows a quadrant upon the Strand front, with flanking towers on either side of a severe pediment, which in like manner are outflanked by towers of still greater altitude, which bring the public building to the avenues. Its architectural characteristic is confessedly un-Palladian, and would not be unsuitable for Chelsea flats on a large scale; it is treated with freedom but naturally suffers from the great repetition.

No. 27 is no doubt the work of the talented author of a delightful house at the corner of Palace Court, who evidently declines to be trammelled by severe limitations, and so we are presented with a vigorous conception, shown in a powerful and sketchable way. It is impossible, however, to view it as a whole, but rather as a collection of masterly sketches; in short, it is hardly serious. Looked at in part, there is much to interest; but we hope to be spared a go-ahead château in the Strand.

No. 20 submitted a fine monumental design some years ago for the South Kensington Museum, but that level has not been reached in the interesting collection here submitted.

The author has provided a more detailed plan than any other competitor, and is the only one who suggests a circus at the bottom of the new road, the centre of which is suggested as the site for a National Monument.

The character is generally Palladian; the County Building stands apart in theme and is somewhat underwindowed. These have pediments which run up to the frieze, the architrave being retained over the three-quarter columns. The drawings are carefully carried out, but in parts considerably overdone.

The names of the authors of the various designs are not yet made public, but we would say they are as follows:—No. 23, Mr. Ernest George; No. 26, Mr. H. T. Hare; No. 21, Mr. Reginald Blomfield; No. 19, Mr. E. W. Mountford; No. 29, Mr. Leonard Stokes; No. 17, Mr. Ernest Runtz; No. 27, Mr. William Flockhart; No. 20, Mr. Mervyn Macartney.

A new Technical Institute and Free Library at Tonbridge was opened recently.

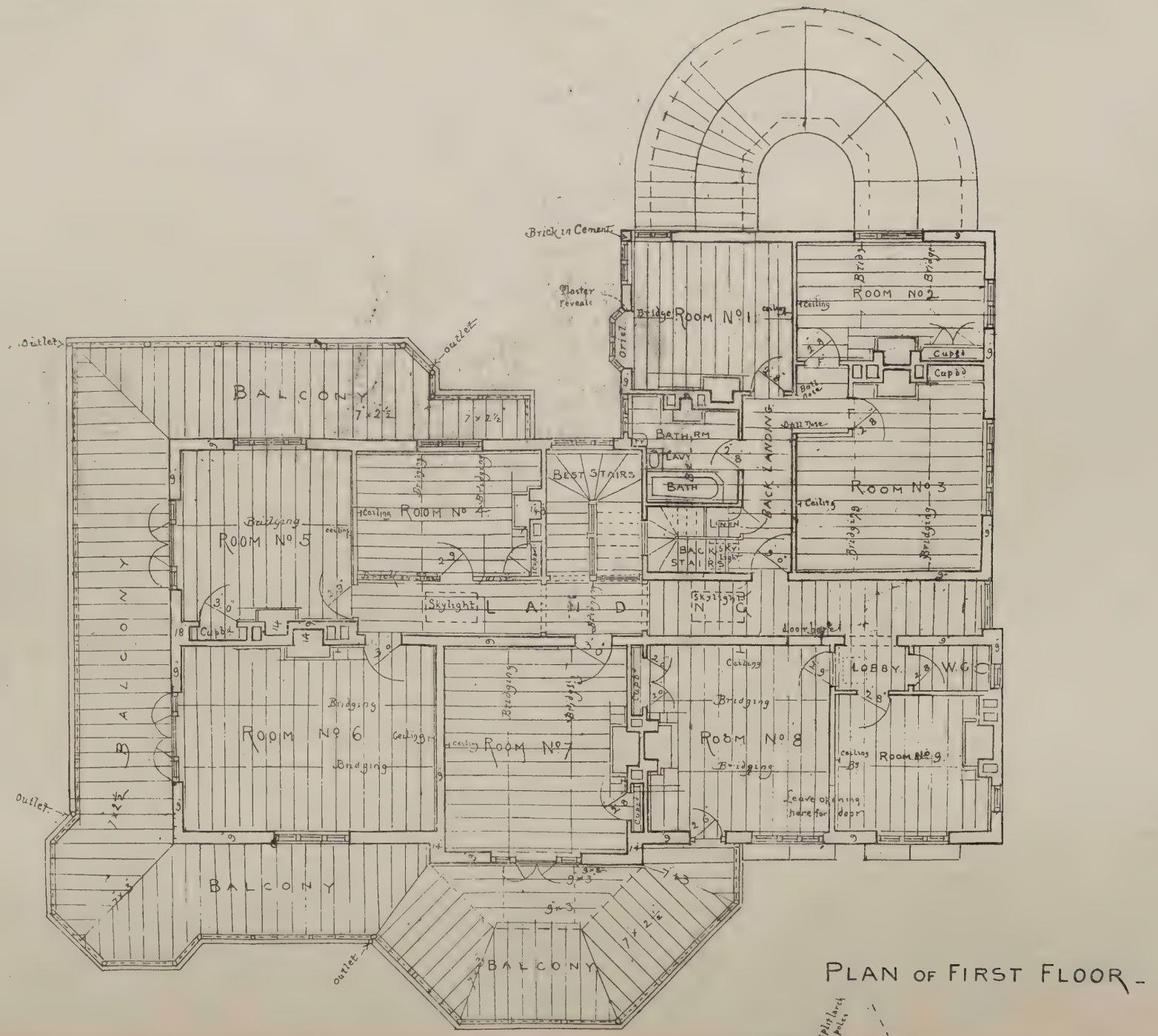
Glasgow Institute of Architects.—The newly-elected council of this Institute held their first meeting last week, when the following office-bearers were elected:—President, Mr. John James Burnet, A.R.S.A.; vice-president, Mr. Alex. Petrie; auditor, Mr. W. Forrest Salmon; secretary and treasurer, Mr. C. J. MacLean, writer, 115 St. Vincent Street. The various committees for the year were appointed, including Committees on Architectural Education, Public Architecture, and Glasgow International Exhibition Architectural Photos Collection. The secretary reported that he had ascertained from the Corporation that the assessors appointed by this Institute to act with the city engineer in adjudicating on the designs sent in for the Cowcaddens and Woodside District Halls competition had duly issued their report, but that the Corporation had delayed the consideration of it meantime in view of the adoption of the Public Libraries Act, and the possibility of going forward with a new scheme for a combined public hall and library. The secretary was instructed to remind the Corporation that considerable hardship would be inflicted on the competitors if, in addition to the very long period of uncertainty and delay to which they had already been subjected, the scheme on which they had spent their labour on the understanding that the building as laid down in the published conditions was to be erected should be now altogether set aside; and to state further, that in the opinion of the Institute's council the competitor whose design in the first competition had been recommended for adoption by the assessors should be entrusted with the carrying out of the revised scheme without further competition.



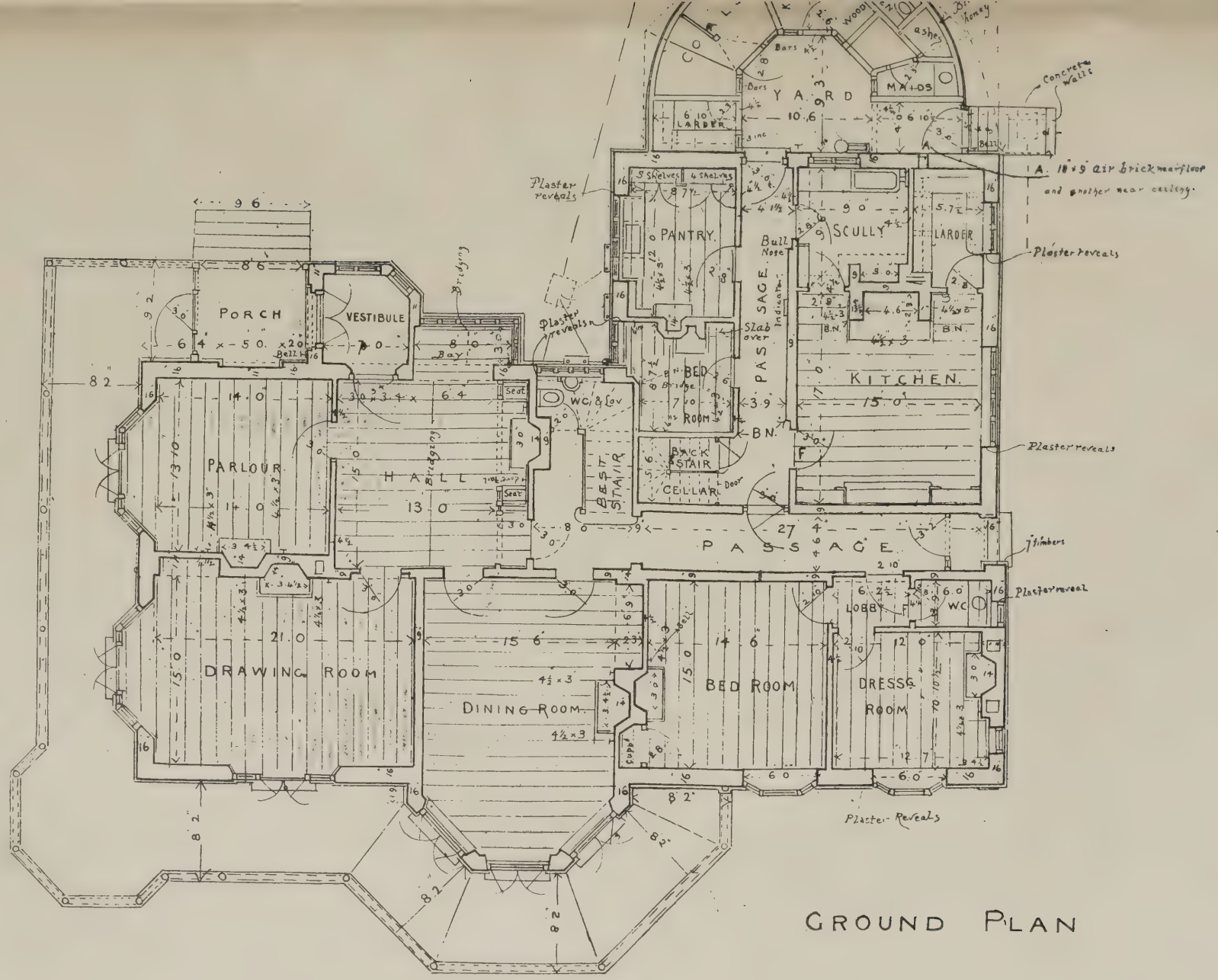
CLEVE COURT STREATLEY, BERKS. JOSEPH MORRIS AND SON, Architects.

LIBRARY
OF THE
UNIVERSITY OF ILLINOIS

Supplement to
THE BUILDERS' JOURNAL AND ARCHITECTURAL RECORD,
Wednesday, October 31st, 1900.



PLAN OF FIRST FLOOR.

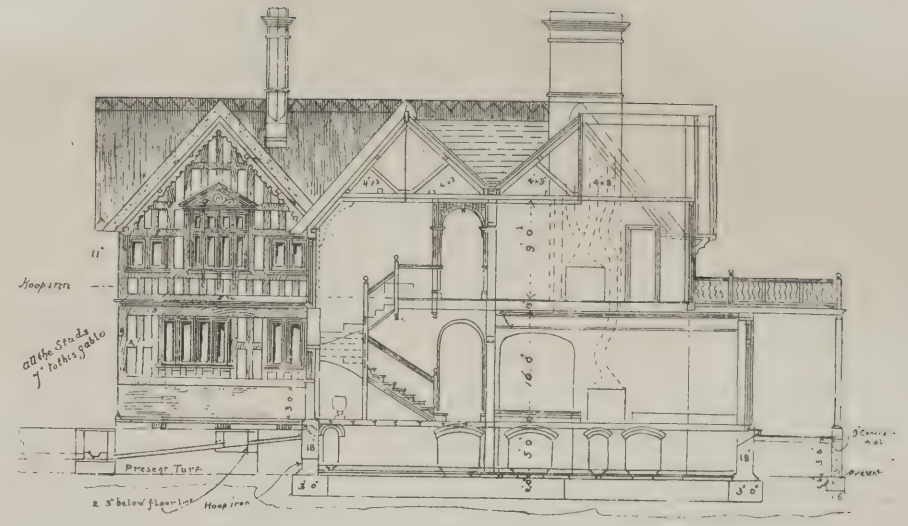


CLEVE COURT, STREATLEY, BERKS. JOSEPH MORRIS AND SON, Architects.

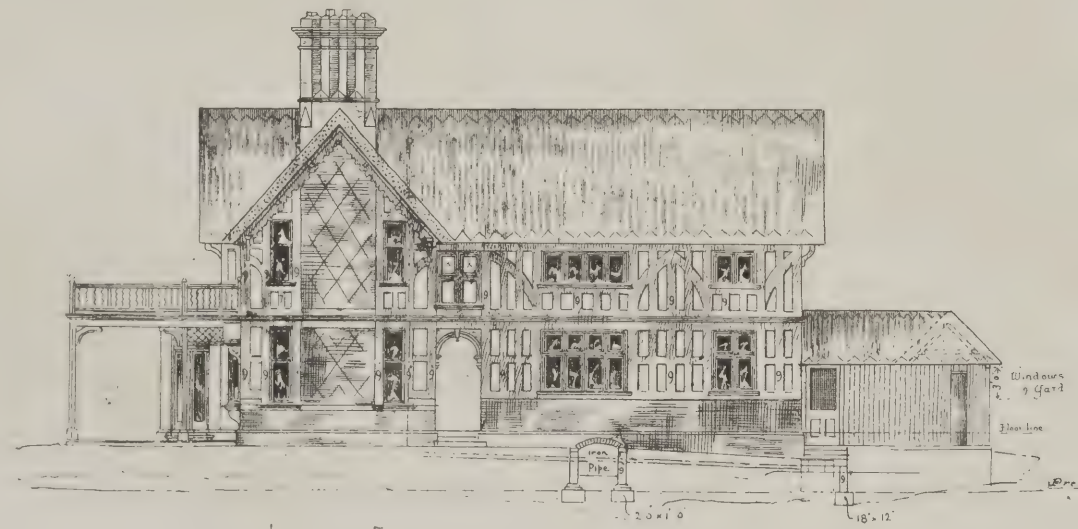
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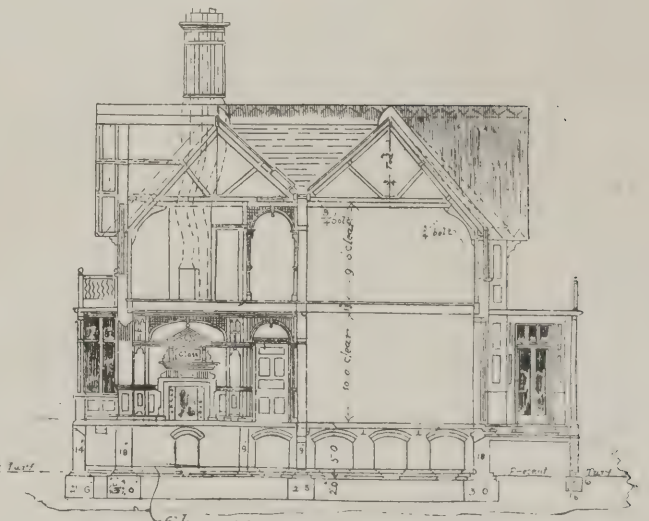
SOUTH ELEVATION



SECTION OF STAIRS & DINING Rm



NORTH ELEVATION



SECTION OF HALL & DRAWING Rm

CLEVE COURT, STREATLEY, BERKS. JOSEPH MORRIS AND SON, Architects.

New Patents.

These patents are open to opposition until December 3rd.

1899.—Brick Machines.—14,350. A. LOWE, Railway Cottage, Cowley Peachey, Uxbridge. By the combination of a moulding table, rising and falling moulds travelling in a circle, and pallet-board carriers, common sand stock bricks can be made in an ordinary pug mill with a considerable saving of labour.

Combination Ladders.—21,530. A. BARR, Campbell Cottage, Bothwell, Lanarkshire. This invention (which is an improvement on patent No. 24,183 of 1896) provides a structure which can be made into a ladder, an extensible ladder, a pair of steps, or a trestle. A swivelling catch is a leading feature.

Gullies.—23,064. J. PLACE AND SONS, LIMITED, Darwen, and W. H. PLACE, Darwen. The trap is placed outside the body of the gully (though integral with it) and the outlet is formed near the top, so that the capacity of the gully is not lessened by the trap being within it.

Window Sashes.—23,451. J. J. HARLEY, 27 Old Haymarket, Liverpool. Pieces of metal are fastened to the frame and to the sash in such a way that they are hidden when the sash is in position, and prevent the latter being opened beyond a certain limit. The invention has special reference to buildings in which persons are kept under restraint.

Light Metal Staircases.—23,510. E. WOOD & Co., LIMITED, Ordsal Lane, Manchester, and H. P. BUTLER, 107 New Park Road, Salford, Manchester. Metal stair-cases are usually of cast or wrought iron, and are necessarily heavy. The staircase which forms the subject of this invention is a very light one, having the treads made of thin steel pressed or stamped so as to provide a good foothold. Risers are also of light steel, and the whole is made secure with angle and other plates.

1900.—Chimney Tops.—848, J. LINKLETER, Tyneside Works, Tynemouth. The top is spiral in form, and is made from a metal disc of any desired size. This disc is cut spirally from the outer edge to the centre, and is then pulled out to the required length and fitted to a pot or tube.

Casement Holders.—14,672. G. F. DEAN, 6 Southey Road, Wimbledon. This holder is practically invisible. The arm is let into the window sill and the slot plate is secured to the underside of the casement. When the latter is opened the arm is automatically lifted clear of the holes in the slot plate and only drops into place when the opening movement is arrested.

The following specifications were published on Saturday last, and are open to opposition until December 10th. A summary of the more important of them will be given next week. The names in italics within parentheses are those of communicators of inventions.

1899.—17,588, LA SOC. ANON DES MANUFACTURES DES GLACES ET PRODUITS CHIMIQUES DE ST. GOBAIN CHAUNY ET CIREY, apparatus for polishing glass. 19,589, HUBBELL, vices. 20,346, VOELKER, manufacture of incandescent electric lamps. 20,877, IMPROVED ELECTRIC GLOW LAMP CO., LTD., & BARNES, manufacture of reflecting opalescent surfaces for electric lamps or glass reflectors. 21,710, WOOTTON, STALEY & PARKER, production of articles in clay. 22,828, ROSS, acetylene gas-generating apparatus. 22,957, BAKER, locks and fastenings for lavatories. 23,073, BAILEY & CLAPHAM, purification of acetylene gas. 23,474, STATTER & VAPOUR PREVENTER, LTD., apparatus for preventing or removing the deposit of moisture on shop windows and other cold surfaces. 23,545, BAILEY, mills or apparatus for grinding and polishing. 23,577, HEWITT, fireplaces or stoves. 23,612, LLOYD, water closets. 23,717, BAUMANN, grinding or crushing mills. 24,615, MILLS (*Pagnon*), process for mounting tiles. 25,716, DAVID KIMBERLEY AND SONS TOOL MANUFACTURING CO., LTD., AND KIMBERLEY, floor and other cramps.

1900.—9,275, PRIOR, process for hardening lime or calcareous sandstone for general building purposes. 9,782, CHISHOLM, manufacture of gas. 11,558, WURTS, systems of lighting by Nernst or similar electric lamps. 11,597, OSBURN, flexible conduits for electrical conductors. 11,638, GERMAINS, chimney cowl. 12,889, IBERT, steam pipe nozzles for heating water and other purposes. 12,938, LEGGE, door locks. 13,168, WARD, tar paving. 13,358, HECKEN, screwdriver with adjustable side claws. 13,366, OUSEY (*Globe-Wernicke Co.*), sliding doors for book and other cases. 13,369, OUSEY (*Globe-Wernicke Co.*), sliding doors, drawers, or slides for book and other cases. 13,425, SCHLOBACH AND WENTZLAU, fireplaces for promoting consumption of smoke. 13,848, WALSH, appliance for heating water by steam. 13,884, BURGUY, locks or latches. 14,295, BURGUY, locks for doors. 15,521, DAVIS, (*Hoskold*), theodolites.

Surveying and Sanitary Notes.

Street Improvements at Ince.—A Local Government Board enquiry was held recently into the application of the Council for sanction to borrow £2,350 for works of private street improvements.

A Dundee Street Improvement.—The Dundee Town Council propose to acquire from the railway company a strip of land which will allow of Drummond Street being widened, and Albany Terrace, or one of the parallel streets, continued through the gardens to Stirling Street.

The Sewerage Engineer's Note Book.—The St. Bride's Press, Ltd., 24 Bride Lane, Fleet Street, E.C., announce that on November 1st they will publish a second (revised) edition of Mr. Albert Wellheim's "The Sewerage Engineer's Note Book, being Standard Notes on Sewerage Formulæ and Sewerage Calculation." (Price 3s. 6d., post free.)

Crossbank Sewage Scheme.—The Rural District Council of Limehouse having applied to the Local Government Board for sanction to borrow £5,000 for purposes of sewerage and sewage disposal for the township of Crossbank, an enquiry was held by a Local Government Board inspector at Hey recently. The enquiry also concerned the propriety of constructing the sewage works within the urban district of Lees and an objection raised thereto.

Proposed Open Space at Hither Green.—The inhabitants of Hither Green, Lewisham, to the number of 1,000, have presented a petition to the Lewisham Board of Works, praying that body to preserve the estate known as "Mountsfield" as an open space. It is pointed out in the memorial that extensive building operations are being carried out at Hither Green, and that "Mountsfield" is at present for sale, and unless speedily bought by the local authority will be lost to the public.

Value of Land at West Ham.—At the Surveyors' Institution, Westminster, Mr. Alfred Savill sat as arbitrator in the case of "Smith *v.* The West Ham Corporation," to determine the value of 3a. 3r. 21p. of land at Silvertown, adjoining the Victoria Dock and the Victoria Graving Dock, which the Corporation have acquired for the erection of artisans' dwellings. Mr. Arthur Tapp, F.I.S., of the firm of Messrs. Tapp & Jones, surveyors, Princess Street, Westminster, said there was a great demand for house accommodation in the district, and the value of land had, during the last few years, largely increased and was still increasing. The piece of land was, until lately, used for grazing, at a rental of £13 per annum. His total valuation was £7,148, inclusive of 10 per cent. for compulsory sale. Eventually it was agreed to accept an award of £5,565, subject to the decision of the referee as to £120, the value of 20ft. of frontage in North Woolwich Road, the title of which was questioned. The amount was practically on the basis of £6 per foot frontage for North Woolwich Road, and £3 15s. per foot frontage in other adjacent roads.

OUR PLATES.

CLEVE COURT, STREATLEY, BERKS.

THIS house (by Messrs. Joseph Morris and Son, architects, of Reading) has been built for Sir William Ingram, Bart., upon a Thames-side meadow, over which water flowed to a depth of six feet during the high flood in the autumn of 1894. The floor of the house is one foot above that flood-level, so that the raising of the ground around the house required many thousand loads of chalk, which was brought in barges from Shooter's Hill at Pangbourne; when this supply failed the chalk was procured from the parish pit at Streatley: thus the bold enterprise and good taste of the owner have produced a charming garden out of what was, from its low level, a site most unlikely to be selected for building. The situation, however, is very charming, embracing delightful views of the river nooks of Cleeve Mill and the weirs, and commanding that lovely reach of the Thames from Cleeve Loch to Goring Bridge. To the south a full view of Streatley Hill is gained; and looking west the view is extensive over hills and wooded country. The house is approached from the Oxford Road by means of a long drive, which has been planted with lime trees and American shrubs, when the lodge gate is reached and the drive continues in a pleasing sweep, crossing a rustic bridge over the neck of the lake which has been formed for the double purpose of getting the effect of an irregular-shaped piece of water and affording the requisite soil for making up the lawns and gardens. A cut has been made from the Thames to the lake so as to form an approach to the picturesque thatched boathouse which has been built upon the shore of the lake. The house is planned with a view to future extension on the north side, which would lengthen the front facing the river. It is entered at the west side through a porch and vestibule into a square hall with ingle nook and bay window. From the hall a passage runs through the house to the garden entrance. The reception rooms face the south and east, and a wide verandah runs round three sides with balcony over. The bedrooms are partly in the roof, so as to keep the house as low as possible. The brick walls are of a subdued colour, and above them is half-timbered work, the panels being cream-coloured rough cast. The timbers are unwrought and stained a rich dark brown colour, contrasting pleasantly with the brick and rough cast. The windows and verandah are painted white.

The roof was intended to have been thatched; but the local sanitary authority who had to administer the Local Government Model By-laws were unable to allow this, so that brindled Broseley tiles were substituted; the "humped" dormers which had been prepared for thatch were retained, and the tiles carried over them, without breaking the courses, making a satisfactory finish both as regards appearance and weather-tightness. A terrace runs round the house with steps formed of larch poles in short lengths driven into the ground. The wings of the steps are formed with rockwork of Somersetshire spar. Throughout the architects have endeavoured to avoid as far as possible the usual formality of builder's work, and to give the house and its surroundings the effect of picturesqueness. The owner had some large willow trees removed from the ditch at the south boundary of his land: these were pollarded and replanted upon the lawns: by this and other devices the good taste of Sir William (in whom the architects found a client thoroughly appreciative of artistic possibilities) has overcome the difficulty of transforming a bare site into a fairly matured garden.

A new Duke's School for Alnwick is proposed to be erected by his Grace the Duke of Northumberland at a cost of £10,000, while the site is worth another £5,000. The site is twelve and a half acres in extent, and is very pleasantly situated on the south side of the town. While the new school is to be used for secondary and technical instruction, the old school will still continue as a useful elementary school.

Bricks and Mortar.

APHORISM FOR THE WEEK.

Ancient art is plastic; modern, pictorial.
SCHLEGEL.

Architectural Teaching in England. IN our issues for September 26th and October 3rd last attention was drawn to the fact that no Faculty of Architecture is provided in the University of London, and Mr. William Emerson's and Mr. T. Bailey Saunders' remarks on the subject in the "Times" were printed. Writing to the same newspaper, Mr. A. Robertson, Principal of King's College, says: "A department for the organised teaching of architecture in relation to applied science has for many years existed at this college. Within the last few years the teaching in this department has been developed into a systematic course of training which in thoroughness and efficiency is on a level with the existing schools of engineering in London. The course is of three years' duration. During those three years the student devotes his whole time to the college curriculum, beginning with mechanical and applied science, and specialising more exclusively in architecture in the latter part of the course. Owing to the exertions of the late Professor Fletcher, and to the generosity of the Carpenters' Company and other benefactors, the studio is equipped with an excellent collection of architectural casts; there is a very fine museum, containing specimens of materials, models, diagrams, and invaluable drawings in great number. There is also a special library. The department offers special facilities for the study of architecture, both as an art and as a branch of science. Whether the path to a degree in architecture is to be through the B.Sc. 'in engineering' with architecture as one of the alternative branches of study for that degree, or through a specially created degree in architecture *eo nomine*, is a question, involving debatable points of principle, which awaits the new Senate. But in either case the work of this college in the department of architecture is a fact to be taken into account. . . ."

The Opinions of Mr. Reginald Blomfield. IN reply to this, Mr. Reginald Blomfield says: "It is not necessary here to discuss the remarkable suggestion of the possibility of ranking architecture as a branch of engineering; what should be pointed out to the public, and more particularly to the new Senate, is that the whole idea of a degree in architecture is repugnant to a strong body of opinion in the profession itself, in regard to the fact that such a degree is about as practicable as a degree in painting or a degree in sculpture. The whole scheme of a degree in architecture is misleading to the public. All architects are agreed as to the necessity of an education in architecture as thorough as it is possible to provide, but practical men have bought their experience that this education must be something wider and more intimate than any that it is possible to provide in the class-room and the school. The provision for the technical education of architectural students in England is absurdly inadequate. If the few bodies that attempt this education were equipped and organised on the scale of the great German institutions, there would be something to be said for a method of training somewhat alien to English instincts."

Mr. Arthur Cates' Views. MR. ARTHUR CATES points out that the systematic course of architectural training indicated by Dr. Robertson appears to be rather a somewhat elementary course of engineering, specialising more exclusively in architecture in the third year, and not in any degree satisfying the requirements of a systematic course of teaching in the art and science, theory and practice of architecture, which alone would justify its claim to take its proper place in the studies of the university. A course of the description indicated cannot be accepted as affording a satisfactory systematic training in the study of architecture, or one at all comparable with the organised instruction available in France and Germany, or in any way approaching the admirable systems which within recent years have, under the influence of Professor William R. Ware, been established in the universities and colleges in the United States of America. . . . In these institutions a special matriculation examination must be passed to obtain admission to the classes. A satisfactory elementary knowledge of essential subjects is thus secured, and the training in architecture commences with the beginning of the course, is continuously developed throughout the whole period of teaching, and is not relegated to a mere specialising towards the end of the course. If Dr. Robertson and the Council of King's College, with the aid of Professor Elsey Smith, would carefully study the methods of the American Universities, which are so admirably adapted to meet the requirements of the case, and frame on a similar basis a systematic course of organised teaching of architecture, as an art and as a science, in both theory and practice, there might be some hope that when such a course was well established architecture might obtain that recognition from the London University which its importance to the nation, the State, and the individual demands for it, but which under existing conditions the Senate is hardly likely to extend to it."

Glasgow Exhibition Buildings. CONSIDERABLE progress has been made during the last few months with the Glasgow Exhibition buildings in the Kelvingrove Park, and the work has now reached a stage when some idea may be formed of the extent and design of the buildings. The Industrial Hall, the main portion of the Exhibition, is practically finished, with the exception of the great dome, and the contractors hope to complete it within the next few weeks, if given favourable weather. The flooring of the Industrial Hall is almost completed; the roofing and glazing are finished, and the plaster work has reached an advanced stage. With the erection of the great dome this part of the work will be quickly overtaken, as the material is already prepared, and the plasterers are ready to begin their labours when the framework of the dome has been erected. The various outside buildings, such as the dining halls, kiosks, &c., are beginning to take shape, and when the workmen now engaged in the Industrial Hall are turned on to these parts of the Exhibition their erection will be a matter of brief time. The Grand Concert Hall, to the north of the Industrial Hall, is also pretty well forward, the whole of the steelwork having been placed in position. Good progress is being made with the construction of the Grand Avenue, which connects the Industrial Hall with the Machinery Hall. Only a few yards of the arched woodwork require to be erected, and workmen are busily engaged roofing and plastering the rest. The bridge spanning Dumbarton Road, leading to the Machinery Hall, is expected to be out of the workmen's hands at an early date. The Machinery Hall itself is far advanced towards completion and is expected to be finished by the end of next month, and arrangements have been made to receive some of the exhibits about that time. There are 600 men at present employed in connection with the buildings, and the contractors are sanguine that the work will be finished in good time.

R.I.B.A. Kalendar. WE have received a copy of the Kalendar for 1900-1901 of the Royal Institute of British Architects, but there is nothing in it to specially note. The following is the programme for the forthcoming session:—November 5th, President's opening address; November 12th, Professor Lanciani on "Architectural Results of the Latest Excavations in the Forum;" December 3rd, business meeting; December 17th, Mr. Beresford Pite on "Some Tendencies of the Modern School of Architecture;" January 7th, 1901, business meeting; January 21st, award of prizes to students, with a paper on "Difficulties and Hindrances in Producing Good Modern Architecture," by Mr. J. J. Stevenson; February 4th, President's address to students and presentation of prizes; February 18th, Mr. G. T. Hine on "The Construction of Lunatic Asylums;" March 4th, business meeting (election of Royal Gold Medallist); March 18th, Mr. C. Harrison Townshend on "The Art of Pictorial Mosaic;" April 1st, Mr. Francis Bond on "The Classifications of Romanesque and Gothic Architecture; April 22nd, "The Work of Sir Charles Barry" (arranged by the Art Standing Committee); May 6th, annual general meeting; May 20th, Professor Flinders Petrie on "The Sources of Growth of Architecture in Egypt;" June 3rd, business meeting (annual elections); June 17th, presentation of the Royal Gold Medal.

London Bridge. THE proposal to widen London Bridge is still on foot and the Bridge House Estates Committee have many schemes under consideration. Mr. Ernest A. White, writing to the "City Press," points out very rightly that the Bridge is the most beautiful one spanning the Thames, and one of the best proportioned bridges in the world. It is simple, dignified, and monumental, and its gracefully turned arches thoroughly satisfy the eye, combining, as they do, lightness with strength. All that is required is extra width. "Surely," he says, "this could be effected without great difficulty or cost by removing the face on, say, the east side, and extending the bridge in width sufficiently to provide two more cartways, and additional width of footpath, refacing with the original masonry. Probably some property might have to be bought on each side of the river to achieve this, but the same would be necessary in building a new bridge, or in any way widening the present one. By this means one of the City's few beautiful buildings would be spared to us. People who condemn the bridge are those who attempt to judge it from what they see walking across each morning and evening. Needless to say, the design of a bridge can only be seen from the level of the river. To tamper with the design by removing the balustrade and bracketting out, a method I have seen suggested, would be an unwarrantable act of vandalism."

Burns's Cottage. Considerable alterations are being carried out at the birthplace of Robert Burns at Alloway. It is intended to remove a hall attached to the back of the cottage, used as a museum and temperance refreshment room, and to transfer the Burns relics from this to a new and larger hall in a range of cottage buildings which have just been completed within the grounds attached to the cottage. The caretaker and his family, who inhabit part of the cottage, have also been provided with accommodation in the new buildings. The cottage will thus be restored as far as possible to its original condition. The trustees, in resolving to make the alterations, were principally actuated by the desire to reduce the risk to the buildings from fire to a *minimum*, and with this end in view all fires and artificial lighting appliances will be removed, and the heating of the cottage will be from the hot-water system in the new buildings. A new turnstile will be put up opening into the grounds, which extend to seven acres, and access to the cottage will be from the grounds. The new buildings are ready for occupation, and it is intended that the alterations shall be completed during the present winter. It may be noted that when the new arrangements come into force no refreshments will be sold within the precincts.

Ancient Lights. AT the annual meeting of the Incorporated Law Society held at Weymouth on October 23rd, Mr. E. K. Blyth (London) discussed the question of ancient lights from the ethical and practical point of view. This rule of the law of England, resting upon statutory authority since 1832, did not exist, so far as he was aware, in any other country. It was the rule by which, if a man built a house with an aperture in the side wall overlooking the property of his neighbour, that aperture became in twenty years an "ancient light," and the ordinary legal right of the adjoining owner to build on his land or to heighten existing buildings was thereby curtailed. Mr. Blyth's examination of the subject led him to the following among other conclusions:—That the enactment of the Prescription

Act, 1832, by which a man may be partially deprived of the right to build on his own land by an act of his neighbour which he cannot prevent or restrain, and against which he can only protect himself by going to the waste expense of a retaliatory wall or blocking erection, was wrong, and ought to be repealed; and, further, that great practical injury arose from the present state of the law, especially in large and crowded cities, in which it interfered most seriously with the full user by landowners of their land in accordance with their proprietary rights, and the requirements of constantly growing commerce. He moved a resolution inviting the Council to take steps with a view to getting the law considered by the Legislature, and, if thought fit, to co-operate with the Royal Institute of British Architects and the Surveyors' Institution. This was seconded by Mr. Grantham Dodd and agreed to.

The Stage Carpenter. AT Paris M. Lugné-Poe, the founder of the Théâtre de l'Œuvre, is bewailing the incapacity of French stage carpenters, and making suggestions for the training and education of the body. They are neither born nor made, but drift into the profession by chance, and exercise it without intelligence or knowledge. It is to their ignorance and slavish adherence to stock rule-of-thumb methods and practices that the backward, embryonic state of French scenic art is to be ascribed. Anything in the nature of an innovation is regarded with horror by the stage carpenter, who esteems that rigid conservatism is the best cover for his utter incompetence. M. Lugné-Poe advocates the foundation of a technical school for stage carpenters, and hopes to obtain the support of the Paris Municipality for his project. The future craftsmen would be taught perspective and the elements of architecture, drawing, and mechanics. They would be instructed in scene shifting, and would study the properties of the materials employed in the construction of scenery. Some initiation into the principles of the art of decoration might complete the course, which would be followed by a period of apprenticeship in a theatre. It is certain that with master stage carpenters formed in this way to choose from, managers would only have to procure plays by geniuses, and clever actors, to realise the ideal theatre.

Cardiff Asylum Plans. AT a meeting of the Asylums Committee of the Cardiff Corporation held last week a letter from Dr. Stewart with reference to the new asylum plans was the special subject of consideration. Mr. Veall said that he had read the doctor's report, which had been drawn up (at request) after the plans and proposals had been considered. The doctor seemed to be opposed to a separate building for "acute" cases. The weight of experience and opinion amongst experts now was that asylums should be designed to deal with all classes of cases in one building. Mr. Veall suggested that the whole question should be referred to a sub-committee. The question raised by Dr. Stewart would have an important bearing upon the conditions under which the second stage of the competition upon the plans would be conducted. The committee decided to abandon the idea of a separate building, and the remainder of the questions were referred to a sub-committee.

Proposed new Law Courts for Leeds.—The Property Committee of the Leeds Corporation have unanimously confirmed the recommendation of the sub-committee to build separate law courts in the city and to adapt the Town Hall for municipal purposes. This decision will, in the ordinary course of procedure, be embodied in the minutes to be presented at the November meeting of the City Council; but in view of the heavy agenda on that occasion and the great importance of the subject, the members of the Corporation will be asked to postpone the consideration of the committee's recommendation to a subsequent meeting. The fact that the vote was a unanimous one will, no doubt, have considerable influence in the Council Chamber when the matter is discussed.

Enquiries Answered.

The services of a large staff of experts, including all those engaged on "Specification," are at the disposal of readers who require information on architectural, constructional, or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Welsh National Eisteddfod Competitions.

Referring to the query and answer about the above competitions given on page 230 of last week's issue, we have since learned that the hon. secretary for the next Eisteddfod is Mr. Sandford Jones, Merthyr Tydfil, from whom all particulars can be obtained.

Society of Architects' Examinations.

LONDON, S.E.—E. F. L. writes: "Are examinations still held by the Society of Architects, and if so, what is the date of the next?"

These examinations are held twice a year, in October and April. The October examination has just ended; the dates of the next examination (a syllabus of which will be sent on application) have been fixed for April 2nd, 3rd and 4th, 1901.

Cheap Wooden Casements.

LONDON.—CASEMENT writes: "Could you give me a rough sketch, plan and section for cheap wooden casements with rounded edges and no mouldings on transome or mullions and with plain oak sills? Would the rough sections sent herewith (not reproduced) answer the purpose for a house of cottage character covered with rough cast, no reveals to windows, but casement frames set back, say, 1in., with rough cast returned round window opening butting on casement frame, or with a small moulding to cover the joint where rough cast does not appear? How would casement fasteners be fastened to such casements, and would sections as shown be sufficient to keep out the weather?"

We think the accompanying sketches will suit the requirements. The glass should have a seating of chamois-leather or of vulcanite; the stops are easily removed for replacing broken panes with new glass—this is not the case with the sketch submitted by querist. The sections for keeping out rain were amply sufficient. We suggest that casement stays should be adopted in lieu of fasteners, the hinge of the arm being secured to the ½in. stop, and the pin and plate being fastened, in one case to the mullion, in the other to the sill, in such positions that with the pin through the first hole the casement would be locked shut.—R. W. C.

Stair Treads.

LEIGH.—ONE INTERESTED writes: "Is greenheart suitable for stair treads?"

There is one particular in which greenheart would answer well for stair treads—it is very hard, and therefore would wear well. For every other reason it is most unsuitable for the purpose; it is difficult to work, and the hard, close grain would cause it to wear almost as smooth as glass, and make it dangerous to walk up or down. I should therefore strongly advise querist not to use it for the purpose named.

TRAMMEL.

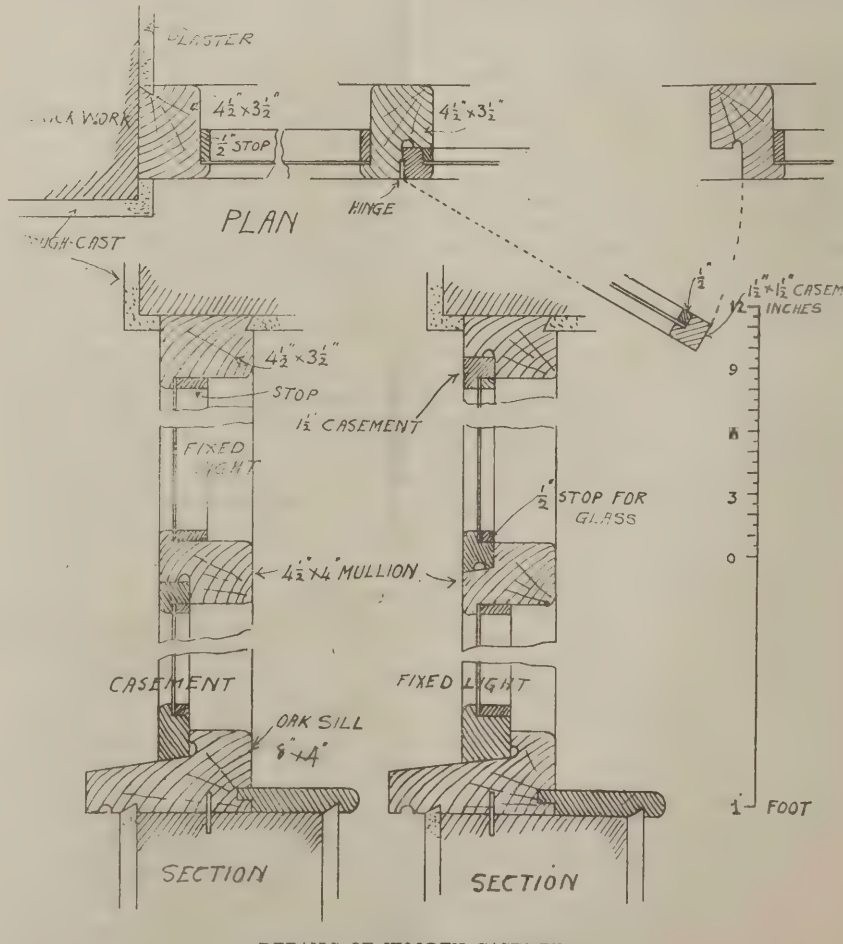
Iron Flue Divisions.

LARGS, N.B.—CLYDE writes: "Can you give us the name of the makers of a patent iron flue division for use when an air flue is next to a smoke flue?"

We have seen these iron flue divisions in many hospitals and other buildings; they are often called cast-iron withes. Those we saw last were made by Messrs. F. Newell & Co., of Stockwith-on-Trent, who would no doubt supply querist with full particulars of them.

Preventing a Draught in an Iron Church.

CHELTENHAM.—B. W. writes: "I am asked to prevent a draught in an iron church lined with matchboarding. Would any improvement be effected if the space between the iron and the boarding were filled with sawdust; also, if sawdust were used would there be any objectionable smell from elm and oak sawdust; or should deal and pine sawdust only be used? I might



DETAILS OF WOODEN CASEMENTS.

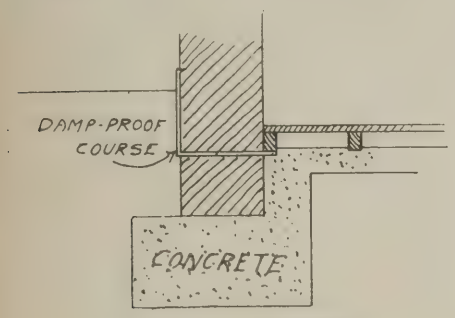
mention that felt was to have been put under the iron to keep out draught, but in many places this has not been done."

We do not at all recommend the use of sawdust for the purpose. The best means of stopping the draught would be to cover the outside of the matchboarding with Willesden paper of about two-ply thickness. This could be afterwards painted to an approved tint, and its use in this position would obviate the expense of stripping the boarding away and replacing.

R. W. C.

Damp Courses.

LONDON, S.W.—F. C. writes: "I am building a small house in the country and am in some doubt about the damp courses, as the ground is above the level of the floor and the intervening wall is not a hollow one. Would it be safe if I used slates set in cement horizontally just beneath the floor battens and vertically thence till the ground level is



DAMP-PROOF COURSES.

reached? I can use lead here as it happens, but would prefer to avoid asphalt."

We do not, of course, know what may be querist's objection to the use of asphalt, but we would strongly urge him to overcome it in this instance. If slates are used there will be an awkward joint at the junction of the vertical and horizontal portions, while asphalt could readily be worked in both positions and round the angle, and would adhere firmly to the walling. Lead could be used in the position indicated for asphalt, but slate should by no means be employed. (See accompanying sketch.)

R. W. C.

Law as to Water Chutes.

WICKHAM, HANTS.—A. B. writes: "My neighbour has forcibly removed my rainwater chute and thus cut off the supply of rainwater to an old tank in my garden. Has he power to do this, and is he open to prosecution?"

If the place where the old chute was forcibly removed is on your property, your neighbour would be liable to prosecution under the Malicious Damages Act, sec. 52, and also to compensate you for damage. If the place where the chute was removed was on your neighbour's property, your rights would depend upon the date and the terms of the sale to him of part of your garden. (See reply on page 93 of our issue for September 5th last.) A. O. H.

Professional Examinations.

NEWQUAY, CORNWALL. — PUPIL writes: "Which examination would you recommend a student to take up first, that of the Society of Architects or the Surveyors' Institution? I should like to go through both, but would prefer to take the easier one first. How long would it take to study the subject thoroughly?"

"Pupil" does not tell us what his previous training has been, nor which of the examinations held by the Surveyors' Institution he thinks of entering for. If he has had an architectural training, he should take the Society of Architects' examination first, but if his experience of architecture has only been slight he should sit for the S.I. exam. (that is, if it is the P.A.S.I. class he contemplates preparing for). The time required for study depends upon conditions which "Pupil" does not disclose. We should say a year, probably, but we know nothing of his present knowledge nor of his capacity for study, so that it might require much more time or much less.

R. W. C.

SOCIETY OF ARCHITECTS.

ANNUAL GENERAL MEETING.

THE annual general meeting of the Society of Architects was held on Thursday evening last at St. James's Hall, Piccadilly, W., when Mr. T. Walter Emden, L.C.C., presided. After the minutes of the last meeting had been read and confirmed Mr. Ellis Marsland read the report of the Council for the year ending October 31st last.

At the closing of the sixteenth session and of a somewhat eventful year of the Society's work, the Council are able to make a very satisfactory report of continued progress and increased activity. Since the resolution to double the annual subscription was confirmed, it is satisfactory to record that, with very few exceptions, the somewhat drastic but necessary step has met with approval, and has been the means of placing the Society in a position to carry on its work to much greater advantage, and to much increase its activity and influence.

Applications for membership continue to come in freely; the total number of members is now 569.

The Council regret the loss, by death, of seven members, including a distinguished hon. member, the late John Ruskin.

For the half-yearly examinations to qualify for membership held during April and October, some hundreds of enquiries were received, but the high standard maintained caused many to postpone sitting until better prepared. Four candidates sat, of whom one was successful.

While on the subject of education, the Council would call attention to the practical way in which the Society continues to uphold the compulsory education and registration of architects, by visiting the provinces and inviting discussion on this all-important subject. Four centres have been visited this session—namely, Exeter, Birmingham, Liverpool, and Manchester. Further meetings are only delayed by parliamentary and municipal elections.

Nine provincial meetings have now been held, at each of which a resolution in favour of the principle has been passed, interest in the subject has been stimulated, and mistaken ideas as to the attitude of the Society in the matter have been removed. It is now generally understood that while the Society does and will continue to do its utmost to carry into effect the measure introduced into Parliament by the Architects' Registration Bill Committee, they are quite prepared to co-operate with the R.I.B.A., if that body will take the lead and will give a definite pledge of their readiness to proceed with the work without delay. The Bill, which was down for second reading on June 15th last, was not reached owing to pressure of public business. A letter was sent to every member of the House of Commons asking for support, but the R.I.B.A. circularised the House in opposition to the measure, basing their objection to four of its clauses only, which could have been amended if Parliament thought right. Mr. L. A. Atherley Jones, Q.C., M.P., has charge of the measure, and members may be assured that no effort will be wanting on his part to secure another hearing for the Bill.

Reform in the law relating to Ancient Lights is another matter in which the Council have been moving for several years past, and they are pleased to find that their action in presenting a petition to the Lord Chancellor two years ago has been followed by the R.I.B.A. taking up the question, and the forming of a joint committee with the Surveyors' Institution to enquire into the present law with a view to its amendment.

It has for some time been felt that an improvement and enlargement of the Journal should be made, and it has been decided to commence a new volume in November, under the title of "The Architects' Magazine," which, while being as before the official organ of the Society, will also contain matter of general interest and information.

The success of the new venture will depend greatly upon the way in which it is taken up by the members, who, it is contemplated, are to be invited to contribute papers on special subjects, for which premiums will be warded.

The session having coincided with the opening and practical conclusion of military operations in South Africa, it may not be out of place to record that the Society has contributed both at home and in South Africa to the ranks of those who have volunteered for active service. Some of its members have taken part in the defence of Kimberley and the occupation of Johannesburg, while others have been cut off from the outer world at Bulawayo and other places. Members in China have also been passing through an anxious time.

A number of donations have been made to the library, and it is hoped shortly to render this most important adjunct more worthy of the Society by the formation of a library fund for the purchase of current publications.

The Register of Employment has not been made use of to the extent which was anticipated, and is one of those privileges of membership which is overlooked. It should be remembered that it is entirely free to members and students, and serves a most useful purpose as a medium of communication between employers and assistants; but so far it has been non-members of the Society who have mostly benefited by it.

With the view of impressing upon the Government the importance of issuing 6-inch colour-printed geological maps, the Council, by a memorial under seal, approached the Inter-Departmental Committee sitting to consider the progress of the geological survey. An encouraging reply from the chairman was received.

The telegrahic address "Crypt," has been registered, and will prove useful to members and others. The question of telephonic communication is also under consideration.

The Society of German Engineers having asked the Society to co-operate with them in preparing an international technical dictionary, the matter is having the attention of the Council.

The Society, in common with individual members of the profession, has had the claims of the Architects' Benevolent Society brought before them, and has become a subscriber. The Council would desire to remind members of the good which is being done by this, the only Society of the kind. The hon. secretary is Mr. Percevall Currey, 9 Conduit Street, W. The Council seeing that the possible effect of the passing into law of the Union of Benefices Bill might be the destruction of churches, resolved to oppose the Bill on these grounds. The Council have under consideration the question of issuing a form of building contract for the use of members and others, enquiries for such having been received from time to time.

It has been a source of much gratification to he Council that at their unanimous request the president (Mr. Emden) has allowed himself to be again nominated to the office, which he has so ably filled for the past three years.

In moving the adoption of the report Mr. Silvanus Trevail, F.R.I.B.A., expressed his gratification at the improvement which had been effected by increasing the annual subscription, and he was glad to say that less than 1 per cent. of the members had resigned on account of this step having been taken. He was sorry to see that the Royal Institute of British Architects still pursued their "dog-in-the-manger" policy in connection with Architect's Registration, especially in view of the fact that such registration was adopted in foreign countries and in our colonies. In concluding he paid a tribute to the indefatigable efforts of the president, Mr. Emden, and moved a vote of thanks for the valuable services which he had rendered to the Society. This was seconded by Mr. W. R. Mallett, and carried unanimously.

The following gentlemen were elected members:—Mr. Charles Carter (Nottingham), Mr. S. A. Gluckstein (London and Johannesburg), Mr. George Gush (Seaton, Devon), and Mr. J. F. Parker (London).

The officers and members of the Council for 1900–1901 were then elected as follows:—

President, Mr. T. Walter L. Emden, J.P., L.C.C.; Vice-Presidents, Lieut.-Col. F. Seymour Leslie, R.E., and Mr. Silvanus Trevail, F.R.I.B.A.; Honorary Secretary, Mr. Ellis Marsland; Honorary Corresponding Secretary, Mr. W.

Cooper; Honorary Treasurer, Mr. H. G. Quartermain; Honorary Auditor, Mr. J. R. Manning; Council: Messrs. James Bartlett, W. R. Bryden, F.R.I.B.A., Charles Caine, J. Williams Dunford, W. L. Grant, W. J. Jennings, W. R. Mallett, F.S.I., G. A. T. Middleton, A.R.I.B.A., A. E. Pridmore, J. H. Richardson, W. A. Scott, A.R.I.B.A., and W. W. Thomas.

Mr. Emden, in acknowledging the vote of thanks, said that he was glad to do all in his power for the Society, as he considered it to be the advance party in the architectural world, endeavouring to effect those changes which were for the benefit of the profession and the public at large. Votes of thanks were passed for the work done by the outgoing council and the meeting then terminated.

ARCHITECTURAL ASSOCIATION.

FRENCH AND ENGLISH CATHEDRALS.

By FRANCIS BOND, M.A., Hon. A.R.I.B.A.

A MEETING of this Association took place last Friday evening at No. 9 Conduit Street, Mr. W. H. Seth-Smith, president, in the chair. The minutes of the previous meeting having been read and confirmed, the following sixty gentlemen were elected members of the Association: Messrs. J. D. Robertson, W. A. Hodges, J. F. Schneider, D. W. Stewart, David Seth-Smith, H. Black, N. F. Barwell, T. R. Bridson, J. S. Brocklesby, J. O. Cook, I. S. Davies, W. W. Ellison, J. B. Fulton, G. Gould, R. H. Greig, H. C. Hollis, H. R. Houchin, J. R. Sykes, J. H. Waterworth, R. F. Wheatly, A. E. Bullock, P. R. Berry, G. Bune, H. W. Cathie, H. Colls, G. F. B. Dan'ell, C. René Harrison, D. B. Hedderwick, W. B. Hellard, F. Hibbard, D. M. Rees, W. A. S. Pettit, H. F. Murrell, A. F. Murray, H. S. Morran, H. Kenchington, W. B. Jemmett, D. B. Hart, R. G. Elwes, D. W. Crawford, A. S. Millar, C. S. Goodwin, G. Walker, L. Rawles, L. T. Moore, F. J. Sherrin, R. J. Howard, S. B. Wates, E. G. Theakston, R. E. Stewardson, I. T. Sifton, E. F. Reynolds, G. Unsworth, T. L. Walker, T. W. Watkins, H. J. Wyeth, A. E. R. Gill, A. B. D. Lang, A. E. Hyams, and H. Hyams. On the motion of the president a vote of thanks was accorded to Mr. G. B. Carvill, hon. secretary, for his services in connection with Association Conversazione held recently. Mr. Bond then read his paper on "French and English Cathedrals," as follows:—

An Englishman, just returned from a day trip to Boulogne, was asked what were his salient impressions of France. Two things, he said, filled him with astonishment. One was that the children in the streets spoke French; the other that the soldiers had red trousers and blue tunics, thus reversing the laws of nature. It is from this insular, and perhaps superficial, not from any cosmopolitan point of view, that I approach the subject of the French cathedrals; some of the French cathedrals, for there are a great many. It is possible to be on fairly intimate terms with all the English cathedrals, of which there are no more than thirty-four, even including those churches which have been elevated to the rank of cathedrals in the present reign. In France, on the other hand, it is impossible to be even on bowing terms with the churches which are at present, or which have been, of cathedral rank. The south-east of France swarms with little cathedrals; even their names will be unfamiliar to many, such as Castres, Cavaillon, Dax. I have even had to explain sometimes where Séez is. Obviously, our survey must be limited to but a few of this vast number.

Let us look in imagination, first at the English cathedrals, and secondly at the more important of their sisters in France. I think I may take it that anyone who has visited and studied our

English Cathedrals

does not afterwards mix them up in his memory; he can always keep each picture distinct; that is, the English cathedrals have the quality of distinction and individuality. For example, we never confuse with one another designs, though on closely analogous lines, such as those of the choirs of Beverley, Lincoln, Ely, Southwell, Worcester, and Salisbury. In the same way the *tout ensemble* of the interior of Ely stands out apart sharply and clearly from that of the interior of Lincoln or Gloucester, or York. Yet more individual are the exteriors. Exeter reminds us of nothing else; nor does Lincoln or Lichfield, or Canterbury, or Wells. Now this is by no means the case in France; or at any rate, not to the same extent. In the two interiors, one of the choir of Amiens, the other the nave of Auxerre, the differences between the two designs are so slight, that, without care and thought, it is really difficult to remember which is which. And this is so with a great number of churches in

The Style of the Ile de France.

Three years ago I spent a month among them; and I must confess to finding them somewhat monotonous and uninteresting. The fact is they were all to a large extent versions of Amiens. In Amiens every problem of French Gothic had been solved consummately. In no way could Amiens be bettered; and so this—the greatest of all the great works of the French Gothic—inspired, dictated, and controlled the great mass of Gothic design even to the furthest ends of the country. So, when I reached St. Quentin, Chalons-sur-Marne, Troyes, Nevers, Auxerre, Tours, Rouen, Clermont-Ferraud, Limoges, Toulouse, Narbonne, I was constantly finding myself in the presence of something which I had seen before. Evidently, about 1220, the thought of the best builders throughout Northern France flowed in the direction of the Amiens design; and the ideas which produced Amiens produced, or were soon to produce, similar work throughout the length and breadth of the country. In England, fortunately or unfortunately, we never had an Amiens. We never had one final summing up in one building of the best in our English Gothic. Wells choir had been an enormous advance about 1175. St. Hugh's design at Lincoln fifteen years later, though he came from Witham, near Wells is in no way based on that of Wells. His choir, in turn, was a vast advance, yet no copy was made of it. There was never in England a superior person like Amiens to set the fashion. Not only English Gothic was non-French, but cathedral after cathedral went on its own sweet way, copying nobody. For that very reason, small as many of our cathedrals are, they are for their number—at any rate, as far as my opinion goes—more interesting than the cathedrals of the style of the Ile de France.

On the other hand, we must admit that there are French cathedrals which have enormous individuality. Nothing was built like Chatres before it; nothing has been built like it since. Rheims, too, stands out alone. Then there is a group of three cathedrals with double aisles of unequal height; Bourges was built first, being commenced about 1190; Beauvais and Le Mans were improved versions of Bourges. Le Mans, had it been completed, would, I think, have eclipsed even Amiens. Then there is a fine group of Transitional Churches which have marked individuality—Paris, Sens, Senlis, Noyon, Soissons, and Laon; to which we may add the noble choirs of St. Remi and Notre Dame of Chalons-sur-Marne. Travel yet farther from Paris, and new and strange, yet beautiful, varieties of Gothic will be found. The lovely "Norman patois" is seen in the choirs of the Abbaye-aux-hommes and Bayeux; at Séez and Coutances; delightful links between the Ile de France and England. Travel far west; and in the choir of the Cathedral of Chalons-sur-Saône, at Sémur and Notre Dame de Cluny will be found another Gothic, bold, vigorous, and independent. Nor will the achievements of what the French call

Plantagenet Gothic,

designs wrought in English realms, not by English brains, ever fail to leave sharp and distinct recollections of lovely work, from St. Serge at Angers to the magnificent cathedral of Poitiers, commenced about the year 1162 by our English Queen Eleanor. Going down south, an Englishman finds himself confronted more and more with churches strange, novel, and interesting. Some of them, like Toulouse and Bordeaux, have an aisled choir and an aisleless nave—a combination magnificently successful at Bordeaux. At last, at Albi, aisles disappear altogether; the whole cathedral becomes one continuous hall; stupendously impressive. If there is monotony in the Gothic of the Ile de France, there is none when its limits have been crossed. There is absolutely nothing in English Gothic to parallel these immense differences of French design. To the faithful who have learnt their Amiens, Poitiers and Albi are a bolt from the blue.

Another important difference is that the French cathedral in those districts which the tourist is most likely to visit is

Wholly Gothic.

The exceptions are very few. At Nevers a western apse of the eleventh century survives, in striking contact with a thirteenth century Gothic cathedral. At Beauvais the fall of the central spire preserved from rebuilding an archaic nave of the tenth or eleventh century and Romanesque sub-structures remain at Bayeux and Chalons-sur-Sâone. But out of our thirty-four English cathedrals, Peterborough and Durham are still mainly Romanesque; while large masses of Romanesque work remain incorporated in Bristol, Canterbury, Carlisle, Chester, Chichester, Ely, Exeter, Gloucester, Hereford, Lincoln, Norwich, Oxford, Ripon, Rochester, St. Albans, Southwell, Winchester, and Worcester. So that of our older cathedrals only Lichfield, Salisbury, Wells, and York are purely Gothic buildings. An extraordinarily clean sweep was made in the thirteenth century of what Romanesque there was in the Domaine Royale; and its corresponding abundance in the English cathedrals forms one of the most striking points of difference between the mediæval architecture of the two countries.

If we look at the two sets of cathedrals chronologically we shall find equally marked differences. In England each period is fully represented by important cathedral work. In France it is not so. The period of Transitional or Rudimentary Gothic is well represented in England at Oxford, Ripon, Canterbury, and Chichester; in France, by the cathedrals of Paris, Laon, Sens, Soissons, Noyon, Senlis, and to some extent by Chartres. Our lancet and geometrical work is represented by the great group of Gothic cathedrals of the Ile de France type. Our Tudor work ran on simultaneously with

The French Flamboyant.

In the preceding period much grand work was done at Bristol, Carlisle, Chester, Ely, Lichfield, Lincoln, Oxford, St. Albans, Wells, Worcester, Gloucester, Canterbury, and York. In many parts of France work stops almost wholly from about 1328 to 1440, when the French were engaged in the most calamitous intestine conflicts, and for a hundred years were at war with ourselves. This period of anarchy, warfare, famine, and plague was no fit seed ground for architecture. The tale of those days is told quite clearly in many a French cathedral. You see quite distinctly where the works were suddenly stopped in the fourteenth century. You see where they were resumed late in the fifteenth century. When they were resumed, however, a great change had come over the spirit of Gothic architecture. In the natural course of things the choir, with some exceptions, for instance Amiens, had been built first. Then the nave was completed. (At Clermont, Limoges, and Moulins the naves were only finished in the present century, that of Narbonne still remains a skeleton.) As a rule, it was just when nave and choir had been finished that war, civil and foreign, stopped the work. In most cases the transepts had been left to complete later; and so it is that we have the constant juxtaposition in a French cathedral of an Early Gothic nave and choir with a Flamboyant transept. In fact, this may be regarded as the

Normal Type

of a French Gothic cathedral. It is seen at Paris, Sens, St. Remi, Amiens, Limoges, Beauvais, Auxerre, Troyes, Senlis, Séez. Very magnificent these Flamboyant transepts are. Whatever be the failings of Late Gothic, we cannot afford to despise the composition of such transepts as those of Beauvais and Limoges, any more than that of such spires of our own as Coventry and Louth, of equally late date.

Externally the French cathedral is, above all, a town church. It rises out of the huxtering of the *place* or the squalor of the narrow lane. In front perhaps is a Sahara of dust, as at Amiens, Auxerre, Paris, Rouen. From no point of view can the grouping of the whole of its masses be seen. Nowhere in France is there such a comprehensive view as that from the north-east of Salisbury or Lincoln. It is seen only in parcels. Sens, for example, has an arid space in front; to the north it is blocked by private houses; to the south by the Archbishop's palace; to the east by the Grande Séminaire. Peeps and glimpses only can be got of transepts, choir, nave, and apse. A general view is impossible.

It is a surprise to see the south side of Bourges rising out of the emerald sward. The peaceful close and elms of Salisbury, the pools and springs of Lichfield and Wells, the wooded slopes and river of Durham, the encircling precincts of ancient canons' houses embowered in foliage and creepers, are all wanting in France.

In France we see the Bare Picture;

in England we see it framed. In England such cathedrals as Canterbury, Durham, Ely, Lichfield, Lincoln, St. Albans, Wells, York, nobly dominate the town and landscape. With us the houses are low, and give the cathedral value; in France they are much loftier, and strangle the great building in their close confines. Indeed, the real greatness of the building is often quite unrecognisable from outside. Mr. Garbett, in his "Principles of Design," quotes an eminent authority who honestly thought Salisbury larger than Amiens. His error was pardonable. Following the south side of Amiens, one sees three things only—the nave, the transept, and the apsidal choir. Following the north side of Salisbury, one sees nave, porch, nave, great transept, choir, eastern transept, choir, retro-choir, Lady Chapel. This bold handling of the masses infinitely increases the apparent magnitude of an English cathedral; nor must one forget the gulfs and abysses of shadow in the deeply-recessed flanks of such cathedrals as Lincoln and Salisbury, to which it gives rise. Especially is this the case where the plan with double transepts has been adopted. It is a strange fact that this, the archiepiscopal plan, appeared first in France; at Cluny and its daughter abbey, Souvigny. It found no favour in its own country, but its adoption in England gave us the finest exteriors we possess.

A French cathedral is essentially a

Town Church;

the English cathedral dwelt in a *rus in urbe*. To these delightful closes and precincts yet another charm is added in their cloisters. Cloisters were natural in cathedrals which, like Gloucester or Bristol, were served by Benedictine monks or by Augustinian canons. So beautiful an accessory, however, was the monastic cloister that it was added as an *objet de luxe* at Chichester, Exeter, Hereford, Lincoln, Salisbury, and Wells; all served by secular canons. In Northern France, on the other hand, cathedral cloisters are far less common. Among better known examples may be mentioned those of Rouen, Laon, Noyon. In England, too, we elaborated first at Worcester a circular chapter-house, and out of this developed the polygonal form. These polygonal chapter-houses, of which so many glorious examples remain, e.g., at Southwell and Wells, have been described as the greatest triumphs of our mediæval architecture. I do not remember to have seen one of them in France.

Where the exterior can be seen, it is seen to be

Hugely Tall;

its outlines, however, especially as one looks eastward towards the apse, are cut up in the most perplexing and vexatious manner by a forest of stone stays—permanent stone scaffolding—the flying buttresses. One's reason tells one that each has its special function, but the eye does not brook to be dictated to by the reason. After the tangled intricacies of such an apse as that of Amiens or Nevers, the eye rests with deep content on the simplicity of the north side of York.

We have seen how porch and eastern transept break up the monotony of the long flanks of our English cathedrals. The French cathedral also, as first designed, had grand shadow effects in the bays between the buttresses; buttresses which, owing to the greater height and span of the vaults within, were of much greater projection than our own. Unfortunately these effects, too, were sacrificed almost everywhere.

The Walls of the Nave Aisles

were pierced through, and chapels were inserted from buttress to buttress. The buttresses practically disappeared as a factor of the exterior; and the flanks of the nave presented one shadowless monotony. This may be seen at Paris, Laon, Nevers, Dreux, Amiens, Autun, almost everywhere. We have had but one nave treated in this disastrous fashion; that of Chichester.

Another disability which afflicted the French designer was that the interior being all in all to him, and the sublimity of the interior being dependent mainly on its altitude, the external roof which covered his vault was so enormously lofty that no towers which could be set upon it were adequate to dominate its masses, unless they were positively gigantic in height. It was only by carrying up spires to the vast altitudes of those of Cologne or Strasbourg that such an exterior could be brought together into unity. In some cases, as at Chartres and Coutances, the attempt was made, and successfully. At Beauvais it was attempted; but the central spire, 510ft. high, collapsed. At Amiens, the *chef d'œuvre* of all the French cathedrals, the

Failure of the Exterior

is supreme. Over the crossing was erected a spire of wood; though 357ft. high, it has the effect merely of a pinnacle. As for the western towers of Amiens, though effective from the west, they are from all other points of view absurdly inadequate. In England, vaulting ambition did not overleap itself.

The Lincoln people kept their roof so low that the three towers have a superb effect. What must Lincoln have been like when it had its three spires as well? the central spire, 525ft. high, a mark far out at sea!

Not only in the elevation of his vaults, but in the composition of his tower-groups, the Frenchman had ambitions amazing to the Englishman. The Englishman never got further than translating into Gothic the Abbaye aux Hommes. The Frenchman essayed to translate into Gothic the tower-groups of Cluny. Laon was designed for seven towers, Chartres for eight. No such groups were ever completed. And so French Gothic is, to a woeful extent, a study of

Unfinished Exteriors—

unfinished where groups had been designed of seven, eight, or nine towers; unfinished often where, as at Amiens, three steeples only had been planned. We see something of what was designed in the tower-groups of Laon, and in a simpler form at Autun, Semur, and Notre Dame de l'Epine, Chalons; or, with intermixtures of modern work, in the Cathedral and St. Ouen, Rouen, in Bayeux, and, above all, in Coutances, the finest tower-group in France. Taking the French exteriors as a whole, one is left rather well content with English Gothic.

But if we turn to the grand façades to north, south, and west we have little, I am afraid, which will bear comparison. A few of our transept-façades, e.g., those of Beverley and Lincoln and the north transept of York, have no superiors anywhere. (It is strange that we have no façade of first rank after the middle of the thirteenth century.) As has been pointed out, the final and most elaborate effort of French Gothic was made in the

Completion of Transepts.

What can be more accomplished than the composition of the north transept of Limoges? How commonplace it would have been in the hands of our contemporary English masons! If, on the other hand, we turn to the west, the French façade immeasurably surpasses anything of ours, Peterborough excepted, which is *hors concours*, being unique. In France they wanted to display statuary, but the grand façade does not sink to the level of an open-air reredos, as at Lincoln, Salisbury, and Wells. Nor can I conceive any French architect so lost to dignity and self-respect as to let his cathedral sink away westward to the ground after the parochial fashion of Winchester, Norwich, Chester, Gloucester, and Worcester. Sometimes, but rarely, he built two symmetrical spires, as at Séez, Angers, Bayeux, Coutances; or two unsymmetrical ones, as at Chartres. Sometimes he built a pair of western towers, as at Paris, Rheims, Bourges, Noyon, Tours, Laon. It is possible that these also were intended to carry spires. (The addition of spires is needed to counterbalance the heaviness and undue horizontality of the present façade of Notre Dame, Paris.) If he could not complete two western towers, at any rate he built one, as at Auxerre, Soissons, Limoges, Troyes, Albi. If he did not get his tower at the west, then, as at Exeter, it finds place at the end of the transept, e.g., at Bordeaux, Le Mans, Nevers. Of our west fronts, that of York is most on French lines and the most successful, always excepting Peterborough. The evolution of the

French Grand Façade

from Senlis through Nôtre Dame to its perfect consummation in Rheims is a fascinating subject which I must pass over.

In such a great façade the central idea is that it is none other than the portal of the House of God Himself. Here there are none of those "holes for rats and mice," as some one unkindly described the west doorways of Wells. These vast cavernous portals, studded with legendary imagery, are the glory of the French façade. The triple portals of Paris, Auxerre, Amiens, Rheims, will be familiar to many of you; while at Bourges the western entrances are no less than five in number. It is true that the comparative insignificance of the

Western Entrances

to our cathedrals is to some extent redeemed by lateral porches breaking most effectively the lines of our long low minsters, such as the north porches of Southwell, Hereford, Salisbury, Wells, and Worcester; the south porch of Canterbury; and the Galilee porches of Ely and Lincoln. But France also has noble examples of lateral porches—the lovely hawthorn porch of Bourges; the statued porches of Chartres; and the superb Flamboyant porches added to Louviers and Albi, the latter incomparable among the works of the Later Gothic. On the whole, as regards the façades of naves and transepts alike, we must bow to the superiority of the French.

When we pass within, all is changed. We step into vast spaces of height incalculable; so overwhelming in their impression on the senses that it seems inconceivable that they should have been designed by the pigmy, man, who walks beneath. Nowhere does one so feel at once the insignificance and the greatness of man; he is overwhelmed by his own work. It is not to the beautiful but to

The Sublime

that the genius of France has attained. Her Gothic cathedrals stand apart on a higher plane than all the other works of man; they are the supreme artistic achievement of our race. At Lincoln the choir is 74ft. high beneath the vault; at Amiens it is 140ft.; Beauvais is nearly 154ft. (one Lincoln choir might well be superposed on another inside Beauvais). It is true that our English cathedrals have the best of it in length. Winchester is 56ft. longer than Amiens, and very beautiful effects are produced by the long-drawn succession of arch after arch rapidly passing out of count. In fact, we may say Frenchmen and Englishmen alike, in building a house for Him who is without length of days, sought to produce the impression of infinity—in England by suggesting infinite length, in France by suggesting infinite height. Ours was the easier task. And this impression of interminable distance was aided yet again by the numerous screens, often carrying organs, which crossed the church; of which two remain at Ottery St. Mary's, while greater churches had three or more. How greatly an interior is foreshortened by the

Want of a Substantial Screen

is seen at Tewkesbury. At Gloucester and at Exeter the organ-bearing screens add enormously to the apparent length of the church. Screens have been swept away from the French cathedrals almost universally. Their length,

already inadequate to our English eyes in proportion to the greater span and greater height of the central nave, is grievously curtailed. A beautiful example remains at Notre Dame de l'Epine, near Chalons-sur-Marne. A sumptuous Flamboyant screen is the glory of the church of the Madeleine at Troyes. The Renaissance screen of Limoges Cathedral still survives, but is thrust back against the western wall. Albi alone retains in all its integrity the whole of its screen and choir enclosure.

What, perhaps, strikes an Englishman most is the homogeneity of the whole

Internal Design of Nave and Choir.

He has been accustomed to nothing of this, except, perchance, at Salisbury. To him a cathedral means a hybrid, a mongrel building—a collection of scraps and patches. It is a revelation to see a harmonious whole, like that of Paris or Amiens or Bourges or Rheims or Chartres or Poitiers, Laon, Soissons, Noyon, Tours, Troyes, Coutances, Séez. At Chichester, for instance, he has seen one design in the nave, a second in the retro-choir, a third in the porches, several designs in the nave chapels, one in the south transept, and another in the north. Equally mixed up and discordant are Rochester, Hereford, and St. Albans. York has one design for the transept, another for the nave and choir. Canterbury choir is absolutely disconnected from and independent of nave and transepts, and so on with the rest, Salisbury only excepted. This, which is the

Greatest Blot Æsthetically

in our English cathedrals, is archæologically their greatest charm. When one has seen one bay of the nave of Salisbury or Amiens, one knows what to expect in each of the rest; there are to be no surprises, no novelties. In such a cathedral, too, as Amiens or Salisbury there are few archæological problems to unravel, few nuts to crack; the constructional history of the cathedral tells itself clearly and unmistakably. But a man must think much and often, and even then he will require Mr. St. John Hope's assistance, to ascertain how Rochester Cathedral grew. I remember finding Wakefield and Ripon Cathedrals more interesting than stately York. Here and there, like the Frenchmen, we were iconoclasts. At Lichfield, Salisbury, Wells, and York the builders cleared away every scrap of Romanesque from the face of the earth. But everywhere else they left masses of Romanesque work standing. Often we have a Romanesque nave with a Gothic choir, as at Southwell; sometimes Romanesque below and Gothic above, as in the choir of Hereford; sometimes blocks of gaunt Romanesque protruding still from Gothic surroundings, as at St. Albans. Parallels may be found in France, but they are rare. Toulouse has a Gothic choir, but never succeeded in rebuilding its twelfth-century hall nave. The Romanesque nave of Le Mans was thought too good to be pulled down. Gothic is superposed on Romanesque at Bayeux, at Chalons-sur-Saône, and at the abbeys of Souvigny and Brioude. But, on the whole, we may say that English cathedral architecture is generally a study of contrasts; that of France a

Study of Harmonies.

If we turn to the internal elevation we shall find a marked difference between the French and the English treatment. The English cathedrals are low; the loftiest vaulted cathedral, Salisbury, is 85ft. high. They sink downward till 74ft. is reached in Lincoln choir, and 70ft. in Exeter. This conditions the English elevation. For an effective interior the piers and pier arches must be lofty. But where the vaults are low there is no room for lofty piers and arches. The piers have to be short and squat, as at Wells and Lichfield. What a change to turn from these to the acute, soaring arches of Amiens, Clermont, and Narbonne! Both in France and England the internal elevation usually consists of three members—the pier arcade, triforium, and clerestory. The French disposition of these—which is seen at Westminster and Beverley—is to give half the height to the pier arcade, and of the other half to assign one-third to the triforium and two-thirds to the clerestory. Some such proportions prevail almost everywhere in France. In England the proportions are seldom good. The clerestory, as a rule, is too low and the triforium too lofty.

The greatest difference, however, as regards proportion is the

Relation of Height to Span.

With us, except at Westminster, Norwich, and Beverley, the height is usually only about twice the span. In France, though the central aisles are much wider than our own, they are usually three times as high as they are broad. It is beyond question that in the matter of proportion English Gothic erred; and proportion, as some one has said, is the life-blood of architecture.

As I have said, we were often inclined to sacrifice the clerestory to the triforium. The fact is, there was in England a very genuine love for the triforium, and a great and well-founded belief in its capacities for artistic development. The French, I think, at no time set much store by it. In great churches, such as Chartres, Limoges, and the choir of Auxerre, the triforium is of a very simple character. Our rich triforia, such as those of Chichester retro-choir, Lichfield, Lincoln, Salisbury, Worcester, Westminster, Beverley, and York, are the exception in France. The elaborate triforium of Séez is one of the proofs of the presence of English influence in the design of that beautiful little cathedral; and when it does occur it is seldom a blind storey proper. As a rule, as in Amiens nave, it is blocked up behind by a solid wall. In this way the Frenchman deliberately gets rid of

The Pits of Shadow and Gloom

which lie at the back of the arcades of such an open triforium as that of Lincoln presbytery. Frequently, after the middle of the thirteenth century, he lowers the aisle roofs and glazes his triforium, as in Amiens choir, Clermont-Ferrand, and St. Ouen, Rouen. But this is no gain. The clear-storey at Clermont-Ferrand is quite tall enough without having a triforium added to it. One instinctively desiderates a three-storey elevation; the Frenchman has reduced it to an elevation of two storeys. In twelfth-century Gothic an elevation of four storeys had not been uncommon. It is seen at Laon, Soissons, and Noyon, and survives in part in Paris. It is seen in transition in Rouen Cathedral and in the fine church of Eu. The extra storey is gained by vaulting the aisle in two storeys instead of one. The additional storey has the effect of increasing the apparent height of the church. The objection to it was that it curtailed the pier arcade and clearstory.

Looking east or west, unity is the mark of the French design. The French cathedral is a house at one with itself. This is largely due to the absence of a central tower and of the obstructive piers on which such a tower rests.

Our Exteriors

owe much to the central towers; our interiors are ruined by them. Canterbury nave and choir are as much disconnected as if they were in separate counties; it is not one but two Canterbury Cathedrals. It is rarely so in Northern France, except in Normandy and Burgundy. The beautiful church of Sémur is constricted into a mere tunnel, in order to allow of a stone central spire. At Bourges, at Bazas, and Nevers even the transept is omitted; at Albi the aisles were omitted as well. Nothing was allowed to stop the uninterrupted flow of the main lines of the church from west to east.

In plan the French cathedral attaches more closely to the type of Hereford, Exeter, Winchester, Salisbury, and Wells than to the simple parallelograms of Lincoln and York. It is, indeed, from the east end of Wells only that we can form any conception of the mysterious, intricate, everchanging vistas and perspectives which fascinate one in a French chevet. The eastern glass walls of Lincoln and York are plain prose indeed to

The Poetry of the Eastern Endings

of the French cathedrals. And when it is remembered that some of the French cathedrals have double aisles to their nave, and that nearly all have their aisles flanked by continuous chapels, it will be seen that there is a romance about the progress up a French cathedral from portal to altar which is here unknown. If, however, we have not the seven chapels of the chevet of Amiens, the eleven of Orleans, the seven of Le Mans, we have by compensation the eastern transept—a most picturesque substitute. And while we are speaking of transepts, it is worth noting that the English transept has usually an aisle on the eastern side only, on which side alone altared chapels were practicable. Beverley and Salisbury are examples. Even in religious art the Englishman was ever practical and economical. I do not recollect these lopsided transepts in France.

As regards detail, I think we may say that the Englishman sometimes bestowed on his detail a loving care which is not always found on the other side of the Channel.

The Frenchman's Mouldings

are few and bold. The outline of the pier arches is not marked, as with us, by an emphatic hood-mould. His piers, on plan, are simple in comparison with those of Wells, Lichfield, and Exeter. But the Englishman as soon as he had begun to learn the new lesson of Gothic burst at once into an intricacy of delicate, refined mouldings such as the Frenchmen never dreamed of. Take a first-class example from either country—the cloister of Mount St. Michel and the Beverley staircase—and you will see the difference. In statuary our case is hopeless. I know of nothing to compare with the statue of the Virgin in the group of the Annunciation, which stands in the central doorway of the façade of Rheims. In foliated capitals nothing, perhaps, was ever done so good as the twelfth-century capitals of Sens, Laon, Soissons—truly architectural in treatment. In later days marvels of foliage were produced—conventional foliage of the highest beauty at Wells and Lichfield; naturalistic work in the Chapter House of Southwell. With the latter we may compare the fine capitals of Notre Dame, Cluny, and the superb example from the nave of Rheims. Honours may be said to be divided.

"It is not so above." Look at the vault, What a poor, thin, ineffective culmination and climax for the riches below! Think of the vaults of the naves of Lincoln and Lichfield, of Norwich, Tewkesbury, and Winchester, and, above all, of that of Exeter, fastening down and tying the whole building together, like the banded lid of some ancient strong-box. Particularly lamentable is the absence in France of

The Longitudinal Ridge-rib.

More than anything else this binds together a cathedral's disconnected bays and enforces unity. Examples of it do occur, e.g., at Souvigny and St. Riquier, but they are rare. The reason, I think, is not far to seek. The French, to lessen the thrusts, always inclined to build their vaults domical. Introduce a ridge-rib and it will be found to wobble up and down in a most distressful manner, as, indeed, it does in the great transept of Lincoln and in Southwell choir. Only at the very end, when it was too late, did the French repent, as at Abbeville and St. Riquier, of their failure to develop the vault.

And so we get back to our normal attitude of complacency. We do not get the "grand Nature" in our English cathedrals. They are human and lovable; foreign travel does not spoil one for them; one ever comes back to the sweet loveliness of Lichfield and Wells and Exeter with renewed delight. Amiens, Clermont, Narbonne are something more than human; it is awe, admiration, almost terror they excite; they seem superhuman; not built for mortal men by mortal men. There is nothing overwhelming or overpowering in the ancient churches any more than in the scenery of England; it is a little country, a peaceful, restful country; no Alps;

> "No grand Nature;
> All the fields
> Are tied up fast with hedges, nosegay-like;
> The hills are crumpled plains; the plains pastures;
> And if you seek for any wilderness,
> You find at best a park."

The English cathedrals were made for England.

THE DISCUSSION.

Mr. E. S. Prior, in opening the discussion on the paper, said Mr. Bond had given them a photographic, and not a superficial, view of the cathedrals; yet he had included many churches

that were never cathedrals. He thought he carried the comparison of archiepiscopal and monastic churches a little too far. Most of our cathedrals were originally monastic, built in connection with monasteries, and therefore could not be put upon the same par as French cathedrals, which were built as the crown of a city, and drew their impetus of building from the civic traditions of a great city. In comparing the western fronts the French were rather dark, and in our English climate they would have been darker still. He thought Wells avoided this. Mr. Bond had treated Wells front somewhat roughly. Also, in comparing the English cathedrals with the French it must be remembered that the latter were only built in a very small area—the Ile de France—so that many of the cathedrals Mr. Bond had included were not really to be considered as French. Mr. Bond called the case of the English sculpture hopeless; but it should be remembered that most had been destroyed by restorers. He himself did not think it hopeless. With regard to the man's insignificance in a French cathedral this grandeur was also to be found in Durham.

Mr. Stannus said he was entirely at one with Mr. Prior as to the grandeur of Durham. In regard to double transepts, these allowed of a number of chapels being placed in connection with the church which could not otherwise be attached, it being a necessity at that time in England of having the chapels face east. The French not caring so much about the eastern position of the chapels, clustered them round a chevet. He proposed a vote of thanks to Mr. Bond; Mr. Alexander Wood, Mr. A. S. Flower, and Mr. Seth-Smith also spoke.

The vote of thanks having been accorded, Mr. Bond in reply said he thought Mr. Prior had certainly made a point in regard to monastic cathedrals. Durham impressed from its being Romanesque. From more than one point of view Gothic was a decadence from Romanesque.

Professional Practice.

Birkenhead.—The new public baths erected by the Corporation were opened recently. The site of the buildings is on the south-easterly side of Livingstone Street, between St. Anne Street and Price Street. The main elevation is to Livingstone Street. Two entrances are provided—one for the first class and ladies, and one for the second class. The first class swimming bath is 63ft. by 24ft., with dressing-boxes along one side and one end. The second class swimming bath is 75ft. by 30ft., with dressing-boxes along both sides, so arranged that the tops form a gallery to be used for swimming galas, &c., and a large gallery is also constructed at one end of the bath. There are nineteen slipper baths, viz., twelve second class gentlemen's, three ladies', and four gentlemen's first class. A vapour bath, and a needle and shower bath are provided in connection with each of the classes of slipper baths. Salt and fresh water will be supplied to both slipper and swimming baths. There is a commodious laundry in connection with the building, fitted with steam-driven washing machine, hydro-extractor mangle, porcelain wash troughs, rinsing tanks, soap boiler, dirty clothes bins, folding-tables, &c. The laundry machinery is driven by a 4-h.p. vertical steam engine, and two Lancashire boilers 20ft. by 5ft. 6in. are used for supplying steam for heating and power purposes. In the whole of the building the various classes are accommodated with waiting-rooms, sanitary arrangements, &c. There is a caretaker's house in connection with the building, containing a commodious kitchen, sitting-room, scullery, and three bedrooms. The whole of the building is cleared, so that all the fittings can be easily examined. The building is constructed of brick, with red pressed brick and terra-cotta dressings, of plain but substantial appearance, and has been designed with special regard to light, air, and general sanitary details. Mr. Charles Brownridge, engineer, is the architect. The contractor for the erection of the building was Mr. James Merritt, of Birkenhead; the contractors for the boilers, heating apparatus, and laundry machinery, Messrs. Thomas and Taylor, Limited, of Stockport; and Messrs. Newton Chambers and Co., Limited, of Sheffield, have carried out the contract for supplying and fixing the salt-water storage tanks and filter. The cost of the building, including machinery, is about £11,000, and of the salt-water storage tanks and filter about £1,600.

Borgue, Kirkcudbrightshire, N.B.—The Free Church has recently been opened after having been, along with the manse, remodelled and improved at a cost of about £1,000. A new open-timber roof with pitch-pine hammer-beam principals have been put on the church, and the internal arrangement has also been improved, and a new platform, pulpit, and seating added. A new vestry has also been built convenient to the pulpit. The works have been executed by local tradesmen from the designs of Mr. J. A. Macgregor, architect, Castle Douglas, N.B.

Buntingford.—The restored Chapel-of-Ease of St. Peter has been opened as the Parish Church of Layston, or rather of Buntingford. Layston Church still stands on a hill half-a-mile outside the town of Buntingford, but very early in its history the parishioners preferred to live near the great highway of the North Road, and the town of Buntingford, like Royston, grew up without a parish of its own, but consisting of a thriving community situate in several parishes, but chiefly in Layston. Layston Church of St. Bartholomew has long since been in such a state of dilapidation and decay as to be quite unfit for public worship. The Chapel-of-Ease, St. Peter's, built about 1615, at the southern entrance to the town of Buntingford, also began to show the ravages of time to such an extent that restoration was urgently needed. The building was evidently at first rectangular in shape, but north and south transepts, and apse had been added. The south end formed the chancel. Thus the plain brick building became as it is at present, cruciform in shape, and was somewhat modified Gothic of the seventeenth century in style. The fabric has been overhauled and repaired, and retiled with the old tiles where possible. A new porch has been built, and a much needed vestry added. Internally the building has been replastered, the roofs boarded and stained. The old oak work has been utilised in the pulpit, choir seats and gallery front. Comfortable benches have been provided, and all rows placed one way. The floor is composed of wooden blocks, and all the seats in the nave and transepts are of pine and have been neatly stained and polished. Of the nineteen windows, seven are entirely new, but some are small, consisting of only one light. The larger windows have brick mullions. All the glass used is cathedral and of a greenish tint. The building is heated by warmed fresh air. The choir and chancel is paved with Minton tiles. In the sanctuary the old communion table is preserved. The reredos consists of a framework of alabaster mouldings enclosing three panels of Italian marble. On each panel there is an *opus sectile* inlay of blue Venetian glass joinery. This work has been admirably carried out by Mr. James Forsyth, of the Sculpture Works, Hampstead. The altar cloth has been renovated. The central window in the apse is fitted with stained glass, the subject represented being "St. Peter healing Æneas." This window is the work of Mr. Dudley Forsyth, of Hampstead. A new feature possessed by the chapel is a bell turret, where is hung a bell weighing two hundredweight. Below the turret is a space for a clock, facing the town. The cost of the bell and clock is estimated at £90. As yet the old organ will have to be used, but a movement is already on foot to obtain a new one. The total cost of the restoration and alterations is about £2,000. The work has been executed by Mr. Chas. Whyatt (Messrs. Gimson and Co.), of Royston, under the direction of the architect, Mr. William A. Pite, F.R.I.B.A., 11 Hart Street, Bloomsbury Square.

Dundee.—The Wishart Memorial United Presbyterian Church is now being erected, and will have seating accommodation for 700. The entrance will be from King Street. The stone dressings of the front will be of red stone. Owing to the surrounding buildings great care had to be exercised in arranging the interior so as to give ample light and good acoustic properties. The plan is arranged in one large nave, side aisle, and transept, with an end gallery next King Street. Halls and other accommodation will be provided in the ground floor, the halls being capable of holding 350 persons. The entrance to the halls and the gallery of the church will be by a door under the tower. The contractors for the work are Mr. Robert Laing (mason), Mr. F. C. Stocks (joiner), Mr. M. Lawless (plasterer), and Mr. W. Brand (slater). Mr. T. M. Cappon is the architect.

Flookburgh.—A new church has been erected to take the place of the old chapel-of-ease. The building is Transitional in style, and has been



PREMISES, NOS 33-35 HIGH STREET, ILFRACOMBE. ALLEN T. HUSSELL, ARCHITECT.

designed by Messrs. Austin and Paley, architects, of Lancaster. The cost has been about £11,000. The ground plan shows a nave, north and south aisles, chancel, south transept, entrance porch, and bell-tower at the west end. The building is of stone from the Home Farm quarry on the Holker estate, with Hutton Roof stone dressings and Yorkshire flagstone slates. All the windows, chiefly of lancet form, are of cathedral glass in leaded squares, with the exception of the three apse windows, which are of stained glass, executed by Messrs. Shrigley and Hunt, of Lancaster. At the east end, a door leads on the level to the vestry and heating room, which are below the organ transept and chancel, and from here also the organ is reached by a stone staircase. The bell-tower is approached by a door in its north face. The main entrance to the church is by a moulded porch in the Norman style on the south side near the tower. The nave, 62ft. by 22ft., is divided from the aisles by arcades of three bays, the pillars being alternately circular and clustered, and the aisles, 43ft. by 9ft., run the length of the arcades over which is a clearstorey lighting the nave. The pews are of oak, and are laid upon pine blocks on asphalt and concrete. The main roof is open to the timbers, whilst the ceilings of the chancel and apse are of stone, the former having a parapet with moulded corbels and coping, and the latter being stone groined. The chancel floor is paved with encaustic tiles and marble, and the back wall behind the communion table is of alabaster. The choir stalls are of carved oak, and the vestry fittings are pitchpine. There is a stone pulpit, and a limestone font. The credence and double sedilia are in the south wall, with stone seat and shelf. There are two chancel arches dividing respectively the nave and chancel and apse and chancel, the groins, of barrel vault shape, continuing the arch to the circular portion of the apse, which is a true groin with moulded ribs springing from circular shafts with moulded caps and carved terminations. All the aisles and passages are flagged. A new feature in connection with the heating apparatus is the entire heating of the roof, which will prevent down-draughts. The seating accommodation is for 400. The massive tower, surmounted by a saddleback roof, is 18ft. 6in. square inside, is divided from the nave inside the church by an arch, is lighted by chancel windows, and contains four bells. The angles of the towers have pilaster buttresses running up close to the corbelled plain ashlar parapet. The bells are four in number, and were made by Messrs. Taylor and Company, of Loughborough. The frames are of massive iron castings, standing upon and bolted to stout steel girders. The organ has been built by Messrs. Brindley and Foster, of Sheffield and London. The contractors not specified above were:—Mason, Messrs. A. Blair and Sons, Allithwaite; joiner, Messrs. Gradwell and Co, Limited, Barrow; plumber and glazier, Mr. A. Moorhouse, Kirby Lonsdale; slater, Mr. J. Chippendale, Grange; wood and stone carver, Messrs. H. T. Miles and Son, of Cark and Lancaster; marble worker, Mr. J. Hargreaves, Lancaster; ironworker, Messrs. Singer and Sons, Frome; lampsmith, Messrs. Hardman, Powell and Co., Birmingham; hassocks, &c., Messrs. Jones and Willis, Birmingham; heating engineer, Messrs. Seward and Co., Lancaster; stained glass, Messrs. Shrigley and Hunt, Lancaster; altar cloths, &c., Messrs. Watts and Co., Limited, London.

Ilfracombe.—The new premises in High Street, illustrated on the previous page, have been erected for Mr. A. C. Blake at a cost of about £4,000. They comprise four floors with basements and are faced with Lawrence's T.L.B. red-facing bricks, with Bath stone dressings and polished red Aberdeen granite pilasters to shop fronts. The contractor was Mr. F. J. Reed, and the architect Mr. Allen T. Hussell, both of Ilfracombe.

The Royal Society of British Artists are now holding their exhibition of pictures at the Suffolk Street Galleries, Pall Mall East, S.W., The president, Sir Wyke Bayliss, sends one work, "St. Mark's Venice," an interior of chancel and pillared arches in gold and brilliant colouring.

MATERIALS INFLUENCING DESIGN.

AT a meeting of the Edinburgh Architectural Society held on Wednesday last, Mr. A.F. Balfour Paul, president, in the chair, a lecture with the above title was delivered by Mr. J. A. Carfae. At the outset Mr. Carfae mentioned the advisability of using stone from local quarries not only on account of economy, but also for the sake of its fitness with the surroundings. No unnecessary labour should be expended upon a hard stone such as whinstone, and even squaring could with advantage be dispensed with. The selection of stone was daily becoming more difficult, and in many busy centres local quarries were being exhausted. The use of brick was consequently increasing, and for its treatment in design there was immense scope. There were many English examples of brick being well used.

In street elevations, on account of the requirements of modern shopkeepers, it was often necessary to begin the design at the first floor instead of at the ground level. Regarding the exposure of constructive material, it was impossible at the present day to leave many parts of construction, e.g., joisting, hearth, arches, &c., uncovered, and there was no harm in covering much of the framework of a building, such as iron and steel, so long as the covering suggested good construction. Iron standards in this way might be enclosed with brick and give the impression of a solid pier. Limmer rock asphalt was now in extensive use as a roof-covering, and there was no reason why inventiveness should not in time make flat roofs attractive. Cast iron was capable of much better treatment than it received at present, and for work which must necessarily be cheap was often preferable to wrought iron. In conclusion Mr. Carfae thought that with the new materials and the new machinery for working material, now at the disposal of the architect, there was a great future for design; and if the present generation was unable to accomplish much, it was at least preparing a way for its successors.

LONDON COUNTY COUNCIL.

AT last week's meeting the Improvements Committee recommended that the Council should contribute £270, one-third of the nett cost of the reconstruction by the Vestry of St. Martin-in-the-Fields of the steps in front of St. Martin's Church in such a way as to increase the width of the footway on the eastern side of St. Martin's Place to about 9ft. The Committee reported that the steps had been in a dilapidated condition for some time, and, owing to their condition and position, were the cause of frequent accidents. In consideration of the vestry undertaking the work, the church authorities would surrender without money payment the land to be added to the public way. They regretted that it was not possible at the present moment to increase the width of the carriageway, but any increase in the width of the thoroughfare at this part must be of great advantage to traffic generally. They could see no other way of obtaining a widening than by the scheme now proposed, as the National Gallery was on the other side of the road. Mr. Shaw Lefevre moved, as an amendment, that the recommendation be referred back to the Committee with instructions to take expert opinion as to the architectural effect of the proposed alteration, and to request the Vestry of St. Martin-in-the-Fields meanwhile to take no further action for carrying out the work. He declared that the scheme, if carried out, would be very detrimental to the architectural features of a church, which was one of the most beautiful in London, not only for itself, but by reason of its almost unique position. Sir H. B. Poland, Q.C., seconded the amendment, which was carried, on a show of hands, after a brief discussion.

The Council approved the estimates, amounting to £1,307,030, for various improvements in Mare Street, Goswell Road, St. John Street, Clerkenwell, Blackstock Road, Archway Road, Kentish Town Road, Nine Elms Lane, Battersea Rise, Blackheath Road, Blackheath Hill, New Road, and High Street and Gardener's Lane, Putney (see page 231 of last week's issue).

As many as 3,700 persons of the labouring class, it was reported, would be displaced by the construction of the Holborn to Strand street. It was proposed to provide accommodation for 1,000 persons on the Duke Street and Marquis Court site; for 799 in a lodging-house at the corner of Kemble Street and Drury Lane; for 1,681 on Reed's Brewery site; for 680 on the Herbrand Street site; and for 290 on the Millbank site. The Improvements Committee reported that they had every reason to believe that the scheme they suggested would have the approval of the Home Office. They recommended the Council to approve it. This was done.

Reporting on the proposal that a tramway should be constructed along the Embankment, the Highways Committee stated that it appeared to them that the scheme might raise considerable opposition, and so place difficulties in the way of the Council obtaining legislation to carry out its numerous other tramway proposals, which otherwise might be to a large extent unopposed. After giving the matter very careful consideration, they had arrived at the conclusion that it was not advisable to proceed with the scheme next session. They recommended accordingly, and the Council approved their action.

Correspondence.

Low Side Windows.

To the Editor of THE BUILDERS' JOURNAL.

BROMLEY, KENT.

SIR,—Although I am far from wishing to open in your columns a discussion on this vexed question, I nevertheless beg some little space for a reply to Mr. Johnston's letter in your issue for October 17th.

Mr. Johnston admits that documentary evidence of their use for confession is very uncommon; he quotes Bedyll's letter which refers *exclusively* to monastic establishments. This was noted in the "Antiquary" a short time ago in the course of a discussion on the same subject, and it is an objection as yet unexplained.

So far as my experience of Kentish churches is concerned, I cannot altogether agree with Mr. Johnston in his remark that these windows are the rule rather than the exception in country churches. In my own district, the following are the churches where I believe they do not exist:—West Wickham, Hayes (much restored), Bromley, Foot's Cray, St. Paul's Cray, St. Mary Cray, Crayford, Horton Kirby, Farningham, Keston, Aylesford, Ryarsh, Bearsted, Otham, Ash, Wrotham, Burham, Snodland, and Cheslfield. These churches exhibit architectural styles from Norman onwards, and form some slight evidence that the windows were not the general rule in West Kent at least.

If, then, this method of confession was so common during pre-Reformation times, why is there not a general distribution of the windows? Why are they found in secluded churches, and sometimes not in those buildings situated in towns, where the larger population would call for at least one confessor? If it was the custom for the confessors to travel in couples, why are there not more instances of double low side windows? Such instances are comparatively uncommon.

I challenge Mr. Johnston's theory for the origin of these windows. He says that they originated in the "barred and shuttered opening of the anchorite's cell." The very meaning of the word Friar (by whom Mr. Johnston says these windows were used) is in direct opposition to the whole spirit and practice of those who had forsaken the world for the small secluded cell. The thickness of the walls in which these windows often occur, would prevent that proximity of priest and penitent so much in keeping with the character of the confessional.

For Mr. Johnston's last paragraph I am particularly obliged; I had wrongly imagined the break in the walls to indicate the usual thirteenth century extension of the chancel.—Yours truly. J. RUSSELL LARKBY.

Builders' Notes.

The Fencing of Machinery.—At the Loughborough Petty Sessions recently, W. F. Harding, builder and joiner, of Loughborough, was fined £2 and costs for not properly fixing and guarding a planing machine, on account of which a workman was injured.

For Letting Four Uncertificated Houses Joseph Leech, a builder, was recently fined £4 and costs by the Wigan magistrates—£1 in each case. At Birkenhead William Davis was fined 10s. and costs in respect of each of three houses which had also been let without first being certificated.

The Building Trades' Exhibition will be held next-year at the Royal Agricultural Hall, London, N., from Wednesday, April 17th, to Saturday, April 27th. The last Building Trades' Exhibition was held in 1899, and was opened by Professor Aitchison, R.A., then President of the Royal Institute of British Architects, who was supported by the leading architects, engineers and surveyors in the country. It was admittedly the best exhibition ever held. The forthcoming one bids fair to be even better. The secretary is Mr. H. Greville Montgomery, of 43 Essex Street, Strand, W.C., to whom applications for vacant spaces should be made.

Mr. David P. How, builder and joiner Dundee, died last week at the age of 59 years. Deceased was well-known in building trade circles in Dundee and district. After serving his apprenticeship as a joiner with Mr. M'Intosh, Alyth, he returned to Dundee, and was for some time foreman to Mr. White, joiner, Ward Road, and in that capacity superintended the erection of the Drill Hall. About thirty years ago he started business on his own account, and since then had been closely identified with the local building trade. Of recent years he had devoted his attention specially to railway work, and erected, amongst others, the stations at Forfar, Brechin, and Stannergate. His interest in public affairs was limited to the incorporations, and he was for some time Box master of the Wright trade.

Municipal House Building at Sheffield.—Acting upon the resolution of the City Council at its last meeting, when by a vote of 21 to 19 a proposal was adopted that the Corporation should build shops in Angel Street, with workmen's dwellings above them, the Health Committee has resolved: "That the City Surveyor be requested to assess the fair saleable price of the plot of surplus land, containing 862 square yards, at the junction of Angel Street and King Street, to be appropriated by this committee in accordance with the resolution of the Council of the 10th October." Also "That the City Surveyor be instructed to prepare conditions and obtain competitive plans for the erection of a building on the surplus land at the junction of Angel Street and King Street, for occupation by selected small householders in the upper portion thereof, and saleshops on the ground floor and basement rooms thereunder."

Chester Cottage Homes.—At the last meeting of the Chester Board of Guardians, the chairman said a letter had been received from Messrs. M'Lellan Brothers, builders, asking to be released from their tender (see p. xii. of last week's issue) for the cottage homes which the Guardians decided to have erected at Saughall. A proposition had been before the committee that Messrs. M'Lellan should be released from the Saughall contract. An amendment was moved that they be released both from the Saughall and the Central Homes contracts. Messrs. M'Lellan's reason for asking to be released of the contract was that they had other work, in addition to being under contract to build Central Homes for the Guardians.—Mr. Morris moved the amendment which he had moved in committee—that Messrs. M'Lellan renounce both their contracts. These gentlemen wanted to take the best jobs, and he held that it was fair that if they refused to have one they should not have the other. The contracts should be put in the market again. After further discussion the amendment that Messrs. M'Lellan should either accept or renounce both contracts was carried by 18 to 6.

The Registration of Plumbers.—A national conference of plumbers was held at Birmingham last week. Mr. Robert Crawford, of Glasgow, representing the Court of the Worshipful Company of Plumbers, presided. In his address he said that after the efforts which had been made he thought they would come to the conclusion that they ought perhaps to abandon the attempt to obtain legislation through a private member, and to put pressure on the Government. It was a matter not so much for private effort as for Government legislation. Dr. Alfred Hill, medical officer of health for Birmingham, remarked that plumbing had a much more important effect on the public health than the majority of persons were aware. Several resolutions were passed, sanctioning steps towards the framing of a Plumbers' Registration Bill.

The Metropolitan Industrial Dwellings Company report that for the year ended September 25th last the nett profit during that period was £10,383, which is but a slight variation on the return of the previous two years, but about £2,000 more than was earned in 1896-7. The dividend on the Ordinary shares remains unchanged at 5 per cent., but the carry forward is £7,447, as against £5,688 twelve months ago. The company is still steadily building and has also acquired fresh land, which in time will no doubt be covered with houses. The company's property does not, of course, accommodate those the housing of whom is the real difficulty of the metropolis and of our big cities, but it must find suitable homes for many who otherwise would have to live in undesirable habitations without saving anything in the way of rent.

The British Fire Prevention Committee have decided to postpone the opening of their new testing station until after Christmas, as their testing operations are principally carried on in the spring and summer months and many of the firms who wish to have tests undertaken prefer to avoid the winter weather for research work of this description. During the first part of the current session the executive of the committee will hence be mainly occupied in dealing with tests already undertaken in the summer, but in respect to which reports have not yet been issued. They will also be preparing an analysis of the tests undertaken to date, for which there appears to be considerable request. The offices of the committee at Waterloo Place will again be available during the winter months as a reading room, and a file of about sixty technical journals from different parts of the world has been arranged for, whilst a small collection has also been formed in the reading room with a view to showing materials that have been subjected to tests.

Engineering Notes.

Extensions to the Union Infirmary, Londonderry, are being warmed and ventilated by means of Shorland's patent Manchester grates, patent exhaust roof ventilators, and special inlet panels, supplied by Messrs. E. H. Shorland and Brother, of Manchester.

A Novelty in Electric Lighting.—The Electric Lighting Boards, Ltd., is the title of a company which has been formed to develop an invention by which electric lamps can be moved from point to point without the need for special wiring. The device consists essentially of a board or a narrow strip made of a somewhat elastic composition in which are embedded a number of fine copper wires. The lamps are similar to those in common use, with the exception of two spikes or prongs which extend below the cap (no holders are needed). By this means the lamp can be stuck into the prepared strip at any desired point and will light up; or a plug may be stuck in and a lamp suspended from it. The invention is applicable to shop windows, advertisement boards, workmen's benches, theatres, and especially for any temporary lighting, such as that for balls, banquets, or bazaars. The company's showrooms and factory are at 18 Dean Street, Soho, W.; the registered office is at 7 Pall Mall, S.W.

The Headquarters of the Honourable Artillery Company in City Road, Finsbury, E.C., have been wired for the electric light by Messrs. Donnison, Berlyn, Sillem, and Co., of London and Liverpool. The fittings have effectively worked in them the arms of the H.A.C.

Electric Lighting of St. George's, Hanover Square, London.—The Vestry of St. George's, Hanover Square, has made an agreement with the Westminster Electric Supply Corporation, Ltd., for lighting the public thoroughfares of the parish with electricity. The installation is to consist, in the first place, of 600 arc lamps, the posts to be of the same design as those already erected near Victoria Station. The number of these will be comparatively small. The work is to be begun immediately, and to be completed, so far as the 600 arc lamps are concerned, by June 30th, 1902. The total cost of lighting the 42 miles of public ways contained in the parish is estimated at about £17,000 per annum, as compared with £11,000, the present cost of lighting with gas. For this additional expense the ratepayers will get from 15 to 20 times the amount of light which they enjoy at present. The annual cost of each lamp will be:—750 watts arc lamp, £32; 500 watts ditto, £22; 120 watts incandescent lamp, £4; 60 watts ditto, £3.

Law Cases.

Infringing the Building By-Laws.—At Leeds Police Court last week Mr. Herbert Wright Thompson, builder, 186 Harehills Lane, Roundhay, was charged with two offences against the building by-laws—namely, having erected four houses in Brownhill Terrace, Hudson Road, contrary to plans approved, and three houses in Brownhill Avenue without having obtained the necessary approval. Mr. C. C. Jolliffe, Deputy Town Clerk, appeared for the Corporation, and Mr. Arthur Willey to defend. Plans had been passed for the erection of back-to-back houses, but defendant, finding that he was restricted by the conditions of sale from building houses of the character approved, made certain structural alterations. Two sets of amended plans were submitted, but rejected. Defendant, however, still carried on the work. A fine of 40s. and costs was imposed in each case.

Fire-resisting Construction between Trade and Private Premises.—On Wednesday last Mr. Kennedy gave his decision in an appeal under the London Building Act, 1884, section 150, brought by Mr. F. C. Hoskins against Mr. B. Dicksee, district surveyor under the London County Council (see p. 240 of last week's issue). Mr. Hoskins is a builder, and in June last entered into a contract to take down and rebuild the "Horseshoe" beer and wine house, 87 Old Kent Road. The plans were approved by the licensing magistrates, and in due course a notice was sent to the district surveyor. It was proposed to make the doors leading to the passage and the stairs to the first floor of deal, and the ceiling of the bar of lath and plaster. The district surveyor served a notice upon him stating that the building came under section 74, subsection 2, as part was to be used for the purposes of trade and part as a dwelling-house, and therefore the ceiling, staircase, &c., must be made of fire-resisting materials. This was the matter in dispute. Appellant's counsel contended that the building did not come within this section, and in support of this he quoted *Carritt* v. *Godson* (1899 2 Q.B., 193), in which it was held by the Divisional Court that a fully-licensed publichouse was not a building within the meaning of this section. A distinction was made, on behalf of the London County Council, between a fully-licensed house and a beerhouse, as a keeper of the latter was bound by law to reside upon the premises. Mr. Kennedy said he could not satisfactorily distinguish this case from *Carritt* v. *Godson*, and the appeal would therefore be allowed, with £5 5s. costs. On the application of Mr. Andrews, the magistrate consented to state a case.

Keystones.

The Work of Completing Truro Cathedral will be begun shortly, the final contracts having been signed.

The Memorial to Viscount Shannon in Walton Church is being restored by Mr. F. J. Williamson, of Esher.

St. John's Church, Great Marlborough Street, London, is having new chancel screen, pulpit, and choir stalls added.

Huddington Church, between Worcester and Droitwich, is being repaired and renovated. All the old features worth preserving are being carefully retained by the architect, Mr. Ford Whitcomb, and £1,050 is required to complete the work.

Closing of the Paris Exhibition Adjourned.—The French Government have decided to prolong the Exhibition for six days. Instead of closing, as it was to have done, on Monday, November 5th, it will remain open until Sunday, November 11th.

A new Board School at Dulwich was opened recently. Accommodation for 1,084 children is provided. The school is in Grove Vale, East Dulwich. The cost of the site was £2 18s. per head, as against the average of £7 1s. 7d. for the whole of London, and the cost of the building was £25,000, or £23 per head, making the total cost per head £26.

The Parish Church of Watlington, near Downham Market, dedicated to St. Peter and St. Paul, has recently been reopened after considerable renovation and repair. The church, or some part of it, dates back to the fourteenth century, and presents many interesting features. During the process of restoration a piscina and two aumbries were discovered in the north wall of the chancel, and it is thought that there may have been a small chantry chapel on that side. The work has cost about £1,400.

A New Police-court at Enfield has been erected on Windmill Hill by the Middlesex County Council, at a cost of between £6,000 and £7,000. This practically completes the scheme for the provision of magisterial courts in the county, each district being now supplied with properly equipped courts. Altogether the County Council has spent within the last five years about £35,000 in providing buildings for the transaction of magisterial business in place of rooms at public-houses and schools.

The Old Church of St. Gregory, Tredington, which is situate about half-way between Stratford-on-Avon and Shipston-on-Stour, has been reopened after careful restoration. The late Sir Arthur Blomfield prepared the plans for the renovation of the building. The cost has amounted to nearly £4,000. The ancient character of the church has been shown during the work by the discovery of Saxon and Norman remains, and Gothic and Jacobean work is represented in various parts of the edifice. The pulpit is considered to belong to the Elizabethan period. A new carved oak altar has been installed.

The Old Churchyard Cross at St. Thomas-à-Becket's Church, Wolves Newton, Monmouthshire, has been restored as a memorial to the late Mr. G. K. Bryan, of Wolves Newton; only about 5ft. of the shaft of the ancient cross remained, and it was decided to utilise this, but upon examination it was found the base and steps were in such a bad state that the whole had to be removed and reset with some new steps and tabling from the quarries at Pontysesion, near Tintern. The head of the cross is of fine red Dumfriesshire stone, and it is 6ft. 11in. from top of shaft to top of finial. There are four panels on the west side; the crucifixion is represented on the east, St. Thomas-à-Becket standing before the altar; on the north the Tudor Rose; and on the south the Canterbury bells. The whole is surmounted by a canopy and crocketted pinnacles, the total height being 22ft. 6in. The architect is Mr. C. E. Ponting, F.S.A., of Marlborough, and the work of restoration was carried out by Messrs. A. Palmer and Sons, of Bristol.

A Working Men's Club at Rock Ferry was opened last week in Bedford Road.

A new Courthouse and Police Station at Lythan is to be erected by the County Council.

A new Science and Art School at Newark has been erected in commemoration of the Queen's Diamond Jubilee.

A new Town Hall for Barnsley.—The Barnsley Town Council have decided to purchase for £4,100, from Mr. C. Woodruff, property known as the Manor House Estate, adjacent to the present Town Hall, as a site for a new building.

Architectural Association of Ireland.—At a general meeting of the members held on October 23rd, the President, Mr. Frederick Batchelor, in the chair, a vote of congratulation to Sir Thomas Drew on his election as president of the Royal Hibernian Academy was adopted. Mr. R. M. Butler then read a paper on "Architectural Association Excursions."

A new Mission House at New Cross, S.E., in Pagnall Street, was opened last week by the Princess Christian. The architect is Mr. William A. Pite, F.R.I.B.A. Not an inch of space inside has been wasted. There is a large hall for services and meetings, there are committee rooms and classrooms, a gymnasium fully equipped for the Church Lads' Brigade, a soup kitchen, and a convenient flat for a church worker. The building has cost nearly £4,000.

New Sunday Schools at Beeston, in connection with the Beeston Church Valley Mission, have been opened. The building accommodates about 450 persons. In addition to the hall in which the ceremony was held there is at the rear a large classroom, capable of seating between 70 and 80, the whole having been erected (on land purchased for £350) at a cost of £1,400, half of which sum, however, has yet to be raised. The main hall is 80ft. long, 35ft. wide and about 30ft. high; the classroom 35ft. by 18ft. There is a large platform at one end of the hall, which is lighted by 24 incandescent burners, and heated by means of hot water.

Glasgow Technical College Architectural Craftsmen's Society held its second meeting on Friday last, when Professor Henderson, D.Sc., M.D., lectured on "Chemical Notes of Building Materials." The lecturer pointed out the various constituents of the atmosphere which acted on materials with regard to their permanency, mentioning elementarily: 1. Water vapour; 2. Carbonic acid and oxygen. Metals were shown to be the most susceptible to atmospheric influences, because of their undergoing corrosion due to oxygen, and in the air of towns this action was greatly promoted, owing to the presence of injurious acids. Regarding iron, the various methods of protecting with their merits, and the precautions necessary to their proper application, were clearly demonstrated, and special attention was directed to the galvanic action set up between certain metals, such as tin and iron on exposure to the air, which action aids the corrosion of the iron. In galvanising with tin this was occasioned by any flaw in the coating; but so long as the coating was intact, galvanising by means of zinc, tin, or nickel was effectual as a protection to iron. A galvanic couple was set up by the contact of iron and lead in the fixing of iron railings, and sulphur was also considered to be objectionable. Cement was the most suitable for this purpose. Regarding lead and zinc, the lecturer stated that great care should be exercised in using these for the storing and conveying of water, and on no account should they be used in the construction of cisterns for water to be used for drinking or cooking purposes, as zinc is dissolved by soft water, and lead, when exposed to air and water, produced a compound of lead, soluble in water, and poisonous. Slate for cisterns was recommended. The lecturer dealt further with various metals, stone, and wood, and remarked in the case of stone that the more compact it was in structure the less likely to be affected by external influences. In conclusion, attention was drawn to the elementary facts dealt with as being of great importance, though too often overlooked.

A New Church at Forest Gate, to be dedicated to St. Edmond the King and Martyr, is being erected.

A Water Fountain has been built, at the expense of Mr. Passmore Edwards, in Christ Church Churchyard in the Blackfriars Road, London.

As a Memorial to the Late Sir William Hunter it is proposed to place a stained-glass window in the chancel of Cumnor Church. Should funds admit, replicas of a bust in bronze of Sir William Hunter by Mr. Hamo Thornycroft, R.A., will be presented to the Indian Government, and to the Indian Institute, Oxford.

The Wallace Collection during the winter months of November, December, January, and February will be open every Monday at 12 o'clock instead of at 2 P.M., as hitherto arranged. To avoid inconvenience to the public, it is desired to point out that children under eight years of age are not admitted under any circumstances. Under 12 years of age they must be accompanied by adults.

The Tabard Inn, Southwark, so imperishably associated with Chaucer's "Canterbury Tales," was one of the famous London hostelries which retained most of its ancient features until a comparatively recent date. It stood in the High Street of Southwark, about midway between St. George's Church and London Bridge, and nearly opposite the site of the old Town Hall. The original inn, as it was in Chaucer's time, existed in 1602, but in 1874, when it was demolished, all its quaint old features had vanished. A good deal of it, however, dated from the time of Queen Elizabeth.

Loftus-in-Cleveland Parish Church is being renovated, and a new and enlarged chancel added at an estimated cost of £2,700. The architects are Messrs. Clark and Moscrop, of Darlington, and the contractors for the mason work, joinery, and cabinet work, Messrs. Bastiman Brothers, of Middlesbrough. The whole of the stonework used in the new portion will be obtained from the Marquis of Zetland's quarries. The pulpit will be of stone. The whole of the windows, of which there are 20, will be traceried in stone, and filled with cathedral-tinted glass.

A new Vicarage House at Clevedon was opened recently. The walls of the vicarage house are of local Pennant stone to the first floor, and from there of brick. The dressings are of Box ground stone, and the roofs are covered with Broseley tiles. The main staircase is of pitch pine, with oak handrails. Wood blocks are laid to hall, passages, parish room, pantry, and kitchen floors. The site is a very commanding one, overlooking the Bristol Channel, and having a good view of the Mendip Hills. The work has been done by Mr. W. A. Green, a local contractor, at a cost of £2,500, from designs by and under the superintendence of Mr. F. W. Hunt, architect, London, Mr. Hocking being clerk of the works.

New Baths at Poplar, situated in Glengall Road, Millwall, erected at the instance of the vestry of All Saints', Poplar, were formally opened last week. The site of the new baths has a frontage of 110ft. to the Glengall Road, and a total depth of 230ft., the area being about half an acre; and as the new building has a frontage of 80ft., there is room for a walking-way 10ft. wide on the west side, and for a cartway 20ft. wide on the east side. There are seven entrances, while the main corridor in the centre of the building is a sort of internal street, from which doors open into the various departments. In addition to the large swimming bath there are men's second-class private baths for 26, men's first-class for nine, and women's baths for five, or 40 slipper baths in all. The pond of the swimming bath is 75ft. long by 35ft. wide, with water 3ft. 6in. deep at the south end and 6ft. 6in. at the deepest part. Wooden dressing-boxes with dwarf doors in front run round the bath on the level of the platform, and there is a gallery on all sides. The cost of the baths will be about £10,400. The materials are red brick, faced with glazed brick and Portland stone. The architects were Messrs. J. S. and F. Clarkson, and the contractors Messrs. F. Thorne.

A new Wesleyan School-Chapel at Appley Bridge has been erected at a cost of about £700. Mr. R. Holt, of Liverpool Road, Appley Bridge, is the architect.

A new Bank at Khartoum.—On the 27th ult. the foundation-stone of the Khartoum branch of the National Bank of Egypt was laid. The contractors are Messrs. Edgar Kirby and Co., of Cairo and Alexandria.

The Death of Mr. W. F. Wakeman, Fellow of the Royal Society of Antiquaries of Ireland, occurred last week at the age of 78 years. Mr. Wakeman wrote considerably on antiquarian subjects, and was an accomplished artist.

A Memorial Tablet to Turner has been placed on the painter's house, now No. 118 Cheyne Walk, Chelsea. The tablet is the design and gift of Mr. Walter Crane, and has been modelled and cast in lead by the Guild of Handicraft.

New Parish Rooms of St. Thomas's Church, Eastville, were opened recently. The building consists of two large and lofty rooms and the necessary offices. The upper room is approached by a wide staircase from the main entrance. The rooms have been built at a cost of about £2,200.

New Companies.

Bermondsey Wharves Company, Limited.

This company was registered on October 19th with a capital of £11,000 in £1 shares to adopt an agreement with Susannah Kemp, and to carry on the business of timber and hardware merchants, wharfingers, dock owners, &c. The first directors (to number not less than three nor more than seven) are to be appointed by the subscribers.

Western Valleys Cottage Company, Limited.

This company was registered on October 17th with a capital of £5,000 in £10 shares to acquire land and buildings in the United Kingdom, to erect houses, cottages, and other buildings, and to carry on the business of land, house, and property owners, auctioneers, surveyors, &c. Registered office: Ffrywd Villa, Mountain Ash, Glamorganshire.

Kill-o'-the-Grange Brick Company, Limited.

This company was registered on October 16th with a capital of £6,000 in £1 shares to acquire, take over, and carry on the brick and tile manufactory or William Paramor, Bolton, at Kill-o'-the-Grange, county Dublin. The first directors (to number not less than three nor more than four) are Messrs. W. P. Bolton, Samuel L. Brown, James McCartan, and M. K. Johnston. Registered office: 37 College Green, Dublin.

Walker and Smith (Batley), Limited.

This company was registered on October 19th with a capital of £12,000 in £10 shares to acquire the business carried on at Batley as Walker and Smith, to adopt an agreement with J. Smith, W. Smith, J. F. Smith, A. Smith, and James Smith, and to carry on the business of machine makers, tool makers, brokers, contractors, engineers, iron and brass founders, builders, &c. The first directors (to number not less than two nor more than five) are to be appointed by the subscribers. Registered office: Bradford Road, Batley, Yorkshire.

Wood Syndicate, Limited.

This company was registered on October 18th with a capital of £3,000 in £1 shares to acquire any inventions relating to the seasoning and desiccation of wood, the treatment of sawdust, bark, cork, peat, or twigs, the electrolysis of wood or the treatment of stone, bricks, tiles, textile fabrics, or other materials, and in particular to acquire certain inventions from H. Higgins, and to carry on the business of timber merchants and preservers, chemists, importers, and manufacturers of and dealers in chemical, industrial, and other preparations, compounds, pigments, dyes, materials, woods, and dyeware, etc. The first directors (to number not less than three nor more than seven) are G. T. Hine (chairman), T. G. M. Hine, P. Bright, J. C. Hill, H. Lovatt, T. W. Lovatt, and H. Higgins.

King Arc Lamp Company, Limited.

This company was registered on October 18th with a capital of £5,000 in £1 shares to carry on the business of manufacturers of, dealers in, and agents for electric lamps, fittings, plant, outfit, tools, appliances, and apparatus, etc. Registered office, 103 Queen Victoria Street, E.C.

John Wood and Son, Limited.

This company was registered on October 17th with a capital of £7,000 in £1 shares to adopt an agreement with J. Wood and F. T. Wood, and to carry on the business of cabinet makers, upholsterers, silverers, bevellers, timber merchants, showcase makers, &c. The first directors (to number not less than two nor more than five) are J. Wood and F. T. Wood. Registered office: 101 George Street, Altrincham, Cheshire.

S. Butterworth, Limited.

This company was registered on October 17th with a capital of £10,000 in £10 shares to acquire the business carried on at Blackpool as S. Butterworth and Sons, and to carry on the business of stonemasons, builders, brick sellers, drainers, plasterers, moulders, decorators, timber merchants, &c. S. Butterworth is permanent governing director. Registered office: Livingstone Road, Blackpool, Lancashire.

Colwyn Bay Electric Light and Power Company, Limited.

This company was registered on October 17th with a capital of £3,000 in £1 shares (1,000 preference) to adopt an agreement with T. S. Jones and R. H. Jones, and to carry on at Colwyn Bay the business of electric light and power producers, manufacturers and fitters of electrical appliances, &c. The first directors are to number not less than three nor more than five. R. H. Hughes is the first managing director. Registered office: Vron Haulog, Colwyn Bay.

COMING EVENTS.

Wednesday, October 31.

SANITARY INSTITUTE.—Lectures and Demonstrations for Sanitary Officers: Part I. Mr. W. C. Tyndale, M.I.C.E., on "Calculations, Measurements, and Plans and Sections," 8 p.m.

CITY OF LONDON COLLEGE SCIENCE SOCIETY.—Dr. J. H. Gladstone, F.R.S., on "Metals of the Ancients."

GUILDHALL, E.C.—Conference on the London Gas Supply, at 3 p.m.

Thursday, November 1.

WORSHIPFUL COMPANY OF CARPENTERS.—Lectures on Sanitary Building Construction at Carpenters' Hall. Mr. James Bartlett, M.S.A., on "Setting Out Work and By-laws," 7.30 p.m.

SOCIETY FOR THE PROMOTION OF HELLENIC STUDIES.—Meeting at 22 Albemarle Street, London, W., at 5 p.m. Council meeting at 4.30 p.m.

CIVIL AND MECHANICAL ENGINEERS' SOCIETY.—Mr. G. F. Emery, LL.M, on "Patent Law," 8 p.m.

Friday, November 2.

ARCHITECTURAL ASSOCIATION (DISCUSSION SECTION).—Mr. H. Rose on "Church Bells," 7 p.m.

SANITARY INSTITUTE.—Lectures and Demonstrations for Sanitary Officers: Part I. Professor Henry Robinson, M.I.C.E., on "House Drainage," 8 p.m.

Saturday, November 3.

SANITARY INSTITUTE.—Lectures and Demonstrations for Sanitary Officers: Part I. Inspection and Demonstration at the Sewage and Destructor Works, Ealing, at 2.15 p.m., conducted by Mr. Charles Jones, M.I.C.E.

BRITISH INSTITUTE OF CERTIFIED CARPENTERS.—Meeting at Carpenters' Hall at 6 p.m.

SANITARY INSPECTORS' ASSOCIATION.—Chairman's Annual Address.

INSTITUTION OF JUNIOR ENGINEERS.—Visit to the Millbank Station of the London Hydraulic Power Company, 3 p.m.

DUNDEE INSTITUTE OF ARCHITECTURE, &c.—Mr. G. S. Aitken, F.S.A.Scot., on "Some By-ways in Architecture," 7 p.m.

Monday, November 5.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.—First Ordinary General Meeting of the Session. The opening address by Mr. William Emerson, president, 8 p.m.

SURVEYORS' INSTITUTION.—Meeting of Elections Committee, at 4 p.m.

LONDON NEEDLEWORK GUILD.—Annual Meeting.

LONDON INSTITUTION.—Professor W. M. Flinders Petrie on "The Rise of Egyptian Civilisation," 5 p.m.

SOCIETY OF ENGINEERS.—Mr. C. Rous-Marten on "Notes on English and French Compound Locomotives," 7.30 p.m.

Tuesday, November 6.

SANITARY INSTITUTE.—Lectures and Demonstrations for Sanitary Officers: Part I. Professor Henry Robinson, M.I.C.E., on "Water Supply—Sources of Supply and Distribution," 8 p.m.

GLASGOW ARCHITECTURAL ASSOCIATION.—Mr. G. S. Aitken on "Bothwell Castle."

ARCHITECTURAL ASSOCIATION OF IRELAND.—Mr. A. W. Chubb on "Locks, Ancient and Modern," 7.45 p.m.

Wednesday, November 7.

INSTITUTE OF SANITARY ENGINEERS.—Meeting of General Purposes and Finance Committee, at 3.30 p.m.; of Election Committee, at 5 p.m.; and of Council, at 7 p.m.

GEOLOGICAL SOCIETY OF LONDON.—Meeting at 8 p.m.

RUSKIN SOCIETY OF BIRMINGHAM.—Dr. F. J. Furnival on "Reminiscences of Ruskin," 8 p.m.

EDINBURGH ARCHITECTURAL SOCIETY.—Mr. W. J. Blain on "Some Scotch Houses."

CURRENT PRICES.

		£ s. d	£ s. d.
FORAGE.			
Hay, best	per load	4 0 0	4 7 6
Sainfoin mixture	do.	3 10 0	4 10 0
Clover, best	do.	4 5 0	5 0 0
Beans	per qr.	1 9 6	—
Straw	per load	1 8 0	1 18 0
OILS AND PAINTS.			
Castor Oil, French	per cwt.	1 10 0	1 11 6
Colza Oil, English	do.	1 13 3	—
Copperas	per ton	2 0 0	—
Lard Oil	per cwt.	1 19 0	—
Lead, white, ground, carbonate	do.	1 4 10	—
Do. red	do.	1 0 4½	—
Linseed Oil, barrels	do.	1 12 9	1 13 0
Petroleum, American	per gal.	0 0 6 1/16	0 0 6⅛
Do. Russian	do.	0 0 5¼	0 0 6
Pitch	per barrel	0 8 6	—
Shellac, orange	per cwt.	3 0 0	3 5 0
Soda crystals	per ton	3 2 6	3 5 0
Tallow, Town	per cwt.	1 4 6	1 8 6
Tar, Stockholm	per barrel	1 8 6	—
Turpentine	per cwt.	1 11 9	—
METALS.			
Copper, sheet, strong	per ton	86 0 0	—
Iron, Staffs., bar	do.	9 15 0	11 10 0
Do Galvanised Corrugated sheet	do.	12 10 0	13 0 0
Lead, pig, Spanish	do.	17 10 0	17 12 6
Do. do. English common brands	do.	17 16 3	17 17 6
Do. sheet, English, 3lb. per sq. ft. and upwards	do.	21 0 0	22 0 0
Do. pipe	do.	23 0 0	—
Nails, cut clasp, 3in. to 6in.	do.	12 0 0	13 0 0
Do. floor brads	do.	11 15 0	12 15 0
Steel, Staffs., Girders and Angles	do.	8 5 0	9 0 0
Do. Mild Bars	do.	9 2 6	9 10 0
Tin, Foreign	do.	128 0 0	128 10 0
Do. English ingots	do.	132 15 0	133 5 0
Zinc, sheets, Silesian	do.	23 10 0	—
Do. do. Vieille Montaigne	do.	24 5 0	—
Do. Spelter	do.	18 15 0	18 17 6
TIMBER.			
HARD WOODS			
Ash, Quebec	per load	3 17 6	4 10 0
Birch, Quebec	do.	3 12 6	3 17 6
Box, Turkey	per ton	7 0 0	15 0 0
Cedar, 1in., Cuba	per ft. sup.	0 0 3	0 0 3½
Do. Honduras	do.	0 0 3 3/16	—
Do. Tobasco	do.	0 0 3½	—
Elm, Quebec	per load	0 12 6	5 10 0
Mahogany, Average Price for Cargo, Honduras	per ft. sup.	0 0 5 7/16	—
Do. African	do.	0 0 3 9/16	—
Do. St. Domingo	do.	0 0 6 3/16	—
Do. Tobasco	do.	0 0 4 13/16	—
Do. Cuba	do.	0 0 5⅞	—
Oak, Dantzic and Memel	per load	3 15 0	5 7 6
Do. Quebec	do.	4 12 6	5 0 0
Teak, Rangoon, planks	do.	8 5 0	13 10 0
Wainscot, Riga (Baulk)	do.	3 15 0	5 15 0
Do. Odessa Crown	do.	3 15 0	5 15 0
Walnut, American	per cub. ft.	0 3 1	0 3 7
SOFT WOODS.			
Fir, Dantzic and Memel	per load	3 0 0	4 0 0
Pine, Quebec Yellow	do.	4 7 6	6 0 0
Do. Pitch	do.	2 14 0	3 6 0
Laths, log, Dantzic	per fath.	4 10 0	5 10 0
Do. Petersburg	per bundle	0 0 10½	0 0 11
Deals, Archangel 2nd & 1st	per P. Std.	12 15 0	18 0 0
Do. do. 4th & 3rd	do.	12 10 0	13 15 0
Do. do. unsorted	do.	11 0 0	12 10 0
Do. Riga	do.	6 15 0	8 10 0
Do. Petersburg 1st Yellow	do.	10 5 0	15 15 0
Do. do. 2nd „	do.	8 15 0	9 5 0
Do. do. Unsorted „	do.	5 5 0	13 0 0
Do. do. White	do.	8 5 0	11 15 0
Do. Swedish	do.	10 10 0	22 10 0
Do. White Sea	do.	11 0 0	18 0 0
Do. Quebec Pine, 1st	do.	19 5 0	—
Do. do. 2nd	do.	18 15 0	—
Do. do. 3rd &c.	do.	9 0 0	9 15 0
Do. Canadian Spruce, 1st	do.	10 10 0	11 15 0
Do. do. 3rd & 2nd	do.	8 15 0	9 0 0
Do. New Brunswick	do.	7 5 0	8 0 0
Battens, all kinds	do.	8 0 0	8 15 0
Flooring Boards, 1in. prepared, 1st	per square	0 12 3	0 14 9
Do. 2nd	do.	0 9 6	0 10 9
Do. 3 d &c.	do.	0 10 0	0 10 9

TENDERS.

Information from accredited sources should be sent to "The Editor." Results of tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the Work.

CROYDON.—For the erection of house, &c., Croham Avenue, for Mr. B. A. Berry. Mr. E. Douglas Hoyland, architect, 2 Walbrook, E.C. :—

T. C Hobbs	£1,809 0 0	J. & C. Bowyer ...	£1,707 15 0
W. Porter	1,800 0 0	Newman, Ltd.* ...	1,640 0 0
J. R. Bex	1,793 0 0	* Accepted.	

LONDON.—For pulling down and rebuilding Nos. 7 and 8 High Street, Marylebone, for Messrs. W. & A. Curnick. Messrs. White & Page, architects, Nos. 4 and 5 Warwick Court, Gray's Inn. Quantities by Mr. Thomas Brown :—

Contract No. 1.
Granite Work to Shop Front.

A. Lee & Bros., Ltd.	£646 0 0
Whitehead & Sons, Ltd.	640 0 0
Fenning & Co.*	548 15 0

Contract No. 2.
Supply and Delivery of Steelwork.

Measures Bros. ...	£382 18 7	Dorman, Long & Co., Ltd.	£351 0 0
Moreland & Son, Ltd.	367 6 0	Deane, Ransome & Co., Ltd.*	349 0 0

Contract No. 3.
Builder's Work.

Lawrance & Sons	£6,973	Bush & Sons	£6,197
H. L. Holloway	6,669	Webber	6,175
Hall, Beddall & Co. ...	6,620	Bywaters	6,144
Simpson & Sons	6,460	Wall & Co.*	5,667

* Accepted.

WITTON, Birmingham.—For the construction of foundations, abutments, and piers, for a steel girder bridge over River Thame at Witton, for the trustees of Mr. James Deykin. Mr. J. E. Willcox, C.E., Union Chambers, 63 Temple Row, Birmingham :—

S. Saunders	£4,355 0 0	Barnes & Co. ...	£2,555 0 0
J. Mackay	3,326 2 2	J. Biggs	2,333 0 0
Holme & King ...	3,085 0 0	Curral, Lewis & Martin, Birmingham*	2,329 9 3
G. Law	2,657 0 0		
T. Vale	2,645 0 0		
W. Craig	2,611 14 5	* Accepted.	

HIGH LITTLETON, Somerset.—For the erection of a shop and store and manager's residence, for the Radstock Co-operative Society, Limited. Mr. William F. Bird, C.E., architect, Midsomer Norton. Quantities by the architect :—

E. Preece, Bristol ..	£2,400	Tom Keeling, Timsbury*	£1,499
Thomas Foster, Radstock	1,630	* Accepted.	

NORTHAMPTON.—For alterations and additions to shoe factory, Raunds, Northants, for Messrs. W. Nichols & Son. Messrs. Mosley & Scrivener, architects, Fish Street, Northampton :—

R. Marriott, Rushden...	£1,345	T. Swindall, Rushden ..	£1,219
F. Henson, Finedon ..	1,260	W. H. Lovell, Raunds*	1,189
W. Beardsmore, Northampton	1,247	* Accepted.	

CONTRACTS OPEN.

TO BUILDERS.

Persons desirous of TENDERING for the ERECTION of a New BOARD SCHOOL, to be known as the CALSTOCK TOWN BOARD SCHOOL, at Calstock, in the County of Cornwall, for the Calstock School Board, can inspect the plans, specifications, and general conditions for the same, prepared by Mr. H. J. SNELL, Architect, The Crescent, Plymouth, on application to the Architect, or to A. J. ROWE, Clerk to the Board, Calstock.

Tenders (endorsed) are to be sent to me (on forms to be obtained from the Architect) on or before FRIDAY, the 9th NOVEMBER.

The Board do not bind themselves to accept the lowest or any Tender.

A. J. ROWE.

Calstock, October 1900.

URBAN DISTRICT COUNCIL of WALKER, NORTHUMBERLAND.
DUST DESTRUCTOR.

The Urban District Council of Walker invite TENDERS for the ERECTION, complete, exclusive of buildings, of a 2-unit DUST DESTRUCTOR of the Meldrum type, including Steam Boilers, Feed Heater, Water Tanks, Piping, &c., in accordance with the specification prepared by their Engineers. Specifications and form of Tender can be obtained on forwarding to the Engineers, Messrs. HANDCOCK AND DYKES, 1 Victoria Street, Westminster, London, S.W., the sum of Two Guineas, which will be returned on receipt of a bonâ-fide Tender. Sealed Tenders, endorsed "Dust Destructor," to be delivered to the undersigned on or before NOVEMBER 12th.

T. M. STURGESS,
Clerk to the Council.

5 St. Nicholas Buildings,
Newcastle-on-Tyne,
October 1900.

COUNTY BOROUGH of DEVONPORT.
ELECTRICITY WORKS BUILDINGS.

The Corporation of Devonport are prepared to receive TENDERS from contractors having experience in public works for the ERECTION of ELECTRICITY WORKS BUILDINGS, comprising engine-house, boiler-house, pump-house, all necessary excavating, pumping, concreting, steel construction, pile driving, and other works in connection with the new buildings to be erected on Newport Quay, Newport Street, East Stonehouse.

Drawings and specification may be seen, and forms of Tender and bill of quantities can be obtained, on application to the Borough Electrical Engineer, Technical Schools, Devonport, on payment of a deposit of 3 guineas, which sum will be returned on receipt of a bonâ-fide Tender. The Corporation do not bind themselves to accept the lowest or any tender, and they reserve to themselves the right of accepting the whole or any portion of a Tender, and they will not make any allowance for or in respect of any expense incurred by the parties tendering.

Tenders must be filled in the form supplied, sealed, and endorsed "Tender Electricity Buildings," and must be sent in so as to reach me not later than NOVEMBER 2nd, 1900.

A. B. PILLING,
Town Clerk.

Municipal Buildings,
Ker Street, Devonport.

SPENNYMOOR URBAN DISTRICT COUNCIL.

The Spennymoor Urban District Council invite TENDERS for the ERECTION of an ISOLATION HOSPITAL in Merrington Road, Spennymoor.

Plans and specifications may be inspected at the Surveyor's Office, Silver Street, Spennymoor, any day up to November 17th, between NINE a.m. and TEN a.m., and on Mondays and Fridays from NINE a.m. to FIVE p.m.

Forms of Tender can be obtained from the Surveyor, Mr. G. W. ROGERS, A.M.Inst.C.E., Spennymoor.

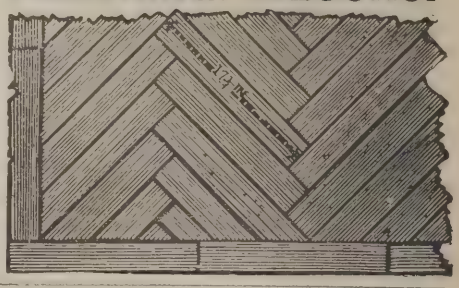
Sealed Tenders, endorsed "Tenders for Isolation Hospital," must be delivered at my office on or before MONDAY, NOVEMBER 19th.

The Council do not bind themselves to accept the lowest or any Tender.

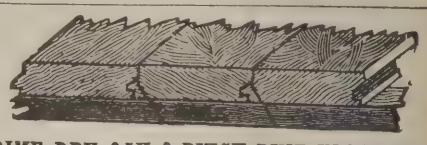
F. BADCOCK,
Clerk to the Council.

Clerk's Office,
No. 3 James Street, Spennymoor,
October 1900.

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17½×3×2	8 11	8 2	14 6
17½×3×1½	6 10	6 3	10 9



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These prices include desiccation.

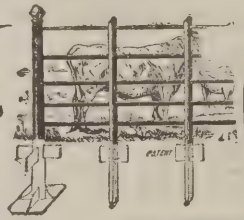
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THE BUILDERS' JOURNAL & ARCHITECTURAL RECORD

NOVEMBER 7, 1900. No. CCC.

EFFINGHAM HOUSE, ARUNDEL STREET, STRAND, W.C.

An Architectural Causerie.

An Underground Architecture.

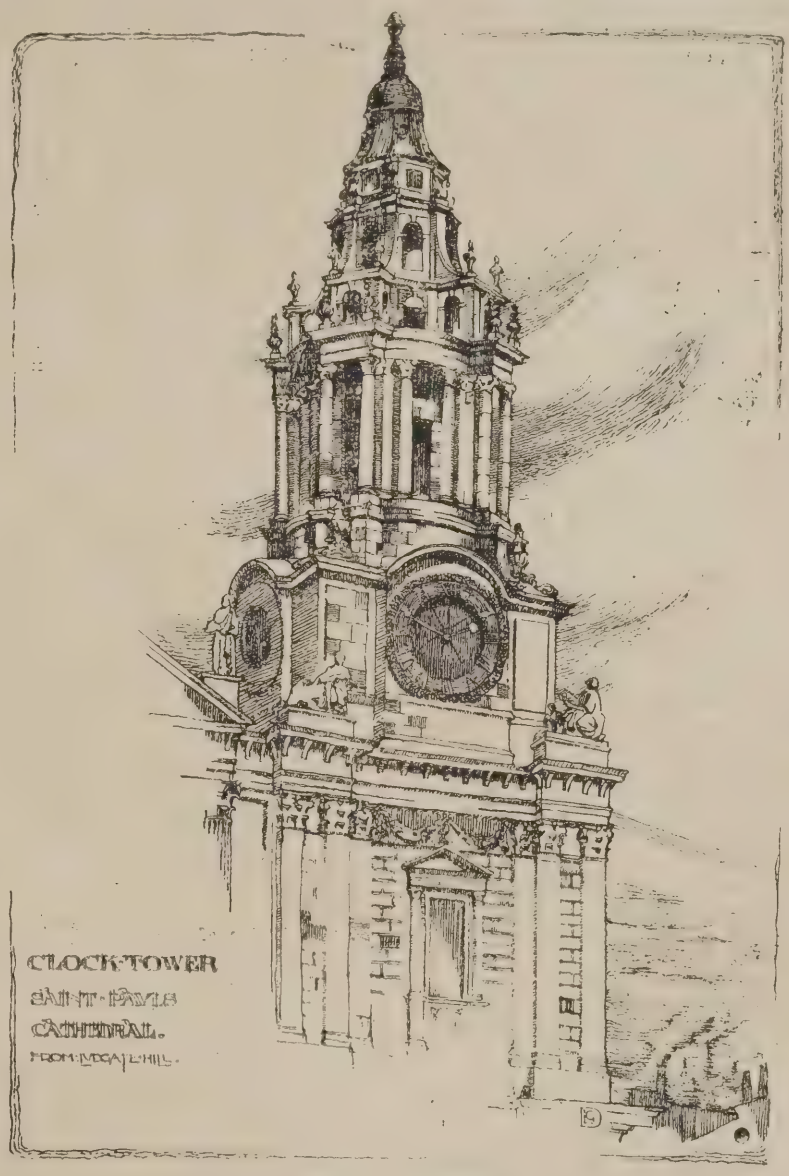
IT is certainly novel, but the idea might be taken to be a degeneration back to the days when—particularly in Asia—whole tribes and nations hid themselves in a subterranean world. Still America may be the pioneer of a modern underground architecture. In the great cities the sky-scraping buildings have about reached, both in the eyes of the law and as regards their physical possibilities, a maximum of altitude: is it therefore chimerical to think of a new era with buildings reaching below the surface to an equal distance? Even now progress is being made towards this end; for instance, in the underground railways, underground street-crossings, underground sanitary conveniences, and a variety of underground workrooms in the cellars of our business premises. The stress of modern life demands the compression of everything into the smallest area, and although much is bound to be achieved in the way of improved transit and communicative facilities, still the tendency to an underground architecture is strong. Of the advantages to be derived, one would be the hiding away from sight of all purely utilitarian and ugly, though necessary, businesses. How glorious to have a city with none of the industrial wreckage we see in all our large cities to-day! An underground building era would allow all such work as this to be carried on out of sight and sound. With the aid of the electric descender (a new equivalent of the elevator) far quarters of the underground world would be easily and quickly reached. There would be no sunlight, of course (alas! for this), but electricity would afford ample illuminative power, and by the aid of efficient air-shafts excellent ventilation could be obtained. And how quiet and restful the business offices would be, away from the rattle and bustle of the overhead world. The idea is a new solution of the housing problem. It would certainly give us an economy of building space. An American architect lately said: "It may be a long time hence, but I believe the time will come when there are as many buildings ten storeys below ground as there are that number above the surface of the earth." But what of Mr. H. G. Wells' underground race?

G. W. H.

Dirty London.

THAT London is an important city we all know; that it is beautiful may be questioned; that it is dirty is certain. There is a peculiarly destructive character in its mud when splashed upon clothing; an inky blackness of colour, a greasiness of texture spread over streets and walks in wet weather, an amount of refuse lying about in dry which a provincial town would not tolerate, whilst everybody has noticed the extraordinary quantity of paper always blowing and drifting about. To these amenities may be added rags of all materials and every colour under the sun, repulsive and dangerous. The great river is none too clean, though considerably improved since the system of sending the solid refuse a considerable distance out to sea was adopted. The Association of Cleansing Superintendents of Great Britain has been discussing the question of street-cleansing, and some valuable suggestions were made. The subject cannot be too often discussed; it deeply affects the public health and comfort. Mr. Brechin, of Glasgow, describes the latest developments of street-cleansing in that city. One of the most important is the washing down of the streets by the hose, a system pursued on a great scale for many years past in Paris; waste paper is not only picked up out of doors, but regularly collected from mercantile offices; clinkers from the destructors are sold and find a ready market. Mr. Smith, of Liverpool, read a paper on the use of motors for street watering and dust removing, and a resolution was passed in favour of that system. A conference upon similar lines, or perhaps a succession, might be held in London; there is room for such gatherings. It is generally assumed that Paris, a city of pleasure under a brilliant sky, is "naturally" kept up to a high standard of cleanliness, whilst London, a city of business, in a foggy climate, is no fit subject for elaborate street cleaning. But such remarks are seldomer heard now than formerly, and a vigorous cleaning-up of the streets, such as we do sometimes see in parts of London, always meets with the approval of the public. It should be permanent, however, and extend to the whole area of the metropolis.

J. C. P.



DRAWN BY L^R G. DETMAR.

The Average Guide-Book.

THIS is pre-eminently the day of the guide-book. The windows of the discount booksellers are filled with them: guides to every conceivable and inconceivable place—to places you know, places you don't know, and places you don't want to know and wouldn't visit if you were paid for it. A much-travelled age, indeed, when we find six rival guides to one place competing for our favour at any price from six shillings to six pence! And what manner of guides are they? Murray, the archæologically-inclined, we know, and the more matter-of-fact Baedeker; but after them comes a horde of strangers whose works, compiled, one would say, from an examination of them, rather from their predecessors and from a desultory course of reading in the British Museum than from a personal knowledge of the places dealt with, form amusing reading to the critic if not instructive matter for the tourist. The sixpenny guide-book is upon us and our withers are cruelly wrung at its architecture in especial and its cheap rhapsodies in general. It is, to the

minds of these uninstructed writers, often a sufficient description of an ancient building to describe it as "Gothic" or "Classic." They are quite reckless, these fellows, of styles or periods; gargoyles or corbels to them are interchangeable terms, describing the same thing, and a crypt is but dimly seen to be something different from a chair. Then, too, your genuine guide-book writer is no pessimist. He is, on the contrary, an optimist of the most advanced type, and sees the world at large, and the places of which he treats in especial, in hues as roseate as the summer dawn. No place so abject, so dull, or so bedevilled with everything that is objectionable, but he will find something (and generally a good deal) to say in its favour, and in the most outworn *cliches*. He has a brief, and like a conscientious advocate, does his best for his client. He is great on the would-be heroic style and rounds up the tourist before mouldering castle or venerable abbey with "Do we not see the centuries passing in procession before us in their long chivalric train telling of"—anything you please, as the humour takes him at the moment. We, however, do not see; and small blame to us when, reading for the twentieth time of rocks "piled up as though by Titan hands," we refuse to proceed further. The inventor of that simile, long years ago, has a great deal to answer for, and so has he who, standing in some unexpected solitude within ten miles of crowded London, first exclaimed how difficult it was to realise that the mighty hive lay so near. For fully fifty years that exclamation has been dragged out and made to do duty in every conceivable and inconceivable place, and now deserves, but does not obtain, a well-earned rest. On the contrary, in a recently-issued guide to Surrey we find it once more, and in this latest instance reduced to absurdity in the phrase, "a dense volume of smoke rolling away for miles was illuminated at its windward extremity by a bright patch of flame. Looking at this from a pine-covered eminence, it is hard to realise that Fleet Street is less than 40 miles off." Leaving aside the odd conjunction of past and present tense which would have made the proximity of a Board School of advantage to that writer, we are left to wonder at the imaginativeness he displays, and rather fancy that the ordinary man *would* most keenly realise that 40 miles divided him from town and would delight in the realisation. C. J. H.

The Late Mr. Young. It is with great regret that we announce the death of Mr. William Young, F.R.I.B.A., who died on Thursday last (at the age of fifty-seven years) at his residence in Putney of acute pneumonia after five days' illness. Though never a strong advocate for Gothic, at the commencement of his architectural career he supported the school of Burgess, but later in life he gave himself wholly to Classic architecture, and produced such buildings as Gosford House (for Earl Wemyss), the Glasgow Municipal Buildings, and Chelsea House, to mention only three; his latest large design was that for the new Government buildings to be erected in Whitehall. He was elected a Fellow of the Institute in 1891. In our issue for June 18th, 1895, we published an illustrated article dealing with the work of Mr. Young; in the issue for the following week is shown a mantel in the dining-room of Boveney Court; while since then of the deceased's designs we have published those for the staircase at Gosford House (August 6th, 1895), plans of Glasgow Municipal Buildings (January 14th, 1896), and the new War Office (April 12th, 1899). Mr. Young was an able architect and a close thinker on the higher ethics of life, and the loss which the profession has sustained by his death will be widely and deeply felt.

On Reflection.

Remarkable Discoveries. MR. A. J. EVANS and Mr. D. G. Hogarth (director of the British School of Archæology at Athens) are to be congratulated on the remarkable and valuable discoveries which have been made in Crete, full particulars of which are given on another page. The substantial truth of early tradition is confirmed by the proofs now produced of the high state of civilisation which existed in the city of Minos. The mythical is becoming the actual. The "House of Minos," the Cretan god of the Double Axe, is without doubt the Labyrinth of later tradition, the home of the fabled Minotaur. For the completion of the whole scheme of excavation the sum of £5,000 was needed, but when work was commenced last year barely £500 had been raised by private subscription. Half of this went to assist one of the writers in the excavation of a site at Kephala, and the other part was apportioned to Mr. Hogarth for the exploration of the prehistoric town and tombs of Knossos and of the Cave of Zeus on Mount Dicta. In addition there was a supplementary grant of £200 from the income of the British School at Athens, and of a sum for the payment of an architect. And with these restricted means, see what has been done. Fresco paintings have been found that excel any known examples of the art of Mycenaean Greece, a painting of a youth gives us the first real knowledge of the race who produced this mysterious early civilisation, a palace has been found beside which those of Tiryus and Mycenae appear insignificant, a veritable Ægean Pompeii has been discovered, and considerable light has been thrown on the first development of high art, the origin of letters, and the earliest of civilisations. The British School at Athens has a Government grant of £500 a year (small enough in all conscience). For the Cretan Exploration Fund at least £3,000 is needed, and we earnestly hope, now it has been shown what valuable discoveries will yet be made, that the Fund will receive a support more adequate for its work and more worthy of the greatest nation the world has seen.

The Shrine of Shakespeare. AFTER a foolish controversy with Mr. Hall Caine, Miss Marie Corelli is now disputing with Sir Theodore Martin about the latter's proposal to erect an alto-relievo of his late wife (formerly known on the stage as Helen Faucit) in the chancel of Holy Trinity Church, Stratford-on-Avon (commonly known as Shakespeare's Church). There has been a mass of correspondence in the columns of the "Morning Post," and it is very difficult to pick out and arrange the facts. Sir Theodore says that it is now about a year since he first announced his proposal. At that time he took steps to ascertain the feeling of Stratford on the subject and found it favourable, the vicar himself cordially approving of the memorial being placed in the chancel. The Bishop of Worcester granted a faculty and, under the direction of Messrs. Farmer and Brindley, the final arrangements have been made. Miss Corelli now steps in and calls for a halt, flatly denying almost all the statements of Sir Theodore Martin. Says the novelist: "It is still fresh in the memory of the town that the vicar was absolutely bullied into accepting the marble pulpit Sir Theodore has erected to the memory of his wife, and was insulted because he made a bold stand against its singular unfitness for the character of Holy Trinity Church. The quarrel between the vicar, Sir Theodore Martin, and Sir Arthur Hodgson was hot and fierce, but the vicar had the intellectual advantage of being able to keep his temper, while the two other gentlemen lost theirs, and a good deal of dignity as well." Sir Theodore asserts that there happens to be a vacant space in the chancel fitted to receive the memorial. Miss Corelli says there happens to be nothing of the kind: "on the contrary, to make room for the proposed monument a fine old brass memorial plate of the Clayton family will have to be displaced and cut about, and the living descendants of that family, not having been asked to give their permission for this defacement of their property, are taking legal action against it." We are, however, glad of the dispassioned remarks of Mr. W. H. Wilkins, F.S.A., who points out that though there are memorials in the chancel other than that to Shakespeare, these are so unobtrusive that the ordinary visitor is hardly aware of their existence; and it is, therefore, perfectly true to say that Shakespeare's memory reigns supreme in the chancel. The alto-relievo is proposed to be placed within the altar rails and right opposite the immortal poet's bust. This would undoubtedly be a mistake. One of the London newspapers has recommended to Miss Corelli the advice of St. Paul as to the relations between ladies and churches, but, despite the fact that she has made several foolish, wild and incorrect statements in the course of this controversy, we feel bound to side with her on the main issue. It rarely seems to be remembered that a memorial in any building has to be considered in its relation to the architecture; the neglect of this truth furnishes us with so many buildings stocked like a monumental mason's yard. Sir Theodore Martin's statement that there is no place in the Stratford Church where the memorial can be well seen except the chancel is contradicted by the vicar's statement that there is a suitable vacant place on either side of the great west door. We might mention in conclusion that we hardly see the necessity for Sir Theodore to erect two memorials to his wife in the same church.

The First Garden City. ABOUT a year ago our columns were open to a correspondence on the merits of the Garden City Association, which had then just been formed under the direction of Mr. Ebenezer Howard. The Association now has 352 members, and has so fully developed its scheme that a resolution has been adopted for forming a company, with a capital of £100,000 in £1 shares, to found the first garden city. A suitable estate would be selected and would be laid out in the most approved manner, especially with the object of avoiding overcrowding. Manufacturers, traders and workpeople are to be attracted there, the rents from the various tenants (who would be the chief builders) would be used for forming roads and building schools, &c.; and thus we should have the model town. Mr. Blashill, the late superintendent architect to the London County Council is opposed to the present system of housing and says that it costs more than £50 a head to clear insanitary areas—the former tenants not returning to the new houses, but going away to overcrowd other districts. The scheme of the Garden City Association is worth trying, though on the surface it may appear rather Utopian. Still, the solution of the housing problem will not be accomplished on paper, and all practical attempts deserve support. It is very easy to talk about the necessity to first reform the man and then his house, to disparage every proposal, and then to *laissez-faire*: in the meantime thousands of men, women and children are living in houses not fit for dogs. New towns built purely for commercial ends are not novelties, and we therefore wish the first garden city the success which its enterprise deserves.



MR. WALTER G. PENTY.

MEN WHO BUILD.

No. 61.—Messrs. PENTY and PENTY.

IN dealing with the work of modern architects whose work carries with it some claim to distinction, it is with great pleasure that we have to consider the work of Messrs. Penty and Penty, of York. Mr. Walter G. Penty, the senior member of the firm, commenced to practice in 1873; the present *personnel* consisting of Mr. Walter G. Penty, F.R.I.B.A., and Mr. Arthur J. Penty, father and son.

The works belonging to the first years of the firm's practice, ending with the middle of the 'eighties, exhibit the Gothic characteristics that so largely mark the architectural undertakings of that era, when the revival of mediævalism was yet forceful and had not spent itself upon efforts to achieve the impossible and to bring back the era of chivalry. To this period belong such important works as the fine houses of "Burnholme," York; "Booklands," Selby; the restoration of Middlethorpe Hall and Alne Hall; and the pleasing red-brick building erected for the York Institute of Art, Science and Literature—now the home of the York Public Library—a building whose spacious and well-lighted rooms might form excellent object-lessons in library construction.

Turning from the cheerful ruddy elevation of this building, in so bright a contrast with the grim and sooty would-be mediæval walls of York Castle opposite, we find within a short distance in the streets of York City such works as the buildings for the York Liberal Club and a tall block of business premises in Coney Street, marking the beginning of the second period of Messrs. Penty and Penty's career; a selective period which, while perforce following the trend of taste in architectural design, has distinctive personal and local features. It is a nice point how far the architect practising in the provinces can allow himself to withstand the suggestions of clients who, taken captive by fashion (which, we all know, rules architecture as greatly as it does millinery), will have fashionable architecture or none at all. The wise man is he who, knowing the folly of kicking against the pricks, saves his practice and his artistic conscience at the same time by adopting the fashion and adapting it. Hence we find, in the second Penty period, such suggestions from the then current amalgam of Elizabethan, Queen Anne, and Early Georgian ideals introduced by Mr. Norman Shaw, as the pleasing red-brick and half-timbered, gabled "Bay Horse" inn in Marygate, York; the "Tile House," St. George's Place; "Rosenlaui," Clifton; "Aldersyde"; and "Dilston House," Lawrence Street—to which list may be added premises for Messrs. Adams and Co., sanitary engineers, at Peasholme Green; business premises in Skeldergate; the residence called "Kenilworth," in St. George's Place; a coffee tavern for the York Coffee Tavern Company in Walmgate; additions to Barkston Towers, Tadcaster; and that more recent work, "Langbaraugh," Fulford Road. Given, however, the first cause, the compelling influence, we find in the personal handling of that then fashionable style many interesting details of plan and design that well repay a special tour of inspection. Thus, at the "Tile House" just mentioned, which we illustrate, can be seen, even in this photographic view, a little detail which reveals at once that rare combination, the artist and the practical man. The detail to which we refer is the lighting of that pretty feature, the porch, continued as a room to the right by what we may call, for want of a better name in this connection, a dormer window. This renders that feature of the shaded porch possible, while lending light to what would otherwise be the somewhat darkened hall within. Were this porch or loggia away, however, this south part of the "Tile House" would yet be a pleasing and an interesting composition, wearing that air of solid and yet picturesque importance which a heaped-up mass like this gives. Light—abundant light, it will be noted, from the scale and disposition of the windows—is an especial and grateful feature of this interesting residence.

While we are on the subject of details, it may not be amiss to turn aside for a moment to note the charming door-head for the "Old Grey Mare" inn at Clifton, a remodelled house in that northern suburb of York. It speaks for itself: a fine work suggested obviously from old examples, but beautifully rendered, with a little effigy of the "Old Grey Mare" standing within the shell.

"Aldersyde," a mansion of large size and elaborate internal appointments, very clearly shows the Norman Shaw influence. The interior is notable, firstly, for a large hall, two storeys in height, which, taken with the staircase (which is placed at one end and divided from it by two rows of arches), measures over fifty feet in length. Lined entirely with oak up to the first-floor level, it forms a noble introduction to a notable house. Dining-room, study, and billiard-room are also treated in oak; the drawing-room finished out in paint, the elaborately-modelled ceiling being one of the two features of this room, the other feature being found in the projecting bay window.

The third phase of Messrs. Penty and Penty's work is chiefly illustrated at present by



MR. ARTHUR J. PENTY.

"Elm Bank," York, a residence conceived and executed in the latest evolution of English art. Modernity in the best sense is the note of it, and it owes its being in this form to the conversion of Mr. Arthur J. Penty to the views of art and decoration familiarised in the theories and in the exhibited works of the Arts and Crafts Society. Messrs. G. Walton and Co., of Glasgow, are here responsible for the painted decorations and the furnishings. Exactly what the interior of this house is like may be judged from the two illustrations we give, of the vestibule and the upper part of the hall, respectively: the first a restful apartment, with a coved and top-lighted ceiling and oak-panelled walls, the door surmounted by a lunette whose generous width recalls the fan-lights of old London houses designed by the Brothers Adam. The upper part of the hall, too, shows how utterly at one with the new school this recent house is.

The work which Messrs. Penty and Penty have of late years been practising in and around York is an indication of the tendencies of modern design. It represents in some degree the possibilities of the Arts and Crafts feeling in architecture. The striving after effect which mars so much modern work is here notably absent. Novelty for its own sake is strictly tabooed. On the contrary, their work tends to



PRIVATE OFFICE AT LENDAL CHAMBERS, YORK. PENTY AND PENTY, ARCHITECTS.



"ALDERSYDE," DRINGHOUSES, YORK, FROM THE SOUTH-EAST. PENTY AND PENTY, ARCHITECTS.

a dignified reserve. Let us hear what they say on Arts and Crafts, and we need no longer doubt to what school they belong. "With reference to this movement, it is our opinion that its influence on modern design must ultimately form the basis of a national style. The return to first principles, which is the kernel of the movement, will have a rejuvenating effect upon architecture. It is a mistake to suppose that the adoption of its creed entails a cutting adrift from the traditions of the past. On the contrary, it will be found that the English vernacular art has for centuries represented the unconscious past of the movement. Its principles may have the air of novelty for the sophisticated modernist who sees everything 'through a glass darkly,' though ultimately they cannot mean anything but sincerity and truth." Which, reduced to its common denominator in the vulgar fractions of everyday doings, is to say that to paint and grain a deal door to resemble oak is an act of original sin, and to paint genuine oak itself (as the ineffable churchwardens of a century ago commonly used to do) is to sin against the light.

Already the streets of York are being noticeably leavened by shop-fronts and restaurants designed by Penty and Penty in this style, the late outcome of modern culture. Let us instance the "Creamery," whose smoke-room we illustrate. This is, of course, hid from the notice of the wayfarer along these ancient streets, who has, however, only to enter that artistically appointed place to discern it. A work of the same class now approaching completion is the Davy Hall Restaurant, a charming design treated with broad effects of restful colours laid on in masses, relieved sparingly with decoratively-carved bosses and panels of birds, beasts, and foliage, in soft wood. Refreshing the inner man in retreats such as this loses all its grossness. An interesting work of redecorating after a fire is the restoration of the interior of Salem Chapel, an uninteresting classical building of the early part of the century.

A newly-finished commission, the Terry Memorial Almshouses form a delightful block, with chimneys rising from the gable-ends in a pleasing battered line, the walls and windows and dedicatory tablet models of proportion and spacing. Indeed, it is largely in the exquisite rightness of the proportions of this later work that much of its charm lies. It is evident, too, in the delightful "Fish and Game Dealer" shop-front, although, to be sure, that has a richness of detail as well. This, it is not too much to say, has set afoot a new era in York. The "Four Alls" inn, on the Malton Road, depending as it does for its charm upon this very exactness and proper inter-relation of parts in the whole, rather than upon any considerations of detail, is a prime instance. A startlingly new departure, too, is seen in the new offices for Messrs. Leetham and Sons, flour millers, the interior being finished simply with green-stained wood doors and desks, the walls left with plainly finished plaster.

Another, and an intensely practical side to this notable firm's doings in architecture, is seen in the Roller Flour Mills for Messrs. Leetham and Sons, a huge pile of red brick, in a style somewhat suggestive of castellation. Constructional and specialist work of this kind has, we understand, been the special work of Mr. Walter G. Penty. To this order belong the extensions to the York Union Workhouse, now in progress, and an electrical laundry in course of erection for the Yorkshire Laundries, Limited. Mr. Walter G. Penty, it should be added, filled the office of President of the York Architectural Society during 1881-2, and again in 1887-8.

Current Periodicals.

The Quarry.—Much space is devoted in the October issue of this publication to the county of Antrim, considered from a geological standpoint, while particulars and illustrations are given (from "Le Génie Civil") of the electric Titan crane to be seen at the Paris Exhibition. This crane consists of a rolling *pylône* (formed by four principal box pillars 10 metres long), which supports on its top a horizontal jib pivoted near its centre and carrying the carriage. It is a very remarkable construction. Attention is also drawn in this issue to the opening of new granite quarries, which has been quite phenomenal during the past year. This is due in some measure to the inadequate supply of suitable stones for monumental and architectural work, but more especially to the unprecedented demand for setts and kerbing for paving purposes. The chief articles in "The Quarry" for November deal with some Yorkshire clay pits and Norwegian national stone quarries.

Sanitary Inspectors' Journal.—"Now that the war in South Africa is practically over, and the authorities are settling down to inaugurate a new government on British Colonial lines, probably nothing is more important than to see that the sanitary laws receive proper attention." This is the opening paragraph of an editorial note in the October number of this journal. The Council has given the matter consideration, and has appointed Mr. J. Dann, M.S.A., late inspector at Poplar, as hon. secretary (*pro tem.*) to take the necessary steps to initiate the South African inspectors in the work, and to establish a branch association in that country.

The R.I.B.A. Journal for October gives a portrait of Professor Lanciani, Royal Gold Medallist, 1900.

The Church Builder.—In the October issue of this quarterly record of the Church Building Society's work there is an interesting illustrated article on the quaint old church of Huddington, seven miles from Worcester and five from Droitwich. The Winters, who settled down at Huddington, are now best known as having added two to the list of gunpowder plotters, but Roger Winter was a great church beautifier and restorer, and he did much for the little building in question. Huddington Church, however, fell sadly into decay, and was so dilapidated that its custodians thought it was past restoration and accordingly applied for a grant to replace it with an iron church. In response to this application £50 was voted by the Worcester Church Extension Society, but fortunately it was never paid, and the building was spared for better things. It is now in the hands of Mr. C. Ford Whitcombe, A.R.I.B.A., but funds are still badly needed. In this number there is also an article on the new Church of Emmanuel in course of erection at Sparkbook (architect, Mr. W. H. Lloyd, Birmingham), and some notes on side altars and side chapels by Mr. J. T. Micklethwaite.

St. George.—This organ of the Ruskin Society of Birmingham publishes Mr. Michael E. Sadler's lecture on school education and preparation. The author points out that "life" is something larger than a means of gaining a livelihood, and he complains that the schools



DINING-ROOM, "ALDERSYDE," DRINGHOUSES, YORK. PENTY AND PENTY, ARCHITECTS.

are too limited, insufficient, and bookish. It is true that during schooldays we learn more from our contemporaries than from our teachers, and more from the example and personality of our teachers than from their set lessons: that the highest function of education is the training of the judgment and the strengthening of the moral will; and while we agree with Mr. Sadler that schools need to be kept in closer touch with life, we think his remarks too general to be of special use. The author says: "Every good school has a personality of its own. It is not a bookstall." We grasp his meaning, but hardly admire the method of expression. The October number of "St. George" contains "An Apology for St. Paul's Cathedral"—some notes of a lecture by Canon Scott Holland (see page 111 of our issue for March 21st last). Mr. J. C. Kenworthy has a short article on "Thoughts of a Recent Visit to Tolstoy," and among other things the number contains a review of the chief articles on Ruskin which have appeared since his death.

The Home Counties Magazine.—Among the articles in the October number of this quarterly are two dealing respectively with the old gate-house of Lincoln's Inn and No. 17 Fleet Street, sometimes called the Inner Temple gate-house; both are concluded from the previous issue. In the former article Mr. W. Paley Baildon deals fully with the old sheds and shops which formerly stood against the east front of Lincoln's Inn gate-house (this objectionable custom was common among our forefathers) and says that probably few passers-by are aware that the predecessor of the old apple woman, who is always seated at her stall on the north side of the arch, followed the same humble calling in the same place more than 350 years ago. In 1885 and 1890 the gate-house was threatened with destruction, but luckily this was averted, and at length, after an interval of nine years, the building has been put in a sound structural condition under the sympathetic guidance of Mr. Dennett Barry, the surveyor to the Inn. With regard to No. 17 Fleet Street, Mr. Philip Norman, after relating the history of the house (it was once occupied by a waxwork exhibition), devotes considerable space to the question whether it was once Nando's famous coffee-house. Timbs says positively that it was, but the author, after much investigation, has grave doubts of the truth of this. Representations of No. 17 Fleet Street in 1786, 1807 and to-day are given.

The Journal of the Society of Architects for October has, as its chief feature, an article by the Rev. William Bazeley, M.A., on the Cistercian Abbey of Hayles, near Winchcombe, in Gloucestershire, which was founded in 1246 by Richard, Earl of Cornwall, brother of Henry the Third. The illustrations, on plate paper, are excellent. This number is the last of the old series; the new series, under the title of "The Architects' Magazine" (see page 257 of last week's issue), will commence next month.

Harper's Monthly Magazine for November contains nothing of special interest to architects.

Feilden's Magazine.—Among the articles in the October issue is Mr. W. N. Twelvetrees' on the Central London Railway. The other articles have little direct interest for our readers.

The **Birmingham Magazine of Arts and Industries.**—No. 6, Vol. 2, is a hospital number, and is descriptive of various hospital institutions in Birmingham. The illustrations reproduce well, but we do not like the paper or the type used in this magazine. The paper is of that very highly glazed variety which is displeasing (and probably injurious) to the eye, while the type is too massive and lacks balance: the headings and the body of the letterpress are quite out of proportion to one another.

The **British Clayworker.**—A writer in the October number deals with the influence of sand in brickmaking. It is very true that much vagueness surrounds the constitution of a "rubber," some defining it as a soft brick used in building gauged work, others as a brick which can be readily disintegrated when rubbed, and the remainder being less sure of the fact and consequently more ready to make exact statements. However, a good rubber has a large proportion of sand, and it is therefore most important that the proper variety should be used. It is useless in the making of bricks to consider the size of the sand grains apart from their mineral nature, as after firing it may be found that the brick has a surface entirely unsuited to its purpose; for a good rubber nothing should be used but a sharp sand, which in some parts of the country is synonymous with a sand containing a good deal of quartz. Other articles in this number are "The Brick-earths of Great Britain: Aylesbury District," "Brick Drying," and "Methods of Expression as applied to Plastic Clay."



THE "TILE HOUSE," YORK. PENTY AND PENTY, ARCHITECTS.

Master Builders' Associations' Journal.—The October number of this journal is devoted almost entirely to the buildings and exhibits at the Paris Exhibition. There are numerous illustrations.

Pall Mall Magazine.—The architect will find more interest in the illustrations than in the letterpress of the article on Dunrobin Castle which appears in the November issue of this magazine: for it is chiefly taken up by an account of the ancient family of Sutherland, which has owned the old castle of Dunrobin in uninterrupted sequence since the days of a somewhat legendary Earl Robin, who raised the original castle on the hill about seven hundred years ago. The gardens of Dunrobin have been beautiful since the days of Princess Margaret. The high lights of some of the illustrations to this article have been largely worked up with a graver, a common practice now with half-tone blocks; and the result is most unsatisfactory, harsh contrasts between line and tone being produced.

The Antiquary for November contains an article on the church of St. Mary Cray, Kent, by J. Russell Larkby, and some quarterly notes on Roman Britain by F. Haverfield, M.A. The church named is at the extreme end of the village and is Early English and Perpendicular, with less than usual of modern restoration. It is externally quite killed by its surroundings—factories and railways.

The Strand Magazine for October contains an article on "Artificial Rock Formation" and "Which is the Finest Building in the World," both of which were dealt with on page 223 of our issue for October 24th.

The Engineering Times prints in its October issue an illustration of the Glasgow Exhibition buildings, now in course of erection. From the Glasgow show of 1888 there was a surplus of £54,000, which, together with interest and private subscriptions, has been increased to £74,000 for the erection of the Fine Art Galleries, which will form the chief architectural feature of next year's exhibition. While the show will suffer to some extent by following close on the heels of those held in Paris and Chicago, the fact that the guarantee fund now approximates £450,000 is an indication of the hearty support the exhibition is receiving. In the number under review, Mr. Brackenbury brings to a close his series of



THE "GREY MARE," CLIFTON, YORK, PENTY AND PENTY, ARCHITECTS.



SMOKE-ROOM AT "THE CREAMERY," YORK. PENTY AND PENTY, ARCHITECTS.

articles on modern methods of saving labour in gasworks, and a new series on "Pumps: their Construction and Management," by Philip R. Björling, is started: it deals with all pumps which can be defined as machines for raising water by the aid of atmospheric pressure, and promises to be interesting.

Architectural Association Notes for November draws attention to Mr. Samuel Gardner's gift to the Association of 200 photographs (each 14½ by 11¼in.) illustrative of the development of English architecture. Such a gift, it need hardly be said, will prove of the greatest value to students, and now that so excellent a start has been made it is to be hoped that the collection will be added to as opportunity offers. Some notes on Wren's London parish churches, by Mr. Percy L. Marks, are also given in this number.

Scientific American (Building Edition).—Since 1891, when Mr. C. B. J. Snyder was appointed Superintendent of School Buildings, a great improvement has been effected in the New York schools, which were formerly conspicuous for their ugliness and mostly built on Italian Renaissance models, consequently suffering from a lack of light. Mr. Snyder obtained a hint for the new H-shaped buildings which have proved so successful from the Hotel Cluny, in Paris; the cost is less per foot than the old schoolhouses of twenty years ago. There is an illustration in the October number of this publication of a very peculiar, though decidedly effective, outdoor music pavilion or bandstand at San Francisco. It was presented by Claus Spreckels, the "Sugar King" of the West, and was designed by Messrs. Reid Brothers, of San Francisco. The pavilion faces a large court surrounded by carriage and bicycle drives and a wide promenade for pedestrians, and consists of a central block with an arched opening 72ft. high at one side, hollowed out behind so as to form an extended half-dome. Here the performers are seated, and the music is projected outwards. At each side of the main block is a double colonnade of Ionic pillars set on a terrace having fourteen steps. The design is severely Classic.

The American Architect.—In the issue for October 6th an attack is made on the newspaper editors who lift up their voices and demand "legislation which, by preventing fires, or reducing the amount of their damage, shall make fire insurance a matter of minor importance." As our contemporary says, this no doubt sounds very eloquent in the ears of the average reader, but it makes the architect smile. It came rather as a shock to find in this issue an article with a headpiece belonging to it, as the "American Architect" has the knack of ignoring these things: for instance in the issue for September 22nd at the head of an article on the excavation of prehistoric Knossos there is a detail from a Paris Exhibition building, and a Montmartre tomb at the beginning of an article on European systems of forest administration. This is hardly observing the laws of fitness. Mr. Brydon's Sessions House design is included among the plates in the issue for October 6th. Mr. Florence's design for the same building is shown in the October 13th number, which also gives reproductions of designs by M.M. Bigot, Bernard and Lemaresquier for "Un Etablissement Thermal." These designs were awarded the Grand Prix de Rome. In going from Padua towards the centre of Italy, the first important city that is met, after Ravenna and Ferrara, is Bologna, where, as it were, the Italian Renaissance breathed its last. An illustrated article on Bolognese architecture appears in the issue of this journal for October 20th. This architecture does not rank very high; it is rather painting which earns for the city its place in the history of Italian art. Among the plates to this issue is one of the third premiated design for the Liverpool Dock Offices (James H. Cook, architect), and another of the Royal School at Honolulu, designed by C. W. Dickey. This latter building has an almost flat roof with wide projecting eaves, and though pleasing in the mass its detail is unsatisfactory in parts, particularly in the treatment above some of the windows.

The Brickbuilder (Boston, Mass.).—"The student of rural domestic architecture must be content to find his pleasure chiefly in the enjoyment of field and woods. The average American farmstead, and its weather-beaten, ramshackle, wooden buildings and unkempt surroundings, adds but a doubtful charm to the landscape." These are the opening remarks of Mr. Robert C. Spencer, junior, in the article which forms the chief feature of the September issue of this journal. The houses of the early settlers in New England, despite their rudeness, were far better than the cheap frame houses which are now being erected all over the United States. These are "just one degree smaller and cheaper and more cheerlessly commonplace than the average mean little house which the speculative builder 'puts up' in the humbler suburbs for poor clerks and working men." The house of the American farmer comes in for less consideration than his barn, and it suffers accordingly. At present the village carpenter is a degenerate, and the plan-merchant holds the field, with a deplorable result. Mr. Spencer, who has made a special study of the subject, says the corrective will be found in placing in the hands of the farm population designs by able men, and in improving the general state of rural education. The designs for farmhouses which illustrate his remarks are pleasing, and we note that the proprietors of the journal take the practical step of instituting a competition for a brick farmhouse, which will undoubtedly take the place of its wooden precursor. The number under review also contains an article on "Practical Fire Tests," being a comparative *résumé* of the tests made by the British Fire Prevention Committee with ceilings, columns, and doors. Facts generally make very dry reading, but this article does not suffer from this fault, and the data it supplies are undoubtedly of much value; not the least useful item is a table showing the fire-resisting qualities of various doors. Of the plates given with this number, that of the Horticultural Hall, Philadelphia (Frank Miles Day and Brother, architects), is certainly the best. The article on practical fire tests is continued in the October number, which also includes an article on the designing and planning of railway stations. Of the plates (which are all excellently printed) that of Cornell University College, New York City (McKim, Mead & White, architects) is the best.

Carpentry and Building (New York).—Some interesting facts as to the relative positions of



UPPER PART OF THE HALL, "ELM BANK," YORK. PENTY AND PENTY, ARCHITECTS.

workmen in Europe and America are supplied in the October issue. The theory that the European mechanic is able to live as comfortably on his smaller wages as his fellow workman in America, because he can obtain necessaries of life more cheaply, does not tally with actual experience. In this country the position of the working population is better than in Continental countries, but it is still materially below that of the American craftsman. "It may be taken as an incontrovertible proposition that the average American artisan enjoys twice the comforts and luxuries of his European contemporary. He has more and better food, is better clothed and possesses more household comforts, and generally has more money saved up for a rainy day." Articles on plumbing without inspection, wood turning, inside window shutters, and a small woodworking shop are given in this number. The brick and frame house shown as a plate is a

which means, of course, a house. *Demo*, in the Greek, means "I build." Viollet-le-Duc points out that the word "dome" is employed for "cupola"; but seeing that the new meaning has become universal, it is useless now to attempt to change it.

Architecture (New York).—It is evident from the statements made by Professor Ware that the Columbia University is striving not only to turn out the theoretical designer, but the practical all-round man as well: one who thoroughly understands the limitations of his art and the complex problems of construction and business which he must face in after life as a practising architect. The day is past when the academically educated man is purely a designer at graduation. Under the heading of "Architectural Practice" are included such subjects as real estate law and the law of contracts. American architecture is now in a state of transition. Architecture to-day, says our con-

a book of nature open and ready, and he has to employ the recorded story of humanity in buildings. Architects will therefore read with great interest the article on architectural books, giving particulars of the Greek, Latin, Mediæval and Renaissance writers, printed in the October number of this publication. The plates presented are of the Symphony Hall at Boston, Mass. (McKim, Mead and White, architects), and the New Chickering Hall in the same city (Peabody and Sterns, architects).

Canadian Architect and Builder.—It is stated in the October issue of this journal that shingled roofs are coming into favour in Toronto, many of them being stained, while others are left to the softening influences of the weather. Some uniform shade of green is the tone most commonly employed, but many architects have successfully mixed their own stains, and thus been able to obtain precisely what tint they desire. Canada, it appears, has no stan-



THE ENTRANCE HALL, "ELM BANK," YORK. PENTY AND PENTY, ARCHITECTS,

hopeless mixture of large rubble work, brickwork and tiles, with the inevitable Classic treatment. For the huge cathedral of St. John the Divine now being erected on Cathedral Heights, New York City, thirty-two granite columns, each 54ft. long, 6ft. in diameter, and weighing about 160 tons, will be required. In the November issue of this journal illustrations are given of one of the enormous square blocks as cut in the quarry and of the special lathe which has been designed to turn them. The corners of the block (which weighs 310 tons in the rough) are first taken off by hand and the stone is then mounted in the great lathe, which has eight cutters, each taking a cut 3in. deep. About six weeks are occupied in dressing and polishing every column. Articles on scissor-trusses, and the heating and ventilating of a club house are given in this issue, and a query is raised as to what is the definition of a dome. The word, like the German term *dom*, comes from the Greek *domos*, through the Latin *domus*,

temporary, is not exclusively an art, and to be successful it must combine economical and commercially successful construction with the greatest amount of beauty possible under the conditions imposed. "If one function of architecture must be sacrificed, the public demand that it shall be its æsthetic side, and although this condition may conflict with our cherished ideas, it is useless for us to attempt to stand in the way of commercial requirements if we are to be abreast of the times." Though deplorable, this is fact. Among the plates presented with this issue are some of the Court House, Appellate Division Supreme Court, in New York (James Brown Lord, architect), and a beautiful country house by Renwick, Aspinwall and Owen. The striped sun-blinds in the windows of the former building, though useful, are incongruous. It is true that no artist is so dependent upon books as the architect; not that he does or should read very much, but he is not furnished like the painter and the sculptor with

dard form of contract. About fifteen years ago a form was agreed upon between the architects and builders of Toronto which was generally used for a considerable time, but, by reason of changing circumstances, many new forms have been introduced, and the need is now felt for a standard contract conserving the rights of all parties concerned. Several papers read before societies are printed in the issue under review, including Professor Beare's on "The Strength of Timber, and How to Test It," read at the Carpenters' Hall. Some particulars are also given of the R.I.B.A. examinations to be held in Canada.

The Building, Engineering and Mining Journal (Sydney, Australia) draws attention in its issue for September 22nd to a Bill which proposes to amend the existing Patent Law by abolishing a searching examination of specifications. This "iniquitous measure" is put forward as the only solution of the problem created by certain high officials who are a bar

to improvement. We quite agree with our contemporary that the only way to secure real protection for patentees and the public is to institute a thorough system of examination; we are badly in need of such a system in this country, and it is to be hoped that some radical improvement will be effected by the Board of Trade Committee, under Sir Edward Fry, which was convened some time ago to examine certain phases of the British Patent Law.

The Clay Worker (Indianapolis).—This publication generally contains much that is readable and of interest, but in the October number we find some very absurd statements. The present is called the steel or the electric age, but we are assured in the issue under review that when Macaulay's Fiji Islander arrives at Trinity Church, New York, to sketch the ruins of Wall Street he will have substantial evidence for calling this the age of terra-cotta. The historians of the future will describe us as copyists, stealing all our lines from the Greeks and the Romans, but will they, asks our contemporary, consider we have improved on the classics? "We are educated now to believe that a good copy is better than a poor original"—what splendid education! And, extending the principle to materials, we find terra-cotta buildings on Broadway masquerading as granite. "Now, presuming it was granite, in what respect would it be better? Only one possible known reason: it would have cost more." Such is our contemporary's view, and what a wretched one it is. Any material can be built, but why, if terra-cotta is chosen, try to make it look like granite? It is like a man habitually wearing a false moustache, and about as commendable.

Die Kunst.—In the November issue there is an article dealing with the work of Messrs. Schilling and Gräbner in Dresden. These architects may be taken as fairly representative of the new art movement so strong in Germany at the present time. We have already pointed out the excesses which are made, with results wholly absurd and hideous, but those who are unacquainted with the movement should endeavour to see some examples of it, as it is interesting in many of its aspects. Its great fault is the production of something novel simply for the sake of novelty, irrespective of the considerations of beauty and fitness.

Berliner Architekturwelt.—The remarks made in connection with "Die Kunst" apply even more pertinently to this publication, which has some most curious designs for bridges and buildings in the current issue.

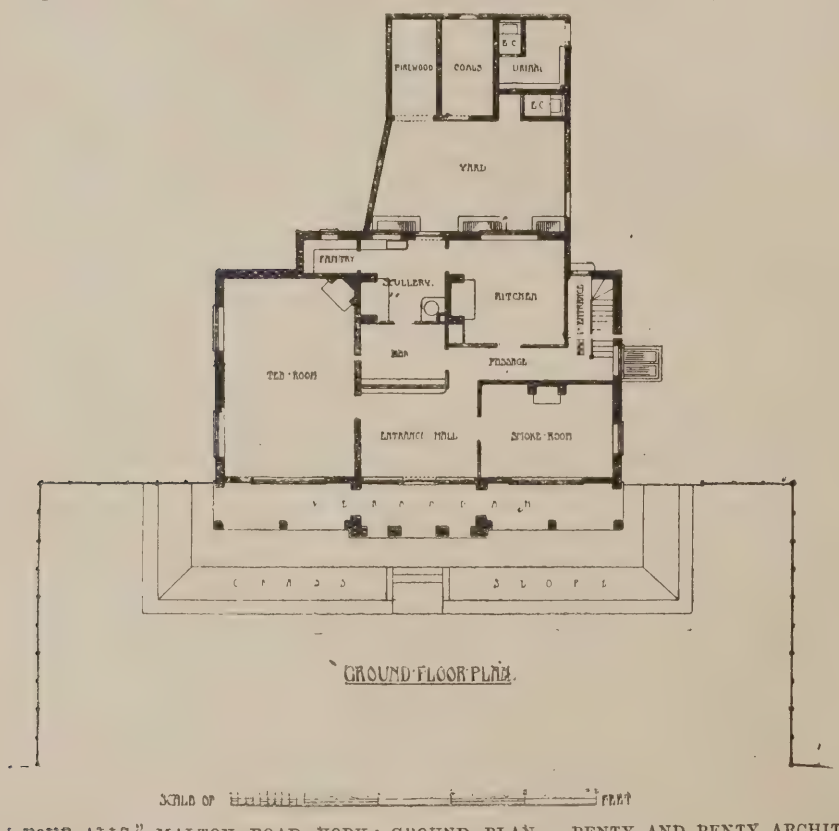
BRITISH SCHOOL AT ATHENS.

ON Tuesday in last week the annual meeting of subscribers to the British School at Athens was held at Burlington House, Mr. H. Asquith, M.P., presiding.

In the course of their report for the session 1899-1900, which was read by Mr. George A. Macmillan, the managing committee said:—Although the number of students has been less than in some previous years, the work of the school, under the direction in Crete of the director of the school, Mr. Hogarth, and in Athens of the assistant-director, Mr. Bosanquet, has been profitably carried on. Of the four new students one is Mr. D. Theodore Fyfe, who was appointed by the committee to the architectural studentship. Mr. Fyfe has done admirable work in Crete, where he not only made the plans and surveys which lay within his special province, but also showed marked artistic talent in his water-colour drawings of the frescoes found by Mr. Evans.

The only excavations undertaken by the school this session were those in Crete. Mr. Hogarth has worked with great success on the site of the town of Knossos, and later in the cave at Psychro which has been hitherto identified, as it now appears with reason, with the far-famed Dictæan Cave. St. Luke's Monastery at Stiris in Phocis, which represents the first instalment of the valuable studies on Byzantine architecture in Greece made some years ago by two students of the school, Mr. R. W. Schultz and Mr. Sidney Barnsley, will shortly be published by Messrs. Macmillan and Co. The cost of the plates has been met by a generous contribution from one of the trustees of the school, Dr. Edwin Freshfield. In this connection it is only fitting to mention the serious loss sustained by the school generally, and by the Byzantine side of its work in particular, through the recent death of the Marquis of Bute, who more than once made liberal contributions to the Byzantine Architecture Fund.

In last year's report reference was made to a project for establishing a British school at Rome. Considerable progress was made in drafting a scheme for such a school, and an attempt was made privately to raise funds to enable it to be started this autumn on however small a scale, but the effort has met with only limited success. In spite of this discouragement a very competent director has been provisionally appointed in the person of Mr. Gordon Rushforth, of Oriel College, Oxford, who knows Rome thoroughly and has shown expert knowledge alike in the field of Latin epigraphy and of Italian art.



GROUND-FLOOR PLAN.

THE "FOUR ALLS," MALTON ROAD, YORK: GROUND PLAN. PENTY AND PENTY ARCHITECTS.

Correspondence.

"Severn End."

To the Editor of THE BUILDERS' JOURNAL.

WORCESTER.

SIR,—On page 203 of your issue for October 17th it is stated that "Severn End," the ancient residence of Sir Edmund Lechmere, Bart, was burned down in October 1896, together with its ancient furniture, pictures, manuscripts, and books. The inference to be drawn from the paragraph is that the house no longer exists. We desire to state that the house was only partly destroyed, and nearly all the ancient furniture, pictures, manuscripts, and books of value were saved. The house has been most satisfactorily restored, and retains its ancient character and detail, and Sir Edmund is now in residence there.—Yours truly,

LEWIS SHEPPARD AND SON.

Builders' Notes.

Of the 3,000 odd candidates for the new London Borough Councils there were 140 builders and contractors.

Partnership Dissolved.—The partnership subsisting between Messrs. John Turner Taylor and Frederick Taylor, carrying on business as builders, joiners, and cabinet makers, has been dissolved by mutual consent as and from October 24th. All debts due to and owing by the late firm will be received and paid by Mr. John Turner Taylor.

Mr. John Nicol Dunn, senior partner of Messrs. Dunn Brothers, stonecutters and granite merchants, of Holland Street, Aberdeen, died last week at the age of 54 years. He served his apprenticeship as a stonecutter with Messrs. Macdonald, Field & Co., and afterwards was associated as a partner in the firm of Messrs. Dunn & Mitchell, stonecutters. About twelve years ago, he and his brother formed a partnership under the firm name of Messrs. Dunn Brothers, and carried on an extensive and successful business.

Building in Edinburgh.—During the past year, not only owing to the masons' strike, but owing to the large amount of building during previous years, fewer new buildings were constructed than formerly. A large number of alterations and additions, however, are constantly taking place on the buildings of the city. During the year in the Dean of Guild Court 969 warrants were granted; but of these 42 were minor warrants for small alterations and did not require the full petition. There were 12 new villas and self-contained houses, and 81 tenements; of the latter, 50 were houses of one apartment, 515 of two apartments, 338 of three, 70 of four, 17 of five, and 3 of six apartments, making a total of 993 houses and 47 new shops, 43 villas, 85 self-contained houses, 227 public and other buildings, and 257 alterations.

London County Council.—At last week's meeting of the Council a proposal to construct a winter garden in connection with the London Hippodrome was adopted after some discussion. The Public Health Committee recommended "That a letter be addressed to the Local Government Board stating that the Council is of opinion that the Sanitary Officers (London) Order, 1891, should be amended so as to enable sanitary authorities to appoint female sanitary inspectors, the whole or part of whose duties would be the teaching of habits of cleanliness and of the best methods of utilising food; and that the Council do express its willingness to contribute a moiety of the salary of every female sanitary inspector so employed." The recommendation was temporarily withdrawn. The Council adopted a series of new by-laws relating to drainage.

Bricks and Mortar.

APHORISM FOR THE WEEK.

If you have understood anything I ever told you about Gothic, you know that no architecture was ever corrupted more miserably or abolished more justly by the accomplishment of its own follies. RUSKIN.

Our Plates. A CRITICISM of the designs for the Holborn-Strand street was published in our issue for last week. The illustrations of the "Four Alls" inn and the fish and game dealer's shop at York are referred to in the article on the work of Messrs. Penty and Penty which commences on page 268 of this issue

The New Bridge at Kew. A MASSIVE granite shield surrounded by scroll work has been completed in the yard of Mr. John Fyfe, granite merchant, Provost Blaikie's Quay, for the three-arched granite bridge which is at present being constructed over the Thames at Kew, under the superintendence of Mr. Easton Gibb. The shield is 10ft. high and 17ft. wide. Above it there is an allegorical head representing Old Father Thames, and on its face have been carved the coats-of-arms of the three principal towns of Surrey. The bridge, it may be explained, is being constructed at the expense of the counties of Middlesex and Surrey, each of which bears half of the cost, and as the shield executed by Mr. Fyfe is for the adornment of the Surrey end, the coats-of-arms of the principal towns in that county have been represented on it. The shield is being duplicated, and the two duplicates will be placed on the spandrels of the Surrey arch, above the pier. It is of fine axed Kemnay granite, and the ornamentation is in bold relief.

An Art Colony. THE scheme of the late Mr. Patrick Allan Fraser to establish an art colony in Hospitalfield, Arbroath, is about to be completed, and with this object in view Mr. George Harcourt, assistant to Professor Herkomer, at Bushey, has been appointed master at a salary of £400 per annum with free house. Mr. Fraser, on his death in 1887, left his residence near Arbroath—supposed to be the Monkbarns of "The Antiquary"—together with a sum of money for endowment purposes in the hands of trustees with a view to founding an establishment of this kind, but it was decided to let the matter lie in abeyance for a time. The scheme is for the encouragement of young men having insufficient means of their own who are desirous of following out one or more of the professions of painting, sculpture, carving in wood, and engraving. For the carrying out of the scheme it is provided that 30 young men shall be comfortably lodged, boarded, and clothed in the house of Hospitalfield. The age of the applicants for admission must not be less than 16, nor more than 18. The students admitted are to be entered for a period of four years. Students are also to be provided with summer quarters at Blackcraig or Glenrinnes, in Perthshire, while allowance has been made for students who have completed their indentures at Hospitalfield going to the Continent to complete their education as artists. In addition to the regular students, young people resident in Arbroath between the ages of 16 and 20 may also be received.

A Collection of Glasgow Architectural Photographs. THE R.I.B.A. having agreed to the proposal made by the Glasgow Institute of Architects that their 1901 dinner should be held in Glasgow during the time the Exhibition is open, a Committee has been appointed to make arrangements for the reception of the Royal Institute during the Exhibition. The date proposed is early in October, but the Committee are at present in communication with the Corporation on the subject. It has been arranged to exhibit a collection of photographs illustrative of the architecture of Glasgow, from the earliest times till the present day. The photographs, to the number of about 150, will be provided by the Glasgow Institute, and will revert to it after the close of the Exhibition, to form a permanent feature of its library collection, which will, it is hoped, be enriched from year to year by contributions of photographs of current representative works by members and others. While the Institute has voted from its Capital Fund sufficient to proceed meantime with the collection, where the work is by architects unknown or long deceased, it has, in connection with work of more recent date invited, and in most cases obtained, the co operation of many existing firms in procuring photographs of works by retired or deceased architects still represented by them. The list of works to be illustrated was drawn up by a sub-committee appointed for this purpose, and approved by the Council. The Committee has also been instructed to co-operate as far as possible with the Exhibition Fine Art Committee towards securing, in the contributions of local architects to the section of modern architecture, some continuity with the retrospective collection.

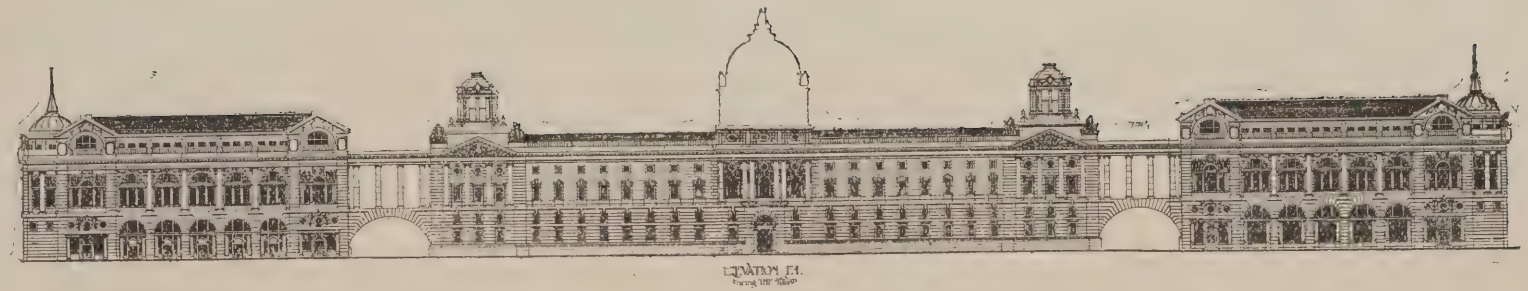
New Furniture Museum at the Louvre. THE Louvre is to be enriched by transferring to it the cream of the treasures hitherto preserved, and very badly preserved, at the Garde-Meuble. This latter institution is the repository in which the State stores the old furniture, the Gobelins tapestries, the Sèvres ware, and other kindred objects of which it is the possessor. The Garde-Meuble is not open to the public, so that its most interesting contents, which, of course, are national property, are in some sort sequestrated. What is worse, they are exposed to grave dangers. It has been proved again and again that the treasures of the Garde-Meuble are in very careless custody. A well-known art critic discovered a series of Gobelins which the ignorant and indifferent employees had rolled up with no more care than if they had been second-hand carpets. But besides being housed in deplorable conditions, the contents of the Garde-Meuble are the prey of privileged pillagers and pilferers. The Ministers have the right to draw on the Garde-Meuble for the adornment of their official residences. The Garde-Meuble has even been rifled for the benefit of colonial functionaries anxious to impress the barbarian mind at the expense of the art treasures of the metropolis. The natural consequence of these many borrowings is considerable "leakage"; not everything that leaves the Garde-Meuble returns to it in due course. There is to be an end to this state of things. All the finest specimens in peril of their existence in the Garde-Meuble are to find a safe refuge in the Louvre. The immense success of the retrospective furniture exhibition in the Petit Palais has been the decisive argument that has enabled the innovators to carry the day. Five spacious rooms on the first floor of the Louvre are to be reserved for the new department. They have already been emptied of the drawings they previously contained and are now in the hands of the painters and decorators, of whose good offices they stood in sad need, as they had never been repaired since the Restoration. The periods represented, to begin with, will be the sixteenth and seventeenth centuries.

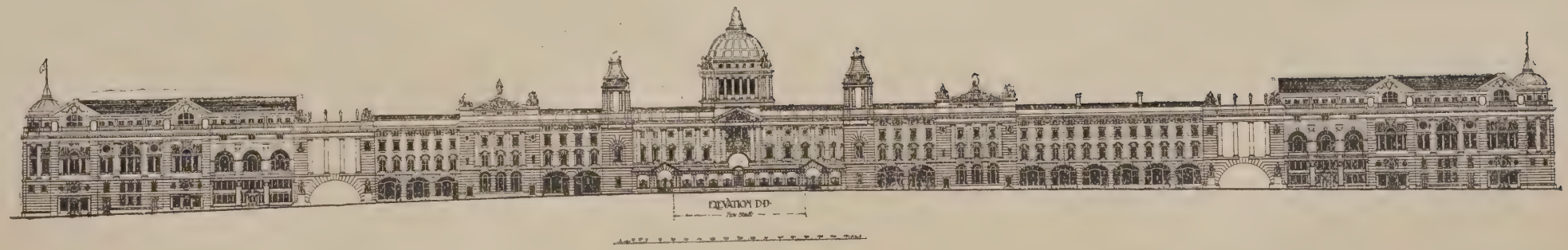
The Roman Forum. THE Rome correspondent of the "Morning Post" writes: "The excavations in the Roman Forum, which under the direction of Signor Boni have led to the discovery of so many interesting pages of early Roman history, are beginning to excite a lively interest among the Italians, and particularly among the people of Rome. Until recently the Forum was regarded by the general Italian public as a special preserve for the erudite, in which ordinary people could not be expected to take an interest. But when the Black Stone, the Sacred Way, the Altar of Mars, the pavements of the house of the Vestals, the Palatine Basilica with its magnificent paintings, the Rostrum from which Mark Antony harangued the Roman crowd, and especially the poetic fountain and well of the nymph Juturna were brought to light the Roman populace of to-day began to feel that it had a sort of special property and a living interest in all these relics of the past, of which it had only known before in the form of legend and tradition. This feeling immediately revealed itself when it was rumoured that the present Minister of Public Instruction, Signor Gallo, meant to suspend the excavations for want of funds. An outcry at once arose, and the idea of a national subscription for the continuation of the work in the Forum was put forward. Without waiting for the opening of the subscription a young engineer officer sent 1,000 lire as his contribution, and the press of all parties has praised his example and is urging all Italians who have the means to imitate him. This movement is an excellent sign of an improvement in the condition of Italian public opinion, which at last seems to be waking up to the fact that it can do much without waiting for the initiative of the Government."

The late Mr. William Anderson. The death of Mr. William Anderson, F.R.C.S., occurred recently at the age of 58 years. The deceased was elected Professor of Anatomy to the Royal Academy of Arts in 1891. He lived for some years in Japan, which enabled him to attain a good knowledge of the decorative and pictorial art of the Japanese, and to form the valuable collection of Japanese and Chinese books, pictures, drawings, and wood engravings now in the British Museum. Besides being the editor of "Heath's Practical Anatomy" and "Brücke's Beauties and Defects of the Human Figure," he was the author of "Deformities of the Fingers and Toes," "The Pictorial Arts of Japan," and "Japanese Wood Engravings" (portfolio monograph).

Manchester Corn Exchange. THE new roof of the Manchester Corn Exchange, which is to be finished by March next, is nearly complete so far as its skeleton is concerned, half a dozen iron girders, weighing four tons each, having been successfully hoisted into their places. The result of the enlargement, which commenced so far back as 1891, will be to turn the Corn Exchange from its polygonical shape into a triangle, having for its three sides, Hanging Ditch, Fennel Street and Cathedral Street. The first-named street has been already widened to 18yds., and will be further improved by the new Corporation and Market Street scheme now being considered by the Corporation Committee. It is interesting to note that the present building dates from 1837—the date of the Queen's accession. Before that time corn exchange business was transacted in the open air, and there still exists an old bell on the Fennel Street side of the Douglas Hotel which was used to summon the farmers and traders to mid-day dinner.

Holborn-Strand Designs. REFERRING to these designs the *Daily Chronicle* says:—"If the result of the recent architectural competition for the new Strand is to be a composite design, embodying what the County Council think the best features of the best drawings, then £2,000 of the ratepayers' money has been thrown away. None of the plans may have been, architecturally, a masterpiece, but there was a point upon which all the competitors agreed: that is, in respecting the unity of the group of buildings destined to fill one of the most important sites in commercial London. Everybody knew beforehand the difficulties of carrying out any such unity. Either ratepayers had to be boldly faced and the Council become proprietors of the entire group, or else each tenant had to be compelled to build under the Council's supervision. But if the Council were not prepared to grapple with these difficulties, to what purpose the competion and its attendant expenses? The new street and the new Strand might as well have been left to the same haphazard that has made such nondescript thoroughfares of Charing Cross Road and Shaftesbury Avenue. Indeed, the new buildings will seem all the worse for the hint revealed here and there of a definite architectural scheme."





THE HOLBORN TO STRAND THOROUGHFARE. Design No. 26.

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Supplement to
THE BUILDERS' JOURNAL AND ARCHITECTURAL RECORD,
Wednesday, November 7th, 1900.

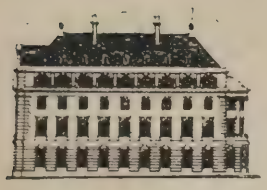


THE "FOUR ALLS," MALTON ROAD, near YORK. PENTY AND PENTY, Architects.



FISH AND GAME DEALER'S SHOP, FEASEGATE, YORK. PENTY AND PENTY, Architects.

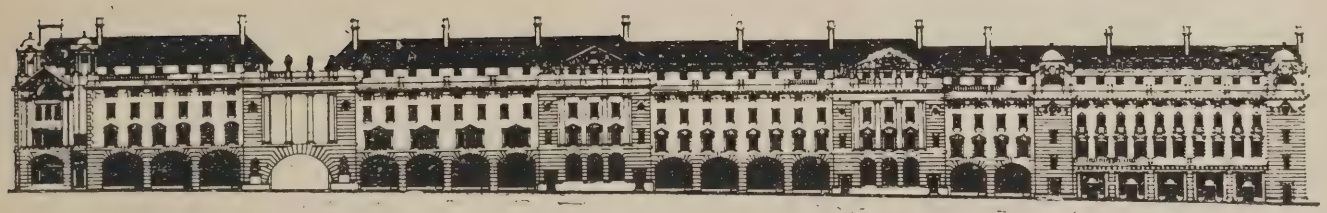
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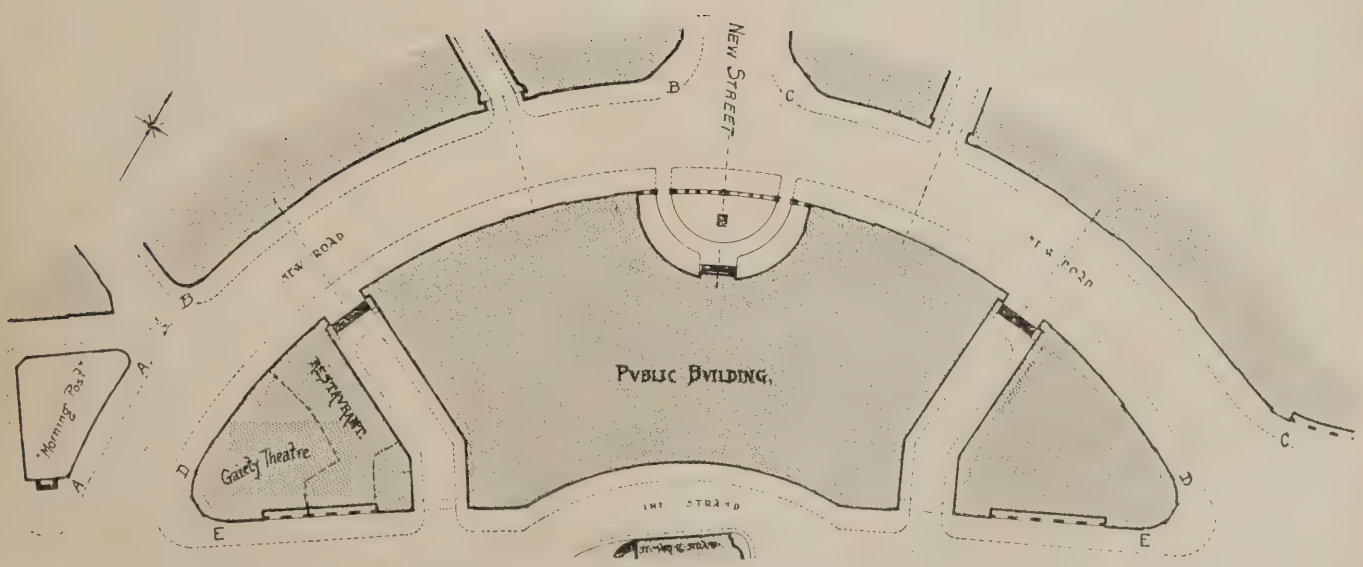
ELEVATION AA.



ELEVATION BB.



ELEVATION CC.



THE HOLBORN TO STRAND THOROUGHFARE. Design No. 26.

EXPLORATION IN CRETE.

WONDERFUL DISCOVERIES.

THE following particulars of the Cretan explorations were given to the Press last week by the well-known archæologists Mr. A. J. Evans and Mr. D. G. Hogarth:—

The preoccupation of the public mind caused by the war in South Africa made it impossible last year to press the claims of Cretan exploration. Sympathy, indeed, was not wanting. A representative committee was formed, and we were able to initiate a fund, to which the patronage of the High Commissioner of the Powers in Crete, Prince George of Greece, was graciously accorded. Thanks to the good offices of his Royal Highness, a number of important sites were set apart for British excavation. But of the £5,000 required for the adequate realisation of our scheme barely a tenth part was collected by private subscriptions.

Meanwhile Italian and French missions, supported by Government aid, had already been in the field for several months. Even to hold their own it was absolutely imperative that British representatives should make a beginning. We had no choice but to embark last spring on an enterprise which, once begun, for the honour of British science must be carried through.

The sum of less than £500 that had been privately collected was devoted to the assistance of two separate enterprises. Half of the amount went to assist one of the above-named gentlemen in the excavation of a site, already acquired by him at Kephala on the site of Knossos, which proved to contain the remains of a prehistoric palace. How inadequate was this contribution may be judged from the fact that five-sixths of the cost of the work—still far from completion—have fallen on the explorer's shoulders. The other half of the sum collected was allocated to the director of the British School at Athens for the exploration of the prehistoric town and tombs of Knossos and of the great cave of Zeus, on Mount Dicta. This was supplemented by £200, spared with difficulty from the annual income of the school, and by the payment of an architect from the same source. The extraordinary results which rewarded both these undertakings have attracted such wide attention that a very brief statement will suffice here.

The Discoveries made at Knossos

throw into the shade all the other exploratory campaigns of last season in the Eastern Mediterranean, by whatever nationality conducted. It is not too much to say that the materials already gathered have revolutionised our knowledge of prehistoric Greece, and that to find even an approach to the results obtained we must go back to Schliemann's great discovery of the Royal tombs at Mycenae.

The prehistoric site, of which about two acres have now been uncovered at Knossos, proves to contain a palace beside which those of Tiryns and Mycenae sink into insignificance. By an unhoped-for piece of good fortune the site, though in the immediate neighbourhood of the greatest civic centres of the island in ancient, medieval, and modern times, had remained practically untouched for over 3,000 years. At but a very slight depth below the surface of the ground the spade has uncovered great courts and corridors, propylaea, a long succession of magazines containing gigantic stone jars that might have hidden the Forty Thieves, and a multiplicity of chambers, pre-eminent among which is the actual throne-room and council-chamber of Homeric kings. The throne itself, on which (if so much faith be permitted to us) Minos may have declared the law, is carved out of alabaster, once brilliant with coloured designs and relieved with curious tracery and crocketed arcading which is wholly unique in ancient art, and exhibits a strange anticipation of thirteenth-century Gothic.

Frescoes, Paintings, and Sculpture.

In the throne room, the western entrance gallery, and elsewhere, partly still adhering to the walls, partly in detached pieces on the floors, was a series of fresco paintings, excelling any known examples of the art in Mycenaean Greece. A beautiful life-size painting of a youth, with a European and almost classically Greek profile, gives us the first real knowledge of the race who produced this mysterious early civilisation. Other frescoes introduce us to a lively and hitherto unknown miniature style, representing, among other subjects, groups of women engaged in animated conversation in the courts and on the balconies of the palace. The monuments of the sculptor's art are equally striking. It may be sufficient to mention here a marble fountain in the shape of a lioness's head with enamelled eyes, fragments of a frieze with beautifully-cut rosettes, superior in its kind to anything known from Mycenae; an alabaster vase naturalistically copied from a Triton shell; a porphyry lamp with graceful foliation supported on an Egyptianising lotus column. The head and parts of the body of a magnificent painted relief of a bull in *gesso duro* are unsurpassed for vitality and strength.

It is impossible here to refer more than incidentally to the new evidence of intercourse between Crete and Egypt at a very remote period supplied by the palace finds of Knossos. It may be mentioned, however, as showing the extreme antiquity of the earlier elements of the building that in the great eastern court was found an Egyptian seated figure of diorite, broken above, which can be approximately dated about 2000 B.C. Below this again extends a vast Stone Age settlement which forms a deposit in some places 24ft. in thickness. Neither is it possible here to dwell on the new indications supplied by some of the discoveries in the

"House of Minos"

as to the cult and religious beliefs of its occupants. It must be sufficient to observe that one of the miniature frescoes found represents the façade of a Mycenaean shrine, and that the palace itself seems to have been a sanctuary of the Cretan God of the Double Axe, as well as a dwelling-place of prehistoric kings. There can be little remaining doubt that this huge building with its maze of corridors and tortuous passages, its medley of small chambers, its long succession of magazines with their blind endings, was in fact the Labyrinth of later tradition which supplied a local habitation for the Minotaur of grisly fame. The great figures of bulls in fresco and relief that adorned the walls, the harem scenes of some of the frescoes, the corner stones and pillars marked with the *labrys* or double axe—the emblem of the Cretan Zeus, explaining the derivation of the name "Labyrinth" itself—are so many details which all conspire to bear out this identification. In the palace-shrine of Knossos there stands at last revealed to us the spacious structure which the skill of Daedalus is said to have imitated from the great Egyptian building on the shore of Lake Moeris, and with it some part at least of his fabled masterpieces still clinging to the walls.

But, brilliant as are the illustrations thus recovered of the high early civilisation of the City of Minos and of the substantial truth of early tradition, they are almost thrown into the shade by a discovery which carries back the existence of written documents in the Hellenic lands some seven centuries beyond the first known monuments of the historic Greek writing. The problems attaching to the decipherment of the clay records which had been found are of enthralling interest, and we have here locked up for us materials which may some day enlarge the bounds of history.

The work of excavation in the Palace of Knossos is barely half completed, and yet whichever way we turn the relics already obtained from within its walls supply new and unhoped-for *data* for the reconstruction of early Ægean civilisation. Nor is this all. Exploratory digging to the south and west of the palace revealed a veritable Pompeii of houses of the same early period, which yielded, among other things, by far the finest series yet found of vases of the singular primitive Cretan polychrome style, unrepresented in European museums. One remarkably well-preserved block of buildings appears to be a group of shrines devoted to a pillar worship, such as is known on the Phœnician and Palestinian coasts, and of which the palace itself supplies an example connected with the cult of the Cretan Zeus.

Finally, in the early heats, the clearing of the Cave of Psychro, notorious since some years for its rich votive deposits, was carried out. This cave is no other than the holy Dictaean Cavern, in which Hesiod and Virgil state that the Supreme God was cradled. The discoveries of vases, weapons and other articles made in this cave cover the whole primitive period of Cretan history back to the pre-Mycenaean epoch.

The Work Still to be Done.

The clouds of war are at last lifting, and it is with confidence that we now appeal for help to carry on the work already set in hand. The Palace of Knossos is still but half uncovered, and the large expenditure entailed by excavation of this vast building, which its explorer hopes to take up again in February next, is a severe strain on individual resources. Among the other sites included in the British concession are two votive caves, the citadels of more than one Mycenaean city of eastern Crete, and Praesos, the ancient capital of that region, within whose walls the language of the old indigenous stock—the Eteokretes of the Odyssey—survived to historic times. Here, if anywhere, should be found the key to the undeciphered hieroglyphic script of Crete, and it is to be hoped that sufficient funds may be forthcoming to begin excavation at this spot during the coming season under the auspices of the British School of Athens. The Cretan Exploration Fund needs contributions to the amount of at least £3,000.

Subscriptions may be paid either to Mr. George Macmillan (as hon. treasurer) at St. Martin's Street, London, W.C., or into the account of "The Cretan Exploration Fund," at Messrs. Robarts, Lubbock & Co.'s., Lombard Street, E.C.

Surveying and Sanitary Notes.

New Destructors for Bradford.—Having received and carried out orders for two destructors for the city of Bradford, the Horsfall Destructor Company, Ltd., have just secured contracts from the same city for five more plants to serve fresh districts.

Street Improvements at Halifax.—The Corporation have purchased the shop and premises at the Pellon Lane corner of Back Street for £300, to enable Pellon Lane to be widened. They have also acquired offices, store-rooms, and shop in Pellon Lane, the purchase price of these, with 112yds. of land, being £2,750. It has been definitely decided, with the approval and consent of Mr. W. Swindon Barber, to remove the statue of the late Colonel Akroyd from its position at North Bridge to the site below All Souls' Church.

New Buildings for the Newbiggin and District Co-operative Society, Limited, were recently opened at Seaton Hirst. The buildings occupy a commanding position, and cover about 750 square yards. They are faced with Penshaw pressed bricks and stone dressings. On the ground floor are the grocery department, butchery department, greengrocers' shop, bootmaking department, and a large warehouse which has a covered-in dock, so that carts can be loaded or unloaded under cover. In the rear of the building is a good three-stalled stable, harness-room, and other offices. On the first floor is a large drapery department, principally lighted from the roof, by Helliwell's patent glazing, also several other rooms for conducting business. The lighting is by acetylene gas, and the heating by hot-water radiators. The whole of the work has been carried out by Mr. Beattie, contractor, of Pegswood Quarry, from plans and under the superintendence of Messrs. Boolds and Hardy, architects, Morpeth, and Newgate Street, Newcastle-on-Tyne.

R. I. B. A.

President's Opening Address.

ON Monday evening last the Royal Institute of British Architects held its opening meeting of the session 1900-1901. The President, Mr. William Emerson, expressed deep regret at the loss they had sustained by the death of Mr. William Young. He had a large practice in the country, had erected many houses for the nobility, and was one of the two architects selected to design the new Government offices. It was decided that a vote of condolence should be sent to Mr. Young's family and relatives. Mr. Alexander Graham announced with regret the death of Mr. Joseph Goddard, of Leicester, who was elected a Fellow in 1871, and of Mr. Charles H. Driver, who was elected a Fellow in 1872. The death of Mr. Lloyd Tayler, of Sydney, Australia, was also announced.

The Secretary (Mr. W. J. Locke) stated that Mr. H. Legg (Christ's Hospital) and Mr. R. D. Hanson (Dulwich, S.E.) had passed the statutory examination held on October 25th, and had been granted certificates of competency to act as district surveyors under the London Building Act.

Mr. Aston Webb then presented to the Institute a portrait of the past-president, Professor Aitchison, painted by Sir Lawrence Alma-Tadema. He referred to the excellent work done by Professor Aitchison, his ability as an architect, his eminence as a scholar, and his geniality as a friend. The portrait would be a worthy addition to those already hung on the walls—the late John Whichcord, by Tadema himself; the late Professor Cockerell, by the late J. Boxall; the late Sir Horace Jones, by the late Frank Holl; Alfred Waterhouse, by Orchardson; and F. C. Penrose, by Sargent. In acknowledging the gift the President expressed the thanks of the Institute to the painter for thus placing his genius at their disposal, and he moved that a vote of thanks be given to him.

Sir Alma-Tadema, in replying, said that it gave him the greatest pleasure to paint the portrait, for what could be more pleasing to the artist than to paint a portrait of a dear friend for a dear friend—the Royal Institute of British Architects.

The President then delivered his opening address as follows:—

On taking this chair at our first sessional meeting of the twentieth century, the sixty-sixth in our annals as a Chartered Institution, I find it difficult to express in suitable terms my high appreciation of the honour of being again elected to the office of President. I can only say it shall be my most earnest endeavour to advance the interest, promote the welfare, and enhance the influence of the Royal Institute of British Architects, and to uphold the dignity of the profession.

Let us consider some few points of interest in connection with the architectural practice of the present time, as well as some subjects of importance that may influence our art during the twentieth century.

Architectural Education.

There can be no doubt that the most important question of the moment is the necessity for a better and more methodical system of education for our students in architecture than exists at present. The Institute can only stimulate and assist such steps as may be taken in this direction. Its *rôle* is not that of a teaching society; its function is to foster and encourage the art of architecture, to guard the interests of the profession, and to examine and ascertain the qualifications of those wishing to be enrolled on the list of its members. England is lamentably deficient in adequate means of imparting the necessary grounding to the students who wish to turn their attention to this particular art.

More severe and systematic courses of tuition exist in France. Their devotion, however, is limited almost exclusively to Renaissance. Their work, often most correct, is somewhat wearisome. But their course of study is thorough. A close familiarity with the best of what has gone before in Classic, Gothic, and other styles should enable the architect who is gifted with some power and freedom of thought and expression to avoid the wearisomeness of modern French architecture. And it may be remarked in passing that the faults in proportion and detail, and the incongruities often found in our English work, might be avoided in like manner. The new Byzantine Cathedral of Marseilles shows the thoroughness of French methods of study.

In France the centre of this thorough study of architecture, where each student gets properly grounded in first principles, is the Ecole Nationale des Beaux-Arts. And this is a Government establishment. In Italy the central school is the Academy of St. Luke, also under Government. In Germany there are a number of excellent training schools for architects, all under Government control.

In the universities, colleges, and technical institutes of America there are about half a dozen or more first-class training departments in architecture, which have now reached such efficiency that their students are ceasing to go to France for purposes of study. And the best American architects are often university graduates to begin with. All these countries have felt that the interests of the community and the State demand the efficient education of the student of architecture.

In England at present there are no Government schools of architecture worthy of the name, or any individual endowments that would render a successful organisation possible. It is true there have been certain schools of architecture attached to the schools of art, as at South Kensington; but in these the grounding in first principles has been on somewhat unsystematic and desultory lines, and the teaching of architecture is altogether subservient to the classes for painting and sculpture. The methods at the Royal Academy School appear to be similarly wanting in systematic grounding. A new school, under the Board of Education, forming part of the Royal College of Art, has been inaugurated at South Kensington, and a reorganisation of the schools of art generally is in progress; but this new school is, apparently, to be of limited scope, and designed mainly for the training of art teachers; and though students of architecture will be received, it will be chiefly to learn drawing and the artistic side of architecture. It will, therefore, be a hard task for the new teaching authorities to make it a complete and systematic school of architecture from the foundation to the finish. However, until it starts work, it is premature to say what it may become or to discuss its efficiency.

Our universities seem to ignore architecture—the only bodies who touch the subject at all being University College and King's College, London, and Victoria University in the North.

It had been hoped that the authorities, in the reconstruction of the London University, would have taken some steps for the representation of architecture; but, notwithstanding that their attention had been particularly drawn to the desirability of this, architecture remains unrecognised, and can only now be admitted by Act of Parliament. Apparently this is because there are really no properly-constituted or efficient schools of architecture in the country, or none worthy of university recognition. However, Mr. Bailey Saunders, the Secretary to the London University Commission, in his letter to the "Times," informs us "that amongst certain Boards enumerated in the regulations a Board of Fine Art, including architecture, is to be appointed, and that there is nothing to prevent the future Senate recognising architecture as a branch of science." Let us hope it may also be recognised as a Fine Art.

Our junior society, the Architectural Association, has done much in the matter of architectural education. If it extends its work in the direction suggested by the President a short time back, and becomes really a teaching body, a properly constituted, systematic and efficient school of architecture such as the universities will recognise, the thanks of the whole profession will be due to it, and an advance of unparalleled significance will have been made in our architectural education.

In connection with education we have in the collection of casts that forms the Architectural Museum a most potent instrument ready-made to our hands. If this Museum, expanded in scope, were made part of the school suggested by the Architectural Association, and were organised in connection with the Institute, it would be of great use to students and practising architects.

Architects' Registration.

A second very important question is that of the present status of the architect. Any person, however unfitted to practise the art of architecture, or even that of building, with no pretence of architecture at all, can put a plate on his door and dub himself "architect." This is an absurdity, and as much a danger to the lives and pockets of the community as the quack practising in medicine. With a view to remedying this state of affairs it has been suggested that some form of registration by Act of Parliament of architects now carrying on business (and hereafter those who have passed an examination) should be adopted. But as this would not prevent quantity surveyors, engineers, land agents, house agents, builders, and others undertaking the duties of architects, and obviously for many years would introduce to the public a host of absolutely unqualified men. I need scarcely remind you that the Institute has hitherto strenuously opposed such a measure. That the public should be safeguarded in some way in regard to the practice of architecture by unqualified persons is becoming daily more apparent.

A revival of the ancient guild system seems to be a strongly marked modern tendency; nor can there be any doubt of its protective value to all professions, since enrolment in a recognised society practically amounts to registration. Thus, accountants are not, I believe, bound by Act of Parliament to register; but no one can use the title "Chartered Accountant" unless he belongs to the Institute of Chartered Accountants and has passed an examination.

The Incorporated Law Society commenced its existence in a very similar way to the Royal Institute of British Architects. After a time it began to impose the passing of examinations as a condition of membership. Later, the registration of solicitors was made compulsory. Still later they acquired the entire control of examinations, the custody of the Roll of Solicitors, the registration of articles of clerkship, the power of admission and readmission of solicitors, the renewal of their certificates, and other powers. To follow on somewhat similar lines should be our policy.

Public Competitions.

There is a third matter, in relation to architects and the practice of architecture, to which I must refer, and that is public competition. This was a burning question when I was a pupil, is a burning question now, and will, I fear, continue to vex the souls of future architects. I cannot help expressing the opinion, based on years of experience, that, whether looked at from the point of view of the client who desires to obtain a good building, or of the architect who wishes to do himself justice, or of the general public interested in fine architecture, architectural competitions are a failure. In most cases better designs, or designs more suited to special requirements, would result if architect and client were in constant consultation from start to finish than if the former were working from printed instructions only.

In making these remarks I have no wish to decry the work of many of those eminent architects who have earned their reputations by competition. In my own case the commission for the largest building I am responsible for—the Allahabad University for the Government of India—was obtained in competition. But I am bound to say it was practically redesigned, in consultation with the authorities concerned, after the competition had been decided in my favour.

It is said, however, that the competition gives the young man a chance. That may be so; but in architecture, as in every other profession, the man of energy and ability will come to the front, competition or no competition. The work a man has done is as good a criterion of his powers as any fresh design he may produce in

competition, and it becomes simply a cruel waste of time and money to force him continually to compete.

In a merely economic sense the waste of money and energy in this strife is absurd and monstrous. In six competitions I could name the total sum to be expended was £400,000, and there was an aggregate of 320 competitors. Say that each one spent at least £60—which in most instances is less than the actual sum—on the preparation of the plans, the total cost to the architectural profession in competing for these six works would have been £19,000, and that for a nett profit to be divided amongst the six successful architects of about £12,000; assuming that, say, 2 per cent. on the total amount involved would be the cost to the architects of carrying out the works.

There is one other matter I may mention in connection with our professional practice. After negotiations lasting I am afraid to say how many years, at last a definite form of Building Contract has been agreed upon between our Council and the Institute of Builders, and now only needs the approval of our general body at a business meeting. This will save endless difficulties between architects and their clients and contractors in the future.

So much for matters in connection with the professional practice side of architecture. Now let me glance at one or two subjects that may become

Important Factors in the Architecture of the Next Century.

First of all comes the question of the art of architecture as distinguished from mere building. I have already mentioned the debate as to whether in a competition the assessor should regard more the plan or the artistic qualities of the elevation and design. It has been suggested by an eminent Royal Academician that theory should be subservient to practice, and that the elevation is the growth from the plan—the plan first, the elevation after—a principle, he considers, too often neglected. I cannot think that any hard-and-fast principle can be laid down. Architecture is neither planning nor making fine elevations but a combination of the two—and of much more besides. For there is a subtle and not easily defined quality to be found in all good architecture, one not always included in convenience of plan or propriety of design, which the world has agreed to call "Art." Tolstoy says: "Art is a human activity transmitting feelings," and the stronger the "infection" the better the art.

It is our misfortune just now to have urged upon us comparatively trivial and local views of this great subject. We have had this century a Classic revival, which would take a temple portico as a model and plant it on to a domestic palace as fitting rural architecture. However charming this may appear in a distant view of a large landscape, as at Prior Park, at Bath, nothing could be more incongruous with domestic English life or with the severity of the weather in this uncertain climate. This class of work did not "infect" more than a portion of the community predisposed in its favour.

We have had enthusiasm for mediæval art reproducing for modern requirements and worship fourteenth-century churches, complete in all their parts—or introducing ecclesiastical details and construction into modern domestic work, regardless of the difference in times, politics, social life or thoughts, and of the eternal fitness of things. This class of work did not "infect" more than a portion of the community who were educated to appreciate the influence.

It is a matter for serious regret that the East, and especially India, the cradle land of much that we most prize in Europe, is so entirely neglected by our students and professors. Indian architecture has a whole world of instructive examples of grandeur of proportion, picturesque grouping, perfect planning, and beautiful detail, besides an indescribable nameless poetry nowhere else to be found.

I do not suggest that we should copy Oriental architecture, any more than that we should copy Greek or Egyptian work, but that it should be seen and studied as an educational process, as well as for its own sake, and the more especially as Great Britain is now not only a European but an Asiatic power.

As to the next century: among its many problems it seems likely that some revision of our present methods of

Church Planning

may result from the needs of great congregations in our cities and large towns. It is not dissent alone that now commands large crowds and requires expanded tabernacles. The Mother Church also needs grand areas for worship where all can see and hear.

Perhaps in the near future it may be thought advisable to consider the plans of such buildings as the ancient Basilicas, the early Church of Santa Sophia at Constantinople, the Pantheon at Rome, the grand Oriental mosques, and the Church of Santa Maria del Fiore at Florence, with a view to avoid the blocking of the central portions of our large churches or cathedrals, after the mediæval manner so detrimental to congregational worship. We may then possibly find a way to bring the altars forward instead of placing them some hundreds of feet away from the nearest part of the congregation. I can conceive that such a building might be a glory to the century, not necessarily of cold, Classic details, or of Oriental feeling, or of severe Gothic, but nervous with the life and aspirations of modern times and beautiful in proportion and detail and in sculptured lessons.

Also as to our streets. London is being fast rebuilt—certainly in the central part. I would ask on what principle is this rebuilding being done? Is more forethought being expended than in former centuries? Is new London to be allowed to grow up with as little apparent design as a vegetable — controlled by a thousand influences, some hidden, some vainly directed?

A New London.

One cannot but feel that a step in advance has been made by the fact of the London County Council becoming alive to the importance of obtaining thought out schemes and designs for future improvements, though only in part before rebuilding is commenced.

The Strand to Holborn scheme is clearly a movement in the right direction, recognising as it does a general principle, however ill-advised the County Council may have been in the particular method of applying it; for we cannot but regard as unfair their conditions to the architects, and unsatisfactory the nature of an arrangement by which, even when designs may be settled on, there is no guarantee or certainty that they will be carried out.

But if in the rebuilding of London our authorities are wise, at an early date in the new century plans should be prepared showing future lines of building and increased width of thoroughfares; and all future building operations, private or public, should be controlled within these lines, no matter at what cost.

It is worth considering whether shops should have arcades over the footpaths, for the protection of pedestrians from rain, snow, and sun. There are objections on the ground of police supervision and light, but they are by no means insuperable, while undoubtedly the arcade gives the architect his only chance of making a shop front constructively reasonable.

London is unique in the fact that, notwithstanding its wonderful and continuous growth through many centuries, its centre, the City, has always been fixed. In any future reconstruction this centre must be the starting-point; the main arteries for traffic must be arranged to radiate from this centre to the surrounding suburbs.

The Arts and Architecture.

But this is not all. We have heard at our Congress last session of the necessity for collaboration between the architect and sculptor and painter; that is to say, closer union of all the arts is needed in the master art of architecture. Painting *may* have more scope in the architecture of the future, in the way of internal decoration, than during the past century, and there are many signs of this coming to pass.

But sculpture *must* have much to do with the design of the external architecture and rearrangement of new London if it is to be worthy of this great empire. Nothing can be more wasteful and absurd than to finish sculpture placed at a great height above the eye to the extent that the figures on the top of Milan Cathedral are finished. Or, again, I cannot think it happy to place sprawling, meaningless figures on the sides of window pediments, like some I noticed the other day—out of scale, coarse, and so large in comparison with the pediments that they looked scarcely capable of sustaining their weight; or, on the other hand, to place in similar positions rows of nude children, repeated *ad nauseum*, is a costly, meaningless, and futile decoration. Nor can I think yards of repeated terra-cotta ornamentation excellent. But much depends on the manner of the introduction of such embellishments. Sculpture in connection with architecture should not be the first object to attract the eye, but should take its place as part of the general scheme, adding to and not upsetting the general harmony, helping the architecture to tell its tale.

The sculptors of the middle ages, no mean artists, seldom attempted the "insulated" statue. At a later date Donatello produced statues independent in themselves, and not "mere adjuncts" of architecture.

The critics who uphold this doctrine of insulation, as we may call it, doubtless think of the matchless single figures of Greek workmanship, of which copies and a few originals are seen usually in a fragmentary state. But they probably forget that the majority of these works, including even the magnificent Venus of Milo, now standing in solitary grandeur in the Louvre, were originally part of an architectural composition. I cannot help feeling that sculpture divorced from architecture loses greatly in value, character, style and teaching.

There is a great gulf between the portrait statues and busts of Rome, conceived and executed in a style which was then a vital force, set in congenial architectural surroundings, and our forlorn and sparsely sprinkled public effigies.

A building is of itself an historical monument, upon which, more fitly than by any insulated work, the varied aims, achievements, interests, and story of the time can be permanently inscribed. I do not mean to say we should have no independent statues at all, but rather that when we do have them, even in our public places and gardens and on our bridges, they should form part of a properly considered architectonic scheme.

But there must be in our future progress not only collaboration with the arts in sculpture and painting, but also with science in engineering. If architecture neglects scientific construction in other materials than brick and stone, it is not properly fulfilling its mission On the other hand iron and steel could certainly be used without the meagreness or aridity of effect to which we are unhappily so much accustomed. It certainly is not impossible to make a beautiful iron bridge or roof.

I have now, gentlemen of the Institute, ventured to direct your attention to a few of the subjects that appear to me to call for our consideration, and in some cases for our united action, if there is to be material progress in our art during the next century.

But one cannot expect that a large body will in all these matters see eye to eye with one who, though occupying this chair, is but an individual. I have, however, at least expressed some of my most earnest personal convictions, and as such I commend them to your consideration.

A vote of thanks to the President was proposed by Mr. Alfred Waterhouse and seconded by Mr. Bodley, the latter referring to the proposal to alter the steps of St. Martin's Church, which he strongly deprecated. Mr. E. R. Robson and F. C. Penrose agreed that the scheme was a most ill-judged one, and they sincerely hoped that it would not be carried out. The meeting then terminated.

The Shrine of Shakespeare.—On the moment of going to press we learn that Sir Theodore Martin has decided not to proceed with his proposal to erect an alto-relievo of his late wife in the chancel of Holy Trinity Church, Stratford-on-Avon (see page 266).

A COUNTRY HOUSE ELECTRIC-LIGHT INSTALLATION.

By K. S. MACKINLAY.

(*Concluded from page* 238, No. CCXCVIII.)

IT would be useless to go into the comparative advantages and disadvantages of wood casing, steel conduit and other methods of wiring here, as making such a comparison would necessitate the consideration of large buildings such as town halls, factories, &c., which would be outside the subject of this article. Apart, however, from making the comparison from an electrical point of view, in private houses wood casing is preferable to barrel or conduit for one or two reasons. For instance, it is desirable that the circuit mains should be easily accessible, so that alterations can be made or extra lights added at any time. For this purpose wood casing can be used on the surface of a wall, where barrel is, of course, out of the question, and chasing the latter into walls necessitates redecoration; again, casing can sometimes be advantageously used to feed wall plugs, treated perhaps as a skirting or dado rail. Where the house is to be redecorated throughout in any case, a system of metal insulation is undoubtedly the better and safer method to employ, though rather more expense is incurred.

There is a system of wiring known as the "concentric" system, in which both the conductors are made up in a special manner to form a single cable, but as this entails the use of special fittings, switches, &c., it does not lend itself very well to use in private houses.

The Institution of Electrical Engineers have been trying to bring about the universal recognition of one set of wiring rules, which should be made as comprehensive as possible, to suit all the several conditions of different installations. The Institution already have a set of rules, which are probably the best that have been drawn up, and if architects would always specify the "Institution Rules" for the wiring of their buildings it would help to promote a much-to-be-desired object. An important thing in the wiring of a house is the

Planning of the Circuits.

It is most general to put all the lights which are nearest to each other, or which come in the most direct run of the wiring, on one circuit (of course, until the number of lights desired on each circuit has been reached). This is done with the object of economising the materials and labour; but at a slightly greater cost more satisfaction can be obtained in the way of convenience, or rather preventing inconvenience, by introducing two distinct circuits into every room; if this is done, in the event of a circuit-fuse melting, no one room can be put into complete darkness. In private houses where balls, dinners, &c., are at all frequent it is clear that an arrangement of the circuits in this way is most advantageous, and worth a little extra expense.

The plans of the house for which the electrical arrangements given in the previous article were designed are shown here, with the positions of the lights indicated in each room. The list of circuits, which are planned on the lines mentioned above, is given at the end of this article.

The mains from the engine-house are brought into the house in the basement, where a main switch, main cut-outs, and the distributing boards are fixed. It is desirable to have a meter somewhere in circuit, so that a check may be kept on the current consumed. This may be fixed in the engine-house or in the house itself; perhaps the former is the better place, as there the current used by the lights in the engine-house can be registered as well as the rest. At the fuse-boards the current is split up into ten circuits, nine of 5 ampères and one of 2½. The main casing runs up through the wine cellar and the ground- and first-floor lavatories.

The arrangement of the switches for the various lights should always be considered in detail before an installation is commenced at all, for one switch well or badly placed means that the convenience or inconvenience of the position is realised not once, but time after time, most likely for years. Many persons about to install will leave the positions of the lights and switches entirely to the contractor, who, in nine cases out of ten, will simply put in as many as he thinks his client will agree to in certain positions which have by repetition become "usual," but are not the most reasonable or by any means the best; and when they move into the house they find that the positions do not in the least fit in with the arrangement of the furniture, and the whole thing is most unsatisfactory. Others go over the house with the contractor and decide upon the positions of the various fittings, &c., without previously having given the subject the least consideration: they will ask what the contractor advises, whenever they are in the slightest doubt about anything, and in consequence they get very nearly the same result as those who leave the whole thing to the contractor. For example, instead of seeing other installations, trying switches fixed at different heights and in different places, and deciding for themselves on the most convenient positions, people will wait until the time comes and then ask the contractor what the best height is; he, in his turn, instead of mentioning a height and stating what he considers is the best, will probably say: "Some people prefer one height and some another, we *generally* put them such and such a height," which does not answer the question at all; however, a decision will most likely be made in favour of the height named, which will prove perhaps satisfactory, perhaps unsatisfactory.

Switches are fixed by most contractors at a height of about 4ft. 9in. or 4ft. 10in. from the floor, presumably for some reason, if no special height is specified. How this custom originated it is difficult to imagine, as it is most inconvenient to turn a switch on and off when fixed at this height, and, say, inside a door; and certainly the ordinary type of switch, either tumbler or otherwise, can claim no artistic merit. There are, of course, switches with covers of hammered copper, silver, and so on, which are most ornamental, and others again with professedly "ornamental" covers, which are simply tawdry. The best and most convenient height for a switch is undoubtedly on a level with the door handle; it may often be fixed outside the room with advantage, in which position it can be switched on and off without attracting attention. In bedrooms one might, perhaps, be liable to leave lights burning if the switches were outside, but this is quite a matter of preference.

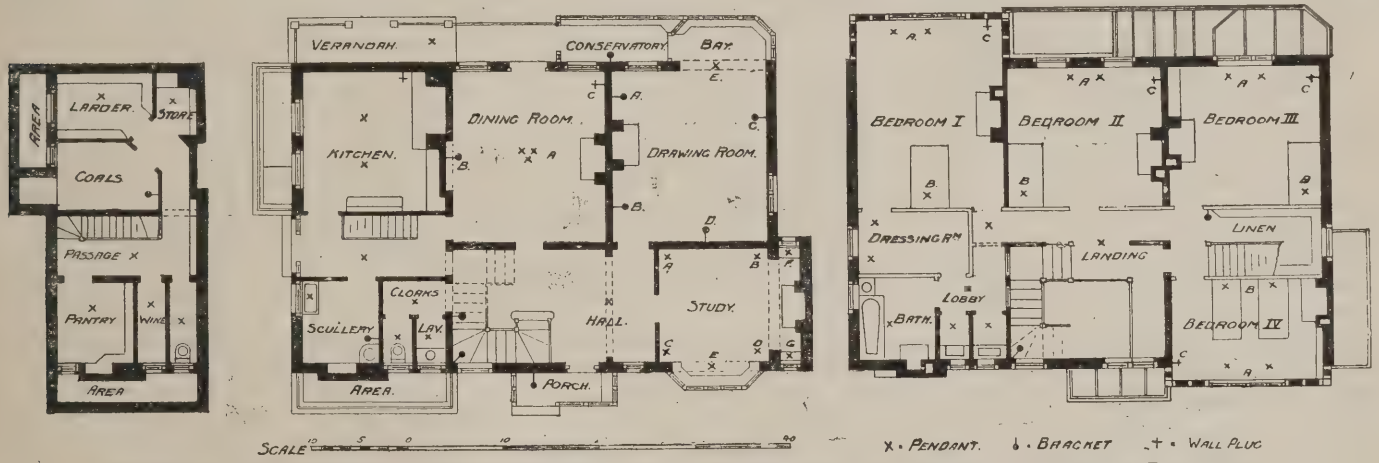
Lights on staircases and in passages can be controlled from two distinct points by the use of what are known as "two-way" switches. The judicious employment of these entirely does away with the necessity of leaving lights always burning on landing, &c., which tends more than ever to make the cost of electric lighting compare favourably with that of lighting by gas. In any room having two separate doors the lights, or, at all events, some of the lights, should be arranged to switch on and off at either door. A much-discussed question is that of the best scheme for

Lighting the Dining-room.

The most usual is a three-light counterweight pendant hanging about two or three feet above the table; this fitting has a shade or else a silk flounce to shade the diners from the light. This style of fitting may have its advantages, and, if a good colour is chosen for the shade or flounce, it certainly shows off the glass and silver to great advantage, but, on the other hand, a good design is so rarely met with, and the shades are, as a rule, so very ugly; further, unless there are other lights burning, the rest of the room is very dark and, in contrast to the brilliantly-lighted table, looks cold and cheerless.

Another method is to employ imitation candles or standard lamps. The most artistic effect can probably be obtained in this way, but there is the disadvantage either of making holes in the table-cloth or the table, or else of a flexible wire. Another scheme is that of using the reflected light given from hidden lamps; this effect is the nearest approach to daylight of any method of utilising incandescent electric lamps, but it is also the most expensive, as much more current must be consumed to give enough light, which, when reflected, is sufficiently intense.

The last way is to use no special lights for the table, but simply to light the room as a room, with brackets, or pendants, or a centre fitting (other than the counterweight pendant with a shade). There is nothing to be said against treating a dining-room in this way so long as good fittings are chosen. Brackets designed as old lamps are sometimes very artistic, and there is no reason why a dining-room should not be lighted entirely by these. In my plan I have indicated a three-light fitting in the dining-room, which is intended to be one of the type in which the lights are quite close up to the ceiling, with reflectors behind them designed as leaves; these fittings are made in copper, iron, and brass and are finished in a variety of ways, the whole effect generally being most decorative and artistic, and not very expensive. The light coming from so high a point is very diffused and casts hardly any shadow, and the reflection from the polished metal increases the light by about 20 per cent. What are known as "electroliers"



BASEMENT, GROUND-FLOOR AND FIRST-FLOOR PLANS OF HOUSE, SHOWING DISPOSITION OF LIGHTS AND FITTINGS.

are generally unsatisfactory in that, like the majority of brackets, although some are well designed, they are anything but decorative, and the lights, which are rarely shaded, are too much on a level with the eye.

Wherever fittings are designed on the same lines as gas-fittings, i.e., with a tube running from the base to the end, it is impossible to avoid a look of rigidity and ungainliness except in very large fittings. There is, however, nothing inartistic in silk-covered wire, and the idea of introducing a tube, which is so detrimental to the appearance of a fitting, to hide this is to me quite inexplicable; and yet this is so often done. It is surprising how few firms there are who have really good fittings, and how some of those who sell but do not manufacture them, who, therefore, have the pick of the manufacturing houses, have such comparatively poor show-rooms. To pass on to

The Drawing-room.

It is usual to light this room by brackets, as ladies prefer a side light to a top light; but if the lights are not shaded they should be kept as high as possible, as a bare light anywhere near the level of the eye is unpleasant and injurious to the eyesight. One frequently hears people say that they will not have electric light installed because it "is so bad for the eyes"; if anyone's eyes are affected, it is either for the above reason, or else the trouble is caused by using too much candle-power, or having clear lamps exposed to the eye. It seems a pity that electric lighting in general should be blamed for an ill caused by its erroneous application.

In connection with the erroneous application of the electric light, picture lighting suggests itself. In the discussion following a paper read by a prominent electrical engineer before the Royal Institute of British Architects, a member of the Institute was giving his opinion against the lighting-up of pictures with special lights, but in replying the reader of the paper said "that this really was not the verdict of well-known artists." At all events, the design of some of the reflectors at present on the market would not tend to induce a further adoption of picture lighting; but as regards the principle itself some pictures can be lit up by an artificial light to great advantage; to produce an artistic effect, however, a certain knowledge, not only of electric lighting, but of painting is necessary. For instance, to light a number of pictures by putting a reflector or two under each, treating all in the same way, would completely ruin whatever artistic value the picture itself might possess under normal conditions, unless by a mere coincidence the pictures all required the same treatment.

The library requires plenty of light so that books can be easily seen and identified when they are in the bookcase. I have indicated four pendants or ceiling lights on the plan; fittings, with cut-glass, cone-shaped globes, close up to the ceiling, are a good type for single lights. It may be argued that putting these lights so close to the walls means a loss of light, but it must be remembered that book-cases are most likely placed, if not fitted, round the room, and thus there is plenty of light on the books. The

Indiscriminate Use of Wall-Plugs

should be guarded against, and where they are used the positions should be chosen with care, on account of the flexible wire stretching about and causing accidents; and in the event of a writing-table being placed in a bay window, or in any similar case, a pendant over the table, not too high up, should be preferred to a table lamp. If the selection of the positions of the lights be left to the contractor, he will almost invariably put a wall-plug on either side of the fireplace in every reception room, or, if he only puts one, he will put it on whichever side he fancies at the time.

It is well to put one wall-plug in every reception room and bedroom, with the idea that a standard will be required for a writing-table in each room; the position is determined by the position of the window; it is quite safe to take the writing-table as being placed in such a position that in the daytime the light comes from the left; the wall-plug must therefore be placed in such a way that when the standard is on the left-hand side of the table the distance to the wall-plug is as short as possible.

Standards are used a great deal at the bedside—to me another curious idea. The position, when trying to read in bed with a standard by the side of the bed, cannot possibly be comfortable (and again, there is the flexible wire), and if there are any bed curtains a bracket is impracticable; surely, then, the most suitable fitting for the bed is a counterweight pendant fixed, of course, as far back as possible. It is strange these fittings are not more used in this way, seeing that they can be fixed to bring the light in the best possible position for reading, can be pushed up out of the way in the day-time, and do not interfere with bed curtains, unless there is a canopy over the top, and even then are more possible than almost any other fitting. I say "almost" because there is on the market a special standard which is made to clutch on to the bedstead itself, which is a very serviceable fitting. For the dressing-table two counterweight pendants are perhaps the best thing; imitation candles may be preferred in some cases, and a standard on either side is possible. I have not marked the positions of the switches on the plans, but they may be taken to be in conformance with the observations I have made on that subject.

List of Circuits.

			See Plan.
I.	Drawing-room	3	(D, C, and E).
	Study	3	(A, B, and F).
	Bedroom iii	1	(C).
II.	Drawing-room	2	(A and B).
	Study	4	(C, E, D, and G).
	Bedroom iv	1	(C).
III.	Dining-room	3	(A).
	Bedroom ii	1	(C).
	Hall	2	
	Conservatory	1	
IV.	Dining-room	1	(B).
	Kitchen	1	
	Verandah	1	
	Bedroom i	1	(C).
	Passage	1	
	Scullery	1	
	Lavatory	1	(2 of 8 c.p. each).
V.	Kitchen	1	
	Verandah	1	
	Scullery	1	
	Cloaks / Porch	1	(2 of 8 c.p. each).
	Half Landing	1	(from ground floor).
	Bedroom iv.	2	(B).
VI.	Bedroom i.	2	(A).
	Lobby	1	
	Bedroom ii.	2	(A).
	Landing	1	
	Bedroom iii.	1	(B).
VII.	Dressing-room	2	
	Bedroom i.	1	(B).
	Bath-room	1	
	W.C.	1	
	Sink	1	
	Corridor	1	(end of).
VIII.	Bedroom iii.	2	(A).
	Linen cupboard	1	
	Bedroom ii.	1	(B).
	Bedroom iv.	2	(A).
	Half landing	1	(from top floor).
IX.	(Basement).		
	Kitchen	1	
	Larder	1	
	Coal cellar	1	
	Store	1	
	Lobby	1	
	W.C.	1	
	Wine Cellar	1	
X.	Servants' bedroom (on second floor)	1	
	Dining-room	1	(C).
	Pantry	1	
	Passage (in basement)	1	

Messrs. E. H. Shorland and Brother, of Manchester, have recently supplied some of their patent Manchester grates to the New Infectious Hospital at Gloucester.

New Scientific Laboratories at King's College have been erected. The whole of the South wing of the college has been raised by an additional storey, which includes the new geological, comparative anatomy, and botanical departments, while the second storey of the north wing, comprising the physiological and bacteriological departments, has been largely reconstructed, as has also the fine room on the first floor now allotted to the architectural department. In all the new rooms electric light, gas and water are laid on, and special care has been taken to obtain in every case a natural light as good as possible. The cost of the extension has been nearly £20,000.

Enquiries Answered.

The services of a large staff of experts, including all those engaged on "Specification," are at the disposal of readers who require information on architectural, constructional, or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Theatre of Marcellus, Rome.

GRANGE-OVER-SANDS. — STUDENT writes: "In Phené Spiers' 'Orders' the Doric from the theatre of Marcellus, Rome, is given, but incompletely for my purpose—to make a drawing of it similar to sketch (not reproduced). Could you please give me the height from the base of the column to the top of the impost and a brief description of this theatre? I have Taylor and Trevy's 'Rome,' but find no mention of this building. In what book or books can further particulars be found?"

The height from base of columns to top of impost is 17ft. Neither the columns nor the imposts have moulded bases, and there is no archivolt; this refers to the lower Tuscan arcade. The second storey is Ionic, and there was an attic, with Corinthian columns and rectangular windows. It is all worked in travertin, once covered with the hard white stucco of pounded marble. The details are much more delicate and refined than those of the similar arcades in the Colosseum. Little of the Scena now remains above the ground, but much of the arcading of the curved exterior is still standing, though half buried in the ground. Plans, elevations, and sections will be found in Canina's great work, *Edifizj di Roma Antica*. Begun by Julius Cæsar, the theatre was finished by Augustus, and dedicated 13 B.C. under the name of his son-in-law, Marcellus. In the Middle Ages it was made into a fortified palace, and here Pope Urban II. found shelter and died. The ruins now support the Orsini Palace. J. M.

Cubing Buildings.

LONDON, S.E.—F. P. writes: "Referring to the cubing of a building for the purpose of roughly estimating its cost, it does not seem difficult to calculate the cube contents of, say, a house; but I am told just enough to gather that there are different modes of allowing a capacity to foundations, and perhaps roofs, &c. Kindly give me some information on this subject."

Leaning's "Quantities," which is the standard work, says: "The most usual practice is to multiply the outside length of the building by the breadth, and the result by the height from the bottom of the footings to half-way up the roof. These measurements, to be of any value, must always be done in the same manner, and must comprise the whole contents, including the walls. Disregard chimney-stacks, buttresses, and dormers, unless in unusual number. A different price per foot may sometimes be adopted for the various parts, but not often. It is more convenient to adopt one uniform rate. For boundary walls and such works an approximate estimate should be made and added to the price arrived at by cubing." There are other methods, but this is the best. The rate for a private residence averages 7d. per cubic foot. HENRY ADAMS.

Design for Bridge.

CLITHEROE.—BOWLING writes: "We send a plan and section of a bridge over a brook crossing the highway. The top of the bridge is to be built of steel girders and concrete. The girders are 10in. by 6in., 44lbs. per foot, and the safe distributed load for span is 16·4 tons per girder. The concrete is 15in. thick, composed of three parts of stone broken to pass a 2in. gauge, two parts of clear washed river sand, and one part of best Portland cement. Would you please state the safe moving load, and the dead load, which this bridge will carry. Do you think it necessary to put iron curved plates between the girders to lay on the bottom flange, and if so will it weaken the girders to bolt them to the bottom flange, say, 2ft. apart?

Can you give a formula for finding the bearing strain of concrete?"

The safe load on a 10 by 6 by 45lb. rolled steel girder 18ft. span is 12.8 tons. With an average thickness of concrete 15in. and roadway material 15in., and girders at 3ft. centres, the dead load on each will be 7·2 tons, leaving 5·6 tons for live load, or 2cwt. per foot super. With this limit it will be necessary to put up a notice forbidding loads to pass over which are greater than five tons, or one ton per wheel. Iron curved plates will not be necessary below the concrete. It would certainly weaken the girders considerably to bolt such plates to the bottom flange. The following formula gives the supporting power of concrete in flat slabs of uniform thickness laid between walls or girders:—w = cwts. safe load per ft. sup. at end of three months; t = thickness in inches; L = span in feet—$w = 4\frac{t^2}{L^2}$. Half this load may be carried at the end of one month, but the centres must not be struck, at the earliest, till a fortnight after laying.

HENRY ADAMS.

Advantages for Study in London and the Provinces.

OSWESTRY.—O. R. writes: "Kindly inform me whether there are any special advantages for study to be gained by being in London in preference to any of the other large cities?"

Three are no special advantages to be obtained in London beyond, of course, the use of the British Museum and the Architectural Association. The Royal Institute of British Architects has a very fine collection of architectural books for the use of its members and students, but most of these works would probably be found upon the shelves of the provincial sccieties or technical institutions. In most large cities, courses of lectures and classes in building construction, &c., are available, and a student in Manchester, Birmingham, or any other large town would have as good facilities for study at his command as his London brother.

R. W. C.

Builders' Book-keeping.

HULL.—B. B. writes: "Could you give me any information about a good system of builders' book-keeping?"

We have several times stated in reply to queries that Saker's "Builder's Book-keeping: a Perfected System" is the book we recommend. It is published at 95-97 Finsbury Pavement, E.C., price 3s. 6d.

Gauging Portland Cement.

LONDON, N.—J. L. writes: "I am desirous of doing some cement dressing. Will you kindly inform me what I should mix with the Portland cement to make it bind well. I have tried mixing with water only, but the cement rubs off in a powder as soon as it is dry."

Obviously the cement used was of inferior quality or improperly gauged. Water is the natural liquid for gauging Portland cement, but it should be clean and free from foreign matter. For casting cement dressings the cement should be mixed with an aggregate, in the proportion of three to five of the latter to one of the former. The aggregate may consist of broken stone, brick, granite, slag, gravel, or coke-breeze. The size of the aggregate is regulated (to some extent) by the size and purpose of the cast, and may range from ¼in. to 2in. The aggregate should also be angular, and of mixed sizes, so as to bond better together. The addition of a small percentage of sand tends to form a closely-gra ned surface.

W. MILLAR.

Ancient Lights.

BANGOR, N. WALES.—BANGOR writes: "Can I erect a back wing as shown on the enclosed sketch (not reproduced) without injuring my neighbour's ancient light? My intention is to erect a new wing abutting against the fence wall, keeping the eave considerably lower, thereby allowing the light to fall at an angle of 45deg. to my neighbour's window."

Draw a straight line from the sill of your neighbour's window to touch the highest point of the existing obstruction to his light, which in this case is the eaves of the existing building. Anything extending above this line would be an obstruction to your neighbour's light, and it appears that part of the proposed building would so extend. The obstruction would not, perhaps be a very serious one, and you might come to some arrangement with your neighbour, e.g., to face the new wall with white glazed bricks; otherwise he might procure an injunction to restrain you from building so as to obstruct his light. There is no special virtue in the angle of 45deg.; the question of obstruction is a question of fact in each case.

G. H. B.

How to Use the Centrolinead.

NORTHAMPTON.—STUDENT writes: "I should be glad to know how to use the ordinary centrolinead. Is an imperial-size drawing-board large enough for a perspective view of a building 120ft. long and 45ft. high, drawn to ¼in. scale; i.e., can the centrolinead be fixed on the board for that purpose, or is a larger board required?"

The centrolinead used in making perspective drawings merely furnishes the means of drawing various lines to the same vanishing point; it does not find the vanishing point or the other points from which the lines are to be drawn. A perspective drawing looks best when the object is contained within an angle of vision of 30 deg., or in other words the point of sight should be at a distance of not less than twice the greatest dimension of the building as seen from the direction selected. The whole height of perspective view should not be more than two-thirds the height of the picture. Therefore, on a sheet 30in. by 22in., with the longest dimension horizontal, the greatest height of building, allowing for border line, would be about 12in., which at ¼in. to the foot would take in 48ft.; so that it would appear that the proposed building could be drawn to this scale on an imperial sheet, as shown at Fig. 1. The following description of the use of the centrolinead by H. B. Bryan, Esq., is published in the instrument catalogue of Messrs. J. and W. E. Archbutt, 201 Westminster Bridge Road, London:—"The centrolinead, invented by Peter Nicholson, is a most useful instrument for perspective drawing, as by its means the vanishing point, often inaccessible on a drawing board, is easily determined. The centrolinead may be set to draw lines to a vanishing point, at any distance from the point of sight, by the following method:—The horizontal line (A B in Fig 2) being drawn, the point of sight marked as desired, near the edge of the board, on the same side as the distant vanishing point, draw S′ S″ perpendicular to A B. From the point of intersection, C, set off 8in. above and below to S′ S″. Fix the studs at these points, so that the *edge* of the stud coincides with point, which must then be between the stud and the point of sight. The distance from the point of sight to vanishing point being known, the distance from C to vanishing point is the difference. Then divide 64 by the distance from C to vanishing point. The result, which is C D, must be set off by a scale divided to tenths of an inch. Draw lines from S′ S″ to D. Lay the short arms of the centrolinead *exactly* along the lines D S′, D S″, and the long arm along the line A B. Screw up tightly. Example:—Let the distance from C to vanishing point be 123in. $\frac{64}{123} = 52$ = the distance from C to vanishing point. Draw lines from studs to D. Lay the short arms along these lines. Adjust long arm to horizontal line and clamp. The constant 64 is the square of 8, the distance of the studs from the horizontal line. Any distance, as 6, 7, 9 or 10, may be used if more convenient, when its square becomes the constant to be used."

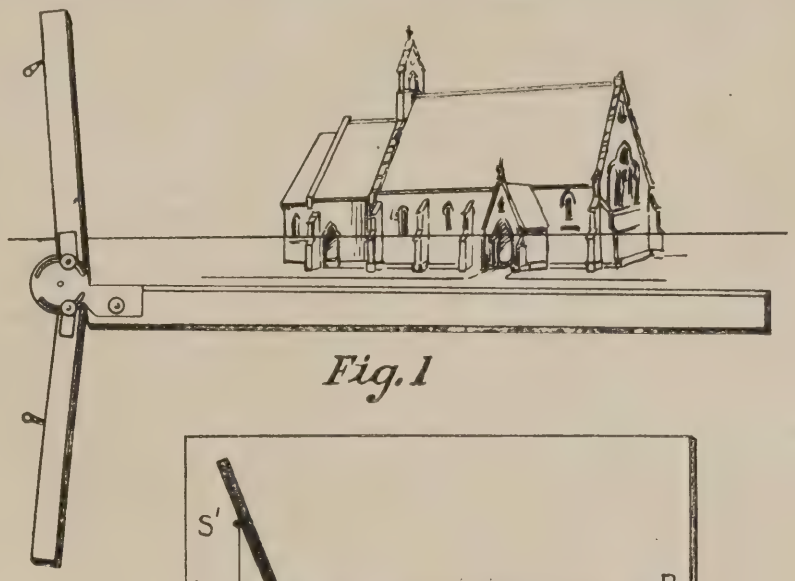


Fig. 1

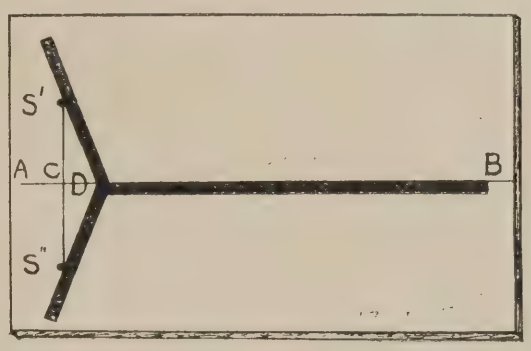


Fig. 2

METHOD OF USING THE CENTROLINEAD.

HENRY ADAMS.

Iron Roof Truss.

ST. LEONARD'S-ON-SEA.—E. D. B. writes: "I am studying a wrought-iron roof truss for 45ft. span given in Mr. Adams's "Practical Designing of Ironwork." Could you say how the connection of short strut and tie-rods is formed? Is the larger tie-rod welded to the smaller one, or have all the tie-rods separate eyes, the whole secured by a bolt? Also, how should the diameters of the bolts be calculated?"

The connection of short strut and tie-rods is shown in Fig. 177, Plate 14, of "The Practical Designing of Structural Ironwork" (Spon., 8s. 6d.). The two portions of the main tie-rod are welded together at the eye, upon one side of which the inner tie comes, and upon the other side the strut, the whole being connected by a bolt and nut passing through them.

When a tie is attached singly by a bolt at right angles, the diameter of bolt should not be less than that of the tie, but where two rods in the same line are welded together they put no stress on the bolt, and the latter is then made to suit the single tie. For this joint in question a $\frac{7}{8}$in. bolt is sufficient. The diameter of bolt may be calculated for the shear stress, according to its sectional area, allowing 4 tons per square inch single shear or 6 tons double shear. HENRY ADAMS.

Stability of Piers.

SOUTH SHIELDS.—A. B. C. writes: "I should be glad to have the opinion of one of your experts as to the stability of the arrangement shown on the accompanying drawing. Is the abutment sufficient to withstand the thrust of the arch?"

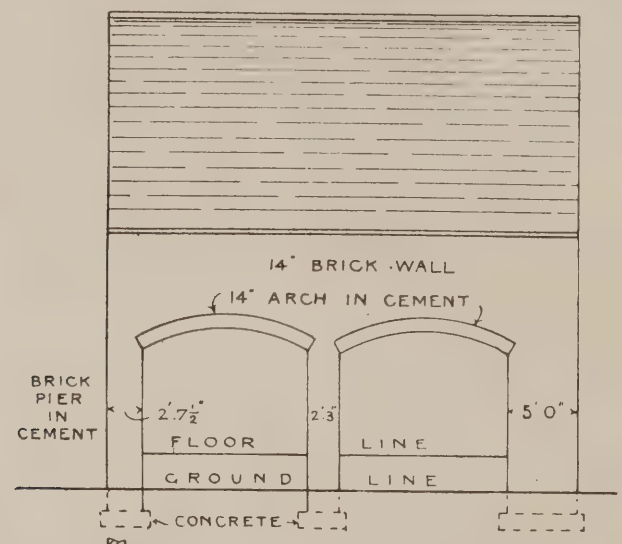


Fig. 1

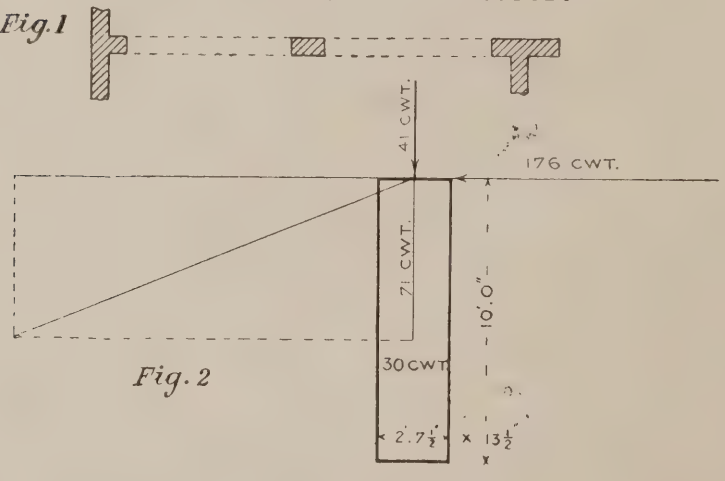


Fig. 2

STABILITY OF PIERS.

The load on the arch, Fig. 1, is not given nor the means to compute it, but assuming it to be about 16cwt. per foot run, and the arch 11ft. 6in. span with a rise of 1ft. 6in., the thrust will be $\frac{wl^2}{8r} = \frac{16 \times 11{\cdot}5^2}{8 \times 1{\cdot}5} = 176$cwt. Assuming that the thrust is to be taken by the brickwork at the pier only, then we have weight of pier, say 30cwt., and the diagram of thrust as shown in Fig. 2, showing that the thrust is certain to push over the pier upon the ordinary assumptions. Unless an outside buttress can be applied, the pier should be widened to the same as the other side, namely, 5ft., the openings reduced in width, the middle pier increased to 2ft. 7½in., and the rise of arches increased to 2ft. The above information will enable calculation to be made for any altered dimensions that may be decided upon. HENRY ADAMS.

Thrust of Arch and Moment of Inertia.

BURTON-ON-TRENT.—(1) "Why should the moments shown in the enclosed sketch (not reproduced) be taken near the middle of the skewback instead of at the bottom corner of the soffit? (2) In finding the area of a wrought-iron section, so that the moment about the neutral axis equals effective area plus the total arm, how would you allow for bolt holes as shown on the sketch sent herewith (not reproduced)? (3) Where can I obtain a syllabus of the geometrical drawing required for the preliminary examination of the Institution of Civil Engineers?"

(1) When the line of thrust is fully worked out in a properly designed arch it is found usually to pass through the skewbacks at one-third of their length from the springing, and through the crown of arch at two-thirds the depth from soffit. In dealing with the moments on a semi-arch, as in sketch, these points are taken because the line of thrust represents the theoretical arch contained within the clothing of practical masonry. (2) The bolt holes in the flanges of a rolled joist or other section virtually reduce the width of flange and are allowed for accordingly in the calculation or graphic diagram. In the web they are of so little consequence that they are usually not considered; if they were it would be merely a question of $-bh^3$ as part of the general formula. (5) Application should be made to the secretary of the Institution at 25 Great George Street, S.W., for copy of regulations and last examination paper.

HENRY ADAMS.

New Council Offices and a New Church for Kilmalcolm.—The Parish Council of Kilmalcolm have decided to erect new Council offices. Plans have been prepared and the contractors fixed, and when the formal approval of the Local Government Board is obtained work will be proceeded with immediately. The cost is estimated at about £1,200. The members of the United Presbyterian Church have decided to erect a new church on a piece of vacant ground near by. The church will cost about £3,000.

Professional Practice.

Edinburgh.—The Diamond Jubilee new pavilion at the Edinburgh Royal Infirmary, which was recently opened by the Princess Henry of Battenberg, is to be specially devoted to the treatment of diseases peculiar to women. About half the cost of it will be defrayed from the Diamond Jubilee Fund raised by the citizens of Edinburgh in 1897. The building, furnishing, and equipment of the pavilion will cost about £40,000. The new pavilion stands on the ground immediately to the west of the medical pavilions purchased by the managers from the directors of the Sick Children's Hospital. Its length is 220ft. by 65ft. in width. Designed by Messrs. Sidney Mitchell and Wilson, architects, its style is a free treatment of the Scottish Baronial, dictated more or less by the character of the adjoining pavilions. It is, however, larger in size than these, and this fact and the special purpose which it is intended to serve have led to certain changes in its outward appearance as compared with the main buildings. The new pavilion is built of red Corsehill stone, the others alongside of it being in grey sandstone. It is five storeys high, consisting of basement, three floors of wards, and attics. At the south end the corner turrets are octagonal, being for baths and ward lavatories. They rise to a height of 95ft. Between them are open balconies opening from each ward. At the north-east angle of the pavilion there is a large square tower rising to a height of 100ft., in which has been constructed a spacious staircase, as, also, in the upper stages, electric fans for the ventilation of the building. On the basement floor a new bathing establishment is placed, containing a Turkish bath with three hot rooms graduated in temperature, a douche room, vapour, needle, sulphur, electric and other medicated baths. There is a cooling room, 70ft. long by 10ft. in width, and provision has been made for dressing-rooms, lavatories and accommodation for attendants. All this portion of the building is lined and floored with tiles of various patterns and colours. Between the bathing establishment and the ward above there is a strong double concrete floor with intermediate ventilated air space, so that the heat from the baths will not penetrate to the wards overhead. The new pavilion is connected with the main buildings of the infirmary by a covered corridor on the ground floor, and an open gallery on the first floor. The wards are in communication with each other by means of a staircase and a passenger lift, and separate lifts for food and coals. The staircase is completely cut off from the wards, at the different levels, by means of a ventilated corridor with glass doors. The ward on the ground floor above the basement is intended to be used as an ordinary spare medical ward. Its chief ward, 102ft. by 28ft., is capable of containing 22 beds with a window between each of them. On the northern end, which is divided into two halves by a corridor 10ft. wide, are a lecture room, three wards of two beds each for special cases, a convalescent room, 35ft. by 20ft., to be used also as a dining room, a nurses' room, ward kitchen, linen stores, and ward baths, lavatories, &c. The wards on the first and second floors are those specially designed for the treatment of the diseases of women. At the north end is a well-lighted corridor, on the right of which are the operating room, two special wards of two beds each, one of which will be used as an anæsthetic room, a demonstration or lecture room, a room for outdoor patients, and a physicians' room. On the left of the corridor are the ward kitchen, bath-room, lavatories, an isolation ward with one bed, nurses' bedroom and parlour, linen stores, &c. The main wards like that below them will be 102ft. by 28ft., and each contain 22 beds. The operating rooms have been tiled throughout, so as to make them as antiseptic as possible. The wards of the pavilion are not strapped and lathed; the plaster is laid on a brick lining separated from the outer wall by an air space. The floors are of iron and concrete, and the floor boards are nailed to a layer of asphalt laid on concrete; the building is thus practically fireproof. All corners throughout the building are rounded,

there are no cornices, and the mouldings on the doors and windows are of the simplest kind, in order to leave no place for the lodgment of dust. The attic floor contains 14 single rooms for nurses, and 7 rooms for servants, besides lavatory, bath, and box-room accommodation. The main lifts go to the attic floor. For illumination the electric light will be used. For heating, steam pipes and radiators will be employed. In each ward there will be an open fireplace to give a comfortable appearance. The contractor was Mr. Colin M'Andrew. At present there is being erected between this large pavilion and the laundry on the north two buildings of smaller size—one for the treatment of diseases of the ear and throat, and the other for diseases of the eye. The infirmary kitchen accommodation has also quite recently been overhauled and enlarged at a cost of about £6,000.

Fulham, S.W.—The foundation-stone of the new baths and washhouses in Melmoth Place was laid last week. The site, which was purchased in January of last year for the sum of £12,250 has an area of 51,978ft., the whole of which (with the exception of 40ft. on either side of the main front) will be covered by the buildings. The main entrances are situated in the central block in Melmoth Place, which has a frontage of 42ft., and separate entrances are provided for men and women. There are to be three swimming-baths, the men's first-class bath being 100ft. long and 30ft. wide; the second-class bath 140ft. by 33ft.; and the women's bath 60ft. by 20ft. Accommodation has been provided in the plans for eighty-four private baths, twenty-five of these being intended for the use of women, while in both the men's and women's departments first and second-class baths will be procurable. In view of the ever-increasing popularity of swimming entertainments, special arrangements will be made for large gatherings. Galleries running round both the men's baths will provide ample space for spectators, and two club-rooms attached to the first-class baths are designed to give cloak-room and dressing-room accommodation for competitors and performers. The public washhouse, to which entrance is obtained in Hartismere Road, contains stalls for sixty-six washers and a corresponding number of drying horses, and four hydro-extractors. The new buildings are being erected from the designs and under the superintendence of Mr. H. Dighton Pearson, A.R.I.B.A., of Chancery Lane.

Hunslet.—The new workhouse being erected for the Hunslet Union, off Wood Lane, Rothwell Haigh, is to be built on the pavilion system, and will, it is expected, be ready for occupation in December, 1902. Accommodation will be provided for 412 persons. An interesting feature, is the arrangement whereby the respectable married couples can spend their declining years together. For this purpose four cottages are in the first instance to be constructed. They will be entirely separate from the main building, and being close to the roadway, will have an independent entrance, so that the fortunate tenants need not, unless they choose, associate with the ordinary inmates of the institution. It was also proposed at one time to accommodate 28 imbeciles, epileptics and lunatics detained for short periods in special wards, but the Local Government Board, refused sanction to the scheme so far on the ground that imbeciles and epileptics should be provided for in separate institutions. The plans have accordingly been altered so as to include only short period lunatics awaiting the magistrate's order for detention in a regularly-constituted asylum, and these will be accommodated in a separate block capable of admitting three of each sex. In the infant buildings, which are to include the receiving wards, the tramp cells and the associated wards, 51 persons will be provided for. Fourteen cells will serve to accommodate the male tramps, and if more than this number apply for admission they will be placed in the associated wards, which are also to be the temporary home of the female tramps. Provision will be made in the main building for 94 males and 100 females, including the able-bodied, the aged, women with infants and the infirm not needing medica treatment. In the infirmary there is to be accommodation for 73 males and 78 females, and the plans also comprise an isolation hospital where cases will receive attention until such time as they can be removed to the general infectious hospital. The buildings will be lighted throughout by electricity generated by private plant. The estimated cost, inclusive of the site, is £65,000. Mr. J. H. Morton, of South Shields, who designed the new workhouses at Doncaster, Burton-on-Trent and Grantham, is the architect, and the contractor is Messrs. Harold Arnold and Son, Doncaster.

Leicester.—The Convalescent Home on the Charnwood Forest has just had a new convalescent home for children added. The site consists of two acres. The Home is a branch of the Charnwood Forest Convalescent Homes for the County of Leicester. The new Home is separated from the main building by a lobby, situated on the Brand Hill, at the upper corner of Hunger Hill Wood. Part of the grounds are left in their natural wild state, and shady walks and lawns, playgrounds, and kitchen garden made. The building is arranged for 26 children, and contains two large day-rooms, namely, a dining-room and a play-room for the children, sitting-rooms for the matron and nurses. Two staircases are provided in case of fire, and there are extensive kitchen offices, laundry, and stabling. The children's bedrooms are all on the first floor, and consist of four wards, having sleeping accommodation for 26 children. One ward is arranged as an isolation ward, with nurse's bedroom attached, so that in the event of any infectious illness breaking out, it can be completely isolated and provisioned from the kitchen separately. Cross ventilation is provided in all the wards, and the lavatories are shut off from the rest of the building on each floor by a passage with cross ventilation. The whole building is heated by hot water—both corridors, day and sleeping rooms—as well as by open fire-places, all rooms being also ventilated by means of inlet and outlet ventilators, so that fresh air is admitted and the vitiated air is automatically drawn off. The water supply is from the Leicester new reservoir, and the rainwater is collected in a large tank. The building is lighted by means of acetylene gas, made on the premises. Mr. Alfred W. N. Burder, in conjunction with Messrs. Barrowcliff and Allcock, of Loughborough, have been joint architects of the building, and the contract has been carried out by Messrs. Moss and Sons, builders, of Loughborough.

West Hartlepool.—The foundation stones of a new Congregational church and Sunday-schools being erected on a site at the corner of York and Park Roads were laid recently. The plans for the building, which have been prepared by Mr. W. Lister Newcombe, F.R.I.B.A., of Newcastle-on-Tyne, provide for a church with accommodation for about 800, on a site containing about 2,000 square yards. The main entrances will be from Park Road, and on the right of the main vestibule will be a cloak-room for ladies, and on the left a similar room for gentlemen, both having lavatory accomodation. The nave and transepts are to have side aisles, divided from the nave by arcading, and an uninterrupted view of the pulpit from every seat in the church will be ensured. There will also be a small gallery over the entrance vestibules and a large choir recess, with a space behind for the organ. On the left side of the choir recess will be the ministers' vestry, and on the right the choir and deacons' vestry, as well as a choir vestry with doors opening into the recess. The west portion of the site is to be occupied by a large assembly hall, 61ft. by 37ft. in dimensions, the entrance to which will be through a spacious porch, and opening off this hall will be three class-rooms, whilst at the rear of the hall four large rooms are to be provided for library, recreation and ladies' sewing rooms, all apartments having independent access. A commanding tower will occupy the north-east corner of the buildings, and the style of architecture to be adopted throughout will be Perpendicular Gothic. The total cost of the buildings, exclusive of the site, is estimated at £14,500.

New Patents.

These patents are open to opposition until December 10th.

1899. — Electric Lamps and Reflectors. — 20,877. THE IMPROVED ELECTRIC GLOW LAMP COMPANY, LTD., and A. BARNES; all of 103 Queen Victoria Street, London, E.C. This invention relates to a composition or paint for covering glass surfaces (such as the bulbs of electric lamps) with an opaque reflecting surface without the use of heat. The composition consists of cryolite in fine powder, 4 parts; oxide of zinc (powder), 10 parts; opal glass (powder), 8 parts; and silicic acid or silica (powder), 6 parts.

Clay Sinks, Seggars, &c.—21,710. J. WOOTTON, Park House, Coalville, J. STALEY, Church Gresley, and J. PARKER, Overseal; all in the county of Leicester. The object of this invention is to enable block sinks, seggars and similar articles to be made by power, improving and cheapening their production. This is accomplished by combining with a pipe-making and socketing machine, or a clay-pressing machine, a die, an adjustable clay-distributing block, and a rising and falling table.

Shop Windows.—23,474. J. G. STATTER and the VAPOUR PREVENTER, LTD., 68 Victoria Street, London, S.W. To prevent the deposit of vapour or moisture on shop windows, a chamber is provided at the bottom of the pane in which is placed a steam-heating apparatus. The heated air thus rises and impinges on the glass and so prevents it becoming clouded.

Slop Closets.—23,612. L. H. LLOYD, 48 Park Road, Lenton, Notts. This waste-water closet dispenses with the usual tipper or tumbler. Attached to the side of the pedestal is a chamber into which the waste water runs from the sink or bath. This chamber has two outlets, one an overflow (which goes into the pedestal), and the other controlled by a hand-rod.

Wall Tiles. — 24,615. B. J. B. MILLS, 23 Southampton Buildings, London, W.C. (communicated by F. Pagnon, Lyons, France). The tiles are first laid down on a flat surface and are then covered with the cementing material, in which a wire network is embedded. By this means the whole can be lifted and applied in one operation.

1900. — Tar Paving. — 13,168. J. WARD, Grange-over-Sands, Lancs. The body of the paving consists of relatively large tarred stones, to which small tarred stones are added, so that when rolled the latter fill up the interstices between the former and form a compact and durable paving.

The following specifications were published on Saturday last, and are open to opposition until December 17th. A summary of the more important of them will be given next week. The names in italics within parentheses are those of communicators of inventions.

1899.—20,378, HARPIN, burners for incandescent gas fires. 20,606, BARRY, means for raising, lowering, and discharging materials. 20,695, BACKHAUS, process for producing imitation paintings on glass and glass mosaic work as transfer pictures. 20,927, HADDAN (*Whiting*), sluice-gates for waterways. 21,985, PRICE, form of winding drums for winches and cranes. 23,026, WORTHINGTON, taps or cocks. 23,670, ROBINS, fixing of valves to pumps. 24,516, HORTON, decoration of walls, screens, and similar surfaces. 24,552, MAYNARD & WATTS, machinery for making bricks. 24,670, SQUIRE & SQUIRE, locks and latches. 25,679, LUCKING (*Pabst*), brushes.

1900.—622, BONHIVERS, incandescent arc and other lamps. 2,112, THOM AND MCCALL, windows. 5,288, GRANT AND MACPHERSON, covers for closet seats. 6,470, CAPRON, filters. 6,540, STEIN AND FREUND, electric railways on the conduit system. 8,751, PRINZ, curtain and other rods. 9,773, DAY, door holder. 10,778, SCHREYER, manufacture of objects in artificial stone. 11,453, COPE, heating apparatus for drying floors, kilns, or ovens. 11,517, ARCHER, manufacture of self-igniting gas mediums·

11,615, HIMMEL, appliances for gas in lamps exposed positions. 12,333, HUMPHREYS AND GLASGOW (*Gibbs*), gas burners. 12,390, GRAY, gas burners. 12,786, BORCHARDT, means for lighting gas. 12,861, LAKE (*Jewel Export Filter Co.*), purification of water and other liquid. 12 914, GREENWOOD, gas and vapour burners. 13 340. WIEGAND, gas cocks. 13,368, OUSEY (*Globe-Wernicke Co.*), doors for book and other cases. 13,684, PÉRILLAT, hydrocarbon burners for heating and lighting. 14,818, WESTAWAY, apparatus for compressing peat, leather, wood, or other material into blocks. 14,828, SCHNEIDER AND DERTZ, smoke-consuming furnaces. 15,418, GEIST, method of purifying and burning smoke by means of water under pressure, or steam. 15,964, STUMPF, window sashes and frames.

Law Cases.

Damages for an Unfulfilled Contract.—At the Blackpool County Court recently, before his Honour, Judge Coventry, Messrs. Crawshaw and England, builders, of St. Annes, claimed £245 2s. 6d. from T. A. Pollard, a Blackpool mason. Plaintiffs' counsel explained that on April 1st last year the defendant entered into a contract with his clients to do all the stone work in connection with some buildings at St. Annes, for the sum of £1,216 17s. In the agreement it was stated that the work had to be completed in 28 weeks, under a penalty of £6 for each and every week over that period. The contract was signed by defendant, and he deposited a quantity of stone on the works, but afterwards refused to go on. Counsel anticipated that part of the defence would be that plaintiffs, or one of them, agreed to give the defendant a guarantee of payment before he signed the contract. This, however, they absolutely denied, and the only contract made was the one before His Honour as to the stone work.—Albert Winstanley, architect, a member of the firm of England, Winstanley and England, of St. Annes, stated that he prepared the conditions of the contract for the stone work, and was present when defendant signed the contract. Pollard's first tender was for £1,069, but he afterwards told the architect that he had missed out an item in the last page of the quantities, and he would like to amend his tender. He was allowed to do this, and they ultimately agreed upon £1,216 17s. Defendant sent some stone down, and also some stone steps, which were not up to the standard, and were condemned by him (Winstanley). About May 24th, defendant asked for a guarantee, and after that he did nothing more. The next thing the architect heard was that defendant was not going to carry out his contract. The contract was afterwards let to a Mr. Shaw for £1,416 19s. 1½d. He carried out about half of it, and then went bankrupt, and the plaintiffs had to finish the job themselves. The defendant in his evidence said that England told him the owners of the land were going to finance the job, and if he got the contract for the masonry they would give him a guarantee. He pointed out to them that the granite and the stone carving would be expensive, but they replied that they did not want either. Yorkshire stone would be good enough. Before the contract was signed, an order was given for some steps for the café, which was part of the job, and they were sent the same day. He had not supplied any stones for the job under the contract, and none were rejected that he was aware of.—His Honour found a verdict for the plaintiffs, assessing the damages at £150.

The Submittal of Plans for Approval.—In the Queen's Bench Division on October 26th, before Mr. Justice Lawrance and Mr. Justice Kennedy, sitting as a Divisional Court, the case of the *Queen* v. *Nicholson* and another, Justices of South Shields, and Wilson, ex parte Hayton, came on for argument. Mr. Eldon Bankes appeared for the appellant, and the Justices were represented by an affidavit, which stated that a complaint was made by Hayton against Wilson Brothers for erecting a wooden stable in Redhead Street, South Shields, without submitting plans to the borough surveyor for approval, in accordance with the by-laws. Defendants were the owners of an acre of ground in Redhead Street, and they contended that it had never been the custom of the Corporation to require plans of a wooden stable to be submitted to them, neither had the by-law been insisted upon as being applicable. The Justices adjourned the case and inspected the building, and they then came to the determination that the by-law in question did not apply to a stable built of wood on enclosed ground, as in the present case, and they therefore refused to state a case for appeal.—Mr. Bankes, for the appellants, said the Justices must have viewed the wrong building. They went there on their own initiative, and now said the building they saw was in the middle of the ground, but that was not the case. It had an entrance from Redhead Street. This was an extremely important matter as far as the Corporation was concerned, because it had reference to all the buildings within their district. Counsel having quoted authorities, their Lordships made the rule absolute, calling upon the respondents to show cause why they should not be convicted.

Keystones.

Mr. Henry Littler has been appointed county architect of Lancashire.

A Church Pupil Teachers' College at Liverpool is to be erected on a site in Colquitt Street, at a cost of about £8,000.

A New Parish Church of St. Chad, Bensham, is being erected at Gateshead. The architects are Messrs. Hicks and Charlewood.

Mr. Holman Hunt has been presented by many friends and admirers of his art with his portrait, painted by Sir W. B. Richmond, R.A., and a silver salver.

Llandaff Cathedral has had a new organ added, and a memorial effigy of the late Dean Vaughan has been placed in a niche in the north aisle. The memorial is in main the work of Mr. W. Goscombe John, A.R.A.

Proposed New Town Hall at Workington.—A Local Government Board enquiry was held recently into the application of the Workington Corporation for the borrowing of £11,750 for the provision of a new Town Hall.

A New Test-House and Casual Ward at Manchester is to be erected in Tame Street, by the Workhouse Committee of Manchester and Chorlton in place of the late one, which was burnt down. The cost will be about £40,000.

The Permanent Building of the Free Home for the Dying, 29 North Side Clapham Common, S.W., has been dedicated, after considerable alteration at the hands of Mr. A. E. Street. The purchase of the freehold and the alterations and repairs have cost more than £10,000.

New Technical Institute, Free Library, and County Buildings at Newport, I.W.—At a special meeting of the Isle of Wight County Council held recently, the plans submitted under the motto "X" for these buildings were approved, subject to certain alterations as to drainage. The cost of the work will probably not exceed £7,900.

Housing of the Poor in Berlin.—The municipal authorities of Berlin have resolved to make a grant of 1,000,000 marks to be devoted to the provision of housing accommodation for the poor, in commemoration of the two hundredth anniversary of the foundation by King Frederick I. of the Prussian Monarchy which will be celebrated on January 18th, 1901.

Proposed Imbecile Home for Westmorland and Cumberland.—A scheme is on foot for the erection of an imbecile home for the counties of Westmorland and Cumberland. The estate would consist of 100 acres of cultivatable land with outbuildings upon it, to cost £4,000, six pavilions or detached houses to cost £27,000, or £90 per head, officers' apartments, &c., to cost £5,000, and a small sanatorium, &c. £3,000; total £39,000.

A School of Science and Art at Weston-Super-Mare has been erected at a cost of £4,000.

A New Church at Wycliffe Street, Southwark, to be dedicated to St. Bartholomew, is being erected at a cost of about £9,000.

All Saints' Church, Leamington, has had its nave enlarged, a bell tower added, and has been generally restored at a cost of about £18,000.

A New Episcopal Church at Ayr has been erected from designs by the late Mr. J. L. Pearson, R.A., at a cost of £10,000, exclusive of furnishing.

A Statue of the Queen, by Princess Louise, has been erected at the entrance to the Royal Victoria College for the Higher Education of Women, Montreal.

St. Mary's Church, Turville, near Henley-on-Thames, has been internally restored at a cost of about £1,700. An organ chamber and a new vestry have been added.

A Shelter and other Buildings at the City Mortuary, Golden Lane, E.C., have been erected at a cost of £11,000. The contractors were Messrs. E. Lawrence and Sons.

The Organ of St. Laurence Jewry, E.C., originally built by Renatus Harris, and enclosed in a case by Grinling Gibbons, has been restored by Messrs. Norman and Beard, of Norwich.

Nurses' Home at Lambeth.—The Lambeth Guardians have approved an estimate of cost, amounting to £59,915 17s., for the erection of nurses' home, new offices, relief station, observation wards, and alterations to the central administrative block at the infirmary, which will increase the accommodation by 100 beds.

A Stained-glass Memorial Window has just been erected in the Redlands Green Chapel, Bristol, from designs by Mr. T. W. Camm, of Smethwick, Birmingham. The work is Classic in treatment, and is in memory of the late Dr. Pritchard, F.R.C.S., of Bristol. The subjects are suggestive of the man and are three in number: "Our Lord as the Great Healer; "St. Luke, the Beloved Physician," and "St. Barnabas, a Son of Consolation."

The Wool Exchange, Coleman Street, E.C., is undergoing structural alteration for the improvement of Kohler's Restaurant, which occupies the whole of the front portion of ground floor and basement in this extensive building. The steel construction is being carried out by Messrs. G. Aston and Son, and Mr. Charles Heeps, of London Wall, is the builder. Mr. Francis Witt, M.S.A., of Manor Park, Essex, is the architect.

New Seamen's Hospital at Cardiff.—In order to prepare the site for the new Seamen's Hospital at Cardiff it has been necessary to reclaim land adjoining the Ferry Road, southwest of the *Hamadryad* ship. Mr. James Allan, contractor for the new Mount Stuart Dry Dock, has tipped some thousands of tons of black clay at this point, with the view of filling up the land to the level of the road. The weight of the embankments has forced up the soft mud, and the pitching which has been laid on the sea side has been disturbed, except on the eastern face. Mr. E. W. M. Corbett is the architect.

Finds at Kinloss Abbey.—In the course of some improvements and excavations recently carried out at Kinloss, under the direction of the Rev. J. A. Dunbar Dunbar, of Kinloss and Seapark, the workmen came upon the remains of several coffins of oak and pine, and a collection of human bones, in the rubbish lying in the old chapel. Underneath one of the coffins parts of a broken vessel were found, and among the rubbish several pieces of tiling with painting and ornamentation were picked up. These latter, doubtless, formed part of the back of the altar in the chapel. A communion token, an ancient key, and a piece of diamond-shaped glass, evidently from one of the windows, were also found. A large number of stones of fine masonry were unearthed during the operations. Certain portions of the ruined abbey, which are now in a precarious condition, are to be repaired.

COMPLETE LIST OF CONTRACTS OPEN.

DATE OF DELIVERY.		WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
		BUILDING.		
Nov.	9	Calstock, Cornwall—School	School Board	H. J. Snell, Architect, The Crescent, Plymouth.
,,	9	Dalton-in-Furness—Police Dwelling-houses	Standing Joint Committee	H. Littler, County Offices, Preston.
,,	9	Exmouth—Alterations	R. H. A. Woodman	E. E. Ellis, Architect, Exmouth.
,,	9	Forres, Scotland—House	Mr. Miller	J. Forrest, High Street Forres.
,,	9	Hindley, Lancs.—Alterations	Lancs. County Council	H. Littler, County Offices, Preston.
,,	9	Manchester—Test House	Workhouse Committee	A. J. Murgatroyd, 23 Strutt Street, Manchester.
,,	10	Hensingham—Church		A. Huddart, 22 Lowther Street, Whitehaven.
,,	10	Newton Abbot, Devon—Board Room	Guardians	S. Segar, Union Street, Newton Abbot.
,,	10	Warkworth—House		M. T. Wilson, Architect, Alnwick.
,,	10	Antrim—Alterations	J. M'Nally	J. M'Nally, Antrim.
,,	12	Hastings—Public Convenience	Corporation	P. H. Palmer, Town Hall, Hastings.
,,	12	Leeds—Church		G. F. Danby, 10 Park Row, Leeds.
,,	12	Mellis—School Building	Managers of the Parochial School	Rev. T. H. Peat, The Rectory, Mellis.
,,	12	Oldham—School	School Board	R. Holt, 11 Dale Street, Liverpool.
,,	12	Darlaston—Widening Bridge	Urban District Council	J. C. Joynson, Public Offices, Darlaston.
,,	12	Ponteland, Newcastle-upon-Tyne—Cottage Homes	Guardians	Oliver, Leeson, and Wood, Mosley Street, Newcastle-upon-Tyne.
,,	13	Sligo—Chapel		Deane and Son, 15 Ely Place, Dublin.
,,	13	Symonds Yat, Herefordshire—Cottage	G.W.R. Company	Engineer, G.W.R. Station, Gloucester.
,,	14	Belford, Northumberland—Malting	J. P. Simpson and Co.	Brewill and Bailey, Angel Row, Nottingham.
,,	14	Petersfield—Filter Bed	Urban District Council	Surveyor, Council Offices, High Street, Petersfield.
,,	14	Tweedmouth—Cottages	N.-E.R. Company	W. Bell, Central Station, Newcastle-upon-Tyne.
,,	15	Sutton-on-Sea, Lincolnshire—School and Master's House	School Board	Mortimer and Son, Architects, Corporation Street, Lincoln.
,,	17	Belfast—Additions	Bishop of Down and Connor	S. C. Hunter, 2 Wellington Place, Belfast.
,,	17	Bradford—Alterations	School Board	W. Bailey, 9 Market Street, Bradford.
,,	17	Whitchurch, Tavistock—Villa and Outbuildings		T. A. Clark, New Town Chambers, Plymouth.
,,	19	Spennymoor—Isolation Hospital	Urban District Council	G. W. Rogers, Surveyor, Silver Street, Spennymoor.
,,	19	Wolverhampton—Car Depôt	Tramways Committee	J. W. Bradley, Town Hall, Wolverhampton.
,,	20	Dundalk—Alterations		Town Clerk, Town Hall, Dundalk.
,,	20	Wakefield—Shed	Lancashire and Yorkshire Railway Co.	Engineer, Hunt's Bank, Manchester.
,,	21	Woolwich—Cottage Homes	Guardians	Church, Quick and Whincop, William Street, Woolwich.
,,	22	Darlington—Engine House and Boiler House	Corporation	Borough Surveyor, Town Hall, Darlington.
,,	30	Port of Recife—Works	Federal Government	Commercial Department, Foreign Office, S.W.
,,	30	Salford—Car Depot and Workshops	Tramways Committee	Engineer, Town Hall, Salford.
		ENGINEERING.		
Nov.	9	Whiston, Rotherham—Lighting	Parish Council	W. C. Harrison, Moorgate Road, Rotherham.
,,	9	Inverurie, Scotland—Water Supply Extension		Jenkins and Marr, 16 Bridge Street, Aberdeen.
,,	10	Bradford—Hoists	Corporation	F. Wild, 9 Charles Street, Bradford.
,,	10	Jassy, Roumania—Water Supply		Technical Department, Communal Council Hall, Jassy, Roumania.
,,	12	Walker, Northumberland—Dust Destructor	Urban District Council	Handcock and Dykes, 1 Victoria Street, Westminster, S.W.
,,	13	Nottingham—Boiler	Water Committee	S. Moore, St. Peter's Square, Nottingham.
,,	13	Worcester—Filter Bed	Council	City Engineer, Guildhall, Worcester.
,,	14	Lahore, India—Tramway Materials	Municipal Committee	Secretary Municipal Committee, Lahore.
,,	14	Herne Bay—Sewerage Works	Urban District Council	F. W. J. Palmer, Surveyor, Herne Bay.
,,	14	Leytonstone—Steam-pump	Guardians of West Ham Union	Workhouse Master, Union Road, Leytonstone, Essex.
,,	14	Petersfield—Filter Bed	Urban District Council	H. T. Keats, Surveyor, Petersfield.
,,	15	Newcastle-upon-Tyne—Widening Bridge	Corporation	Town Clerk, Town Hall, Newcastle-upon-Tyne.
,,	15	London, N.—Filter Beds	East Barnet Valley Urban District Council	H. York, Council Offices, Station Road, New Barnet.
,,	17	Cienfuegos, Cuba—Electric Lighting	Municipality	Secretary, Municipal Offices, Cienfuegos, Cuba.
,,	20	London, E.C.—Electrical Plant	Shoreditch Vestry	C. N. Russell, Electric Light Station, Coronet Street, Hoxton, N.
,,	20	Manchester—Turbine	Waterworks Committee	Secretary, Water Works Offices Town Hall, Manchester.
,,	22	Darlington—Pumping Engine	Corporation	Borough Surveyor, Town Hall, Darlington.
,,	23	Belfast—Plant	Gas and Electric Committee	V. A. H. McCowen, City Electrical Engineer, Belfast.
,,	23	Eastbourne—Destructor	Highways and Drainage Committee	R. M. Gloyne, Town Hall, Eastbourne.
,,	24	Stockport—Overhead Equipment	Tramways Committee	J. H. Carter, Electrical Engineer, Stockport.
,,	24	Stockport—Tramways	Tramways Committee	J. Atkinson, Central Buildings, Stockport.
,,	27	Dublin—Drainage Works	Corporation	G. Chatterton, 6 The Sanctuary, Westminster, S.W.
		IRON AND STEEL.		
Nov.	9	Manchester—Cast-iron Bases	Tramways Committee	J. M'Elroy, Town Hall, Manchester.
,,	10	Christiania—Steel Materials	Inspector of Shipbuilding, Horten	Marinens Skibsbygnings Inspector, Horten.
,,	13	Rugby—Fencing	Urban District Council	D. G. Macdonald, Surveyor, Rugby.
,,	13	Walthamstow—Fencing	School Board	Clerk, Board Offices, High Street, Walthamstow.
,,	14	Christiania—Sleepers, Plates, &c.	Norwegian State Railway Administration	Commercial Department, Foreign Office, S.W.
,,	18	Canea—Ironwork	Cretan Government	Commercial Department, Foreign Office, S.W.
,,	24	Stockport—Rails	Tramways Committee	J. Atkinson, Central Buildings, Stockport.
Dec.	3	Woolverhampton—Iron and Steel	Tramways Committee	J. W. Bradley, Town Hall, Wolverhampton.
,,	10	London, S.W.—Rails		Agent-General for Victoria, 15 Victoria Street, S.W.
		PAINTING AND PLUMBING.		
Nov.	9	Pontefract—Painting	Guardians	Tennant and Bagley, Architects, Ropergate, Pontefract.
,,	9	London, S.E.—Repairs and Painting	Borough Market Trustees	W. Woodroffe, Town Hall Chambers, High Street, Southwark.
		ROADS AND CARTAGE.		
Nov.	10	Burnley—Street Works	Rural District Council	S. Edmondson, 18 Nicholas Street, Burnley.
,,	10	Swinton, Lancs.—Flagging	Urban District Council	H. Entwistle, Council Offices, Swinton, Lancs.
,,	12	Quarry Bank—Granite	Urban District Council	A. Homfray, Clerk, Cradley Heath.
,,	14	Barnsley—Kerbing	Town Council	J. H. Taylor, Borough Surveyor, Barnsley.
,,	14	Fleetwood, Lancs.—Kerbing	Urban District Council	E. Frobisher, Town Hall, Fleetwood, Lancs.
,,	19	Urmston, Lancs.—Street Works	Urban District Council	J. Heath, Council Offices, Urmston, Lancs.
		SANITARY.		
Nov.	9	Renfrew—Sewers	Commissioners	A. R. Paterson, Engineer, Renfrew.
,,	14	Dartmouth—Drainage Works	Urban District Council	T. O. Veale, Surveyor, Castle View, Dartmouth.
,,	15	Wendover, High Wycombe—Sewers	Rural District Council	Taylor, Sons, and Crimp, 27 Great George Street, Westminster, S.W.
,,	27	Audenshaw, Lancs.—Removal of Nightsoil	Urban District Council	Clerk, Council Offices, 2 Guide Lane, Audenshaw.
Dec.	13	Withington, Lancs.—Sewage Outfall Works	Urban District Council	Clerk, Town Hall, Withington, Lancs.
		TIMBER.		
Nov.	20	Aldershot—Fencing	Urban District Council	Surveyor, 126 Victoria Road, Aldershot.

COMPETITIONS OPEN.

DATE OF DELIVERY.		DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	BY WHOM ADVERTISED.
Nov.	15	Newcastle-upon-Tyne—Bridge		H. Motum, Town Clerk, Town Hall, Newcastle-upon-Tyne.
,,	22	Salford—Schools	£50, £30, £20	Borough Engineer, Town Hall, Salford.
,,	30	Swansea—Harbour Offices	£100, £50	T. Strick, Harbour Offices, Swansea.
Dec.	1	Bridlington—Parade Extension	£36 5s., £15 15s.	A. E. Matthewman, Town Hall, Bridlington.
,,	31	South Shields—Municipal Buildings	£200, £100, £50	J. M. Hayton, Town Clerk, Court Buildings, South Shields.
March	25	Basford—Sewerage Scheme		C. J. Spencer, Clerk, Public Offices, Basford.

New Companies.

London Electric Warehouse Company, Limited.

This company was registered on October 25th with a capital of £1,000 in £10 shares to carry on the business of electrical engineers, electricians, suppliers of electricity, manufacturers of and dealers in electrical machinery, &c. Registered office: 78 Cheapside, E.C.

Diamond Anthracite Mine Company, Limited.

This company was registered on October 22nd with a capital of £20,000 in £1 shares to carry on the business of colliery proprietors, miners, fuel, brick, gas, coke, and coal-tar manufacturers, smelters, founders, engineers, &c. The first directors (to number not less than three nor more than seven) are to be appointed by the subscribers.

Stafford and Rogers, Limited.

This company was registered on October 25th with a capital of £8,000 in £1 shares (1,500 preference) to acquire the business carried on at Bedford and elsewhere as Stafford and Rogers, and to carry on the business of auctioneers, land, house, and estate agents, valuers, &c. The first directors are J. Rogers, C. C. Stafford, W. Kingston, J. A. Weston, and C. R. Craddock.

Standard Incandescent Gas Light Company, Ltd.

This company was registered on October 16th with a capital of £60,000 in £1 shares to acquire certain patents relating to improvements in the manufacture of gas mantles (numbered 2,000 and 15,500 of 1896) for the United Kingdom of Great Britain and Ireland, to develop and work the same, and as manufacturers of all kinds of gas-lighting apparatus and appliances. The first directors (of whom there shall be not less than three nor more than seven) are to be elected by the signatories, B. F. Simpson, J. Phillips, T. Baker, A. S. Dimsdale, A. David, H. Bartley and L. Goldstein.

British Electric Street Tramways, Limited.

This company was registered on October 18th with a capital of £300,000 in £10 shares to construct or purchase and equip electric tram and railroads, vans, carts, carriages, and other vehicles for the transportation of goods and merchandise of every description, passengers, &c., whether under the Hackney Carriage Act or otherwise, to adopt an agreement with the Electric Tram Construction and Maintenance Company. The number of directors (of whom there shall be not less than three nor more than eight) are to be elected by the signatories, F. Howard, F. Hopkins, O. M. Bolton, C. W. Murphy, H. J. Taylor, H. E. Hill and R. M. Albery. Registered office: 34 Victoria Street, Westminster.

Engineering Notes.

The Admiralty Pier at Dover is being lighted electrically by Messrs. Donnison, Berlyn, Sillem & Co., of London and Liverpool.

Ystrad Library, Glam., is being fitted with "small tube" hot-water heating apparatus by Messrs. John King, Ltd., engineers, Liverpool.

The Redheugh Bridge, Newcastle-on-Tyne.—The construction of a new bridge over and entirely clear of the old Redheugh Bridge is now approaching completion. The engineers are Messrs. Sandeman and Moncrieff.

London Water.—Small as is the hope they can base on the character of the new House of Commons, the Water Committee of the London County Council propose once more to bring in a Bill for the purchase of the undertakings of the metropolitan water companies.

Lighting of the Chapel Royal.—The Chapel Royal, St. James's Palace, is to be lighted in future by electricity. The new illuminant is in course of installation, and the work (which was interrupted by the preparations for Thursday's memorial service), is likely to be completed in about a week.

London Dock Lighting.—The new electric installation for the London and St. Katherine Docks has been completed.

Electric Traction and Scientific Observations. A meeting of the Board of Trade was held last week with reference to the regulations desired by the scientific departments of the Government in order to prevent interference with the delicate magnetic observations at Kew and Greenwich by the influence of electric traction.

A Large Gas Plant Contract.—The Edinburgh and Leith Corporations' Gas Commissioners have placed with Messrs. Graham, Morton & Co., of Leeds, a contract, amounting to £113,802, for the erection of a complete automatic inclined retort carbonising plant, including their improved system of elevating and conveying machinery for handling coal.

Proposed New Dock for Avonmouth.—After thirty years' fighting over the question of dock extension the Bristol Town Council have finally abandoned the proposed dock station of the river Avon, and, with a solitary opponent, have resolved to apply to Parliament in the ensuing session for an Act to carry out a scheme for a new dock at Avonmouth at a cost of £1,804,000.

Electricity on the Underground.—The Electrical Traction Joint Committee of the Metropolitan and District Railway Companies has fixed December 1st for the receipt of tenders from the electrical traction firms which have been invited to submit offers for the installation of electrical traction on the Inner Circle Railway. During the last few months the companies have been conducting an experiment in electrical traction on a section of their system at Kensington.

Improvements at Dover.—The Dover Town Council at its last meeting approved the scheme to construct a viaduct from the lower part of Snargate Street through what is known as the pier district to the south-eastern district, where are situated the Lord Warden Hotel and the Admiralty Pier. An expenditure to the town of over £100,000 will be involved, as will also an additional cost of £500,000 to the Harbour Board. The scheme also includes a space for a big joint station and for an improved goods depot, and means the clearing away of a large unsanitary area long condemned by the health officer. There will be a large rebate on the expenditure by a contribution from the amalgamated railway company, and this will reduce the cost to Dover itself to £45,000.

TENDERS.

Information from accredited sources should be sent to "The Editor." Results of tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the Work.

ASTON MANOR.—For alterations to fire stations, &c., Chester Street, for the Urban District Council. Mr. G. H. Jack surveyor, Council House, Albert Road, Aston Manor :—

Hughes & Stirling	£1,505	Gowie & Ingram	£1,225
W. Hopkins	1,420	C. Hughes	1,207
Whitehouse & Sons	1,395	T. Elvins	1,185
F. Nicols	1,370	Lee & Sons, Avenue Road, Aston, Birmingham	1,179
G. Trentham	1,320		
W. Bishop	1,275		

BECKENHAM.—For making-up Blandford Road and others four contracts); also Bromley Gardens, for the Urban District Council. Mr. J. A. Angell, surveyor, Council Offices, Beckenham :—

	S. Saunders.	G. Wilson.	Mowlem & Co.	C. Pearce.
Blandford Road	£7,007	£4,093	£3,432	£3,364
Oakwood Avenue	4,161	1,725	1,651	1,542
Gowland Place	1,394	480	456	418
Yewtree Road	1,251	437	405	374
Total	13,813	6,735	5,944	5,698

Bromley Gardens.

S. Saunders	£4,106
G. Wilson	1,676
J. Mowlem & Co.	1,532
C. Pearce	1,450

BRIGHTON.—For alterations and new shop front to 17 and 17a North Street, for Mr. A. Cavendish. Mr. W. H. Nash, architect, 17 North Street, Brighton :—

W. & T. Garrett	£725	Saunders & Sons*	£651
J. Barnes	679	* Accepted.	

CHELMSFORD.—For the erection of new County Constabulary Headquarters for the Essex County Council, including County Offices and Recruits' quarters, residences for the Chief and Deputy-Chief Constables, Chief and Junior Clerks, Drill Instructor, two blocks of stables, and grooms' quarters. Messrs. Clare & Ross, A.R.I.B.A., architects, Chelmsford, and 1 West Street, Finsbury Circus, E.C. Quantities by Mr. J. S. Parmenter, Chelmsford and Ipswich :—

Holliday & Greenwood, London	£21,806	Brown, Braintree	£19,998
Johnson, Chelmsford	20,884	Parmenter, Braintree	19,322
Coulson & Lofts, Cambridge	20,859	West, Chelmsford	19,193
Everett, Colchester	20,400	Grimwood, Sudbury	19,037
		Thoday, Cambridge	18,674
		Smith,* Witham	17,445

* Accepted.

These prices include yard boundary walls and fences, underground mains from Springfield Road, surveyor's charges, &c.

DOVER.—For the erection of a Pavilion, &c., on the Promenade Pier. Mr. M. Noel-Ridley, 11 Dartmouth Street, and Mr. Robert J. Beale, A.R.I.B.A., joint engineers, Broadway House, Westminster :—

Alex. Penney & Co., London	£7,280 17 5	Alfred Thorne, London	£6,887 0 0
W. J. Adcock, Dover	7,000 0 0	Anthony Fasey & Son,* Leyton-stone	6,280 0 0

* Accepted.

GRAYS, Essex.—For the erection of twenty-five cottages, Parker Road, for the Urban District Council. Mr. A. C. James, surveyor, District Council Offices, Grays :—

P. Brown	£6,325	H. J. Carter, Grays*	£5,250
Wood & Co.	5,808	* Accepted.	

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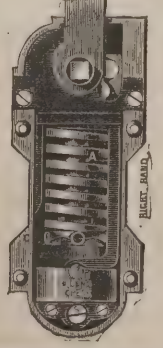
ROBERT ADAMS'

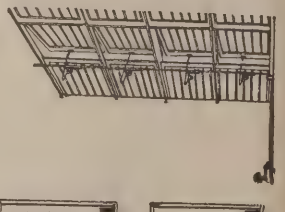
PATENT

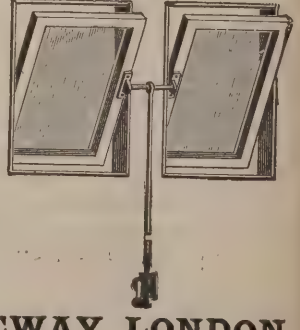
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KIRKCALDY.—Accepted for the erection of tenements at Balfour Street, Kirkcaldy, for the Kirkcaldy District Lodge of Free Gardeners. Mr. D. Forbes Smith, A.R.I.B.A., architect, Kirkcaldy:—

Mason.—Wm. Kilgour	£580 0 0
Joiner.—David Simpson	392 10 0
Plasterer.—J. Schoolbraid	73 0 0
Plumber.—H. Hutchison	65 0 0
Slaters.—Currie & Grant	50 19 0
Total	£1,161 9 0

[All of Kirkcaldy.

KIRKCALDY.—Accepted for the erection of stabling, van sheds, committee rooms, &c., at Mid Street, Pathhead, for the Pathhead and Sinclairtown Reform Co-operative Society, Ltd. Mr. D. Forbes Smith, A.R.I.B.A., architect, Kirkcaldy:—

Mason.—Henry Masterton, Sinclairtown	£865 0 0
Joiner.—Andrew Carmichael, Pathhead	323 0 0
Plasterer.—Wm. Easton, Kirkcaldy	88 10 0
Plumber.—James Crombie, Gallatown	77 15 4
Slater.—David Stark, Kirkcaldy	39 3 0
Total	£1,393 8 4

LONDON.—For alterations at Capland Street Board School for the London School Board. Mr. T. J. Bailey, architect:—

Godson & Sons	£3,238 0 0	Stevens Bros.	£2,948 0 0
Killingback & Co.	3,235 0 0	Martin, Wells & Co.	2,909 0 0
Lawrance & Sons	3,211 0 0	G. Neal	2,822 15 1
Williams & Son	3,119 0 0	R. P. Beattie*	2,802 4 7

* Recommended for acceptance.

LONDON.—For enlarging and improvements to Manchester Street Board School, for the London School Board. Mr. T. J. Bailey, architect:—

T. L. Green	£20,463	Lawrance & Sons	£19,172
Leslie & Co., Ltd.	20,132	Clarke & Bracey	19,163
Grover & Son	19,822	Treasure & Son, London and Shrewsbury*	18,533
C. Cox	19,606		
Miskin & Sons	19,584		
Williams & Sons	19,558		

* Recommended for acceptance.

LONDON.—For the erection of a Board School for thirty blind children (two classrooms of fifteen each) and special school for sixty (three classrooms of twenty each), and enclosing, draining, and tar-paving additional land at Edinburgh Road, for the London School Board. Mr. T. J. Bailey, architect:—

Outhwaite & Son	£8,291	Lawrance & Sons	£6,561
O. Craske	7,569	J. Appleby	6,337
Leslie & Co., Ltd.	7,044	Treasure & Son, London and Shrewsbury*	6,296
Miskin & Sons	6,918		
Unsigned	6,766		
Johnson & Co., Ltd.	6,660		

* Recommended for acceptance.

LONDON.—For the enlargement of Merton Road Board School, for the London School Board. Mr. T. J. Bailey, architect:—

Bulled & Co.	£5,383	Johnson & Co., Ltd.	£4,844
F. & H. F. Higgs	4,972	Garrett & Son	4,700
O. Craske	4,962	E. Triggs	4,688
Wall & Co.	4,945	J. & C. Bowyer*	4,576
B. E. Nightingale	4,943		

* Recommended for acceptance.

LONDON.—For the erection of a Board School at Townmead Road, for the London School Board. Mr. T. J. Bailey, architect:—

B. E. Nightingale	£36,350	Lawrence & Sons	£32,052
Leslie & Co., Ltd.	34,105	J. & M. Patrick	31,089
Miskin & Sons	34,035	Smith & Sons, Ltd.	30,933
Kirk & Randall	33,531	Wallis & Sons	30,853
C. Wall	33,425	Treasure & Son, London and Shrewsbury*	30,422
O. Craske	33,384		
Killby & Gayford	32,780		
Stimpson & Co.	32,320		

* Recommended for acceptance.

LONDON.—Erecting three iron buildings on the West Hill site, for the London School Board. Mr. T. J. Bailey, architect:—

W. Harbrow	£1,565 0	Hawkins & Co.	£1,355 0
T. Cruwys	1,548 0	Mitson & Co.	1,282 0
Croggon & Co., Ltd.	1,397 10	J. & W. T. Hunter*	1,175 0

* Recommended for acceptance.

LONDON.—For additions to business premises, Offley Road, Kennington, for Messrs. Sharwood & Co., Ltd. Mr. H. Phelps Drew, architect, 88 King Street, Covent Garden. Quantities by Mr. J. Rookwood, 25 Bedford Row:—

Norton	£1,509	Edwards & Medway	£1,297
Snewin Bros.	1,397	Wilkinson Bros.*	1,250

* Accepted.

MELTON, Suffolk.—For extensions and alterations to the Suffolk County Asylum, Melton. Mr. A. J. Wood, architect, 22 Surrey Street, Victoria Embankment, W.C. Quantities by Messrs. Widnell & Trollope, 20 Tothill Street, Westminster, S.W.:—

Higgs & Hill, Ltd.	£82,500	Johnson & Co., Ltd.	£75,600
Foster & Dickson	79,560	Lawrance & Sons	73,000
Rudd & Son	79,444	C. Wall	71,700
Patman & Fotheringham, Ltd.	79,000	Pattinson & Sons	67,500
H. Lovatt	77,975	Kerridge & Shaw*	65,917

Electric Plant.

Royce & Co., Ltd.	£2,691 12 0	Crompton & Co., Ltd.	£2,284 0 0
Holmes & Co.	2,493 0 0	Lawrence, Scott & Co., Ltd.	2,268 16 4
Siemens Bros. & Co., Ltd.	2,387 7 5	Reavell & Co., Ltd.*	2,255 12 9
Scott & Mountain, Ltd.	2,314 0 0		

Wiring and Fittings.

Mann & Co.†	£2,740 18 9

* Accepted. † The lowest of seventeen tenders received.

NOTTINGHAM.—For the construction of sewerage works, St. Ann's Well Road, for the Corporation. Mr. Arthur Brown, C.E., Guildhall, Nottingham:—

E. Lucas	£14,404 17 8	Johnson & Langley	£9,861 10 0
Kerry & Co.	12,170 17 11	T. Smart	9,500 0 0
R. M. Parkinson	10,985 0 0	Nowell & Sons	8,999 0 0
George Bell	10,768 0 0	Lock & Andrews	8,583 4 3
Barnes & Co.	10,750 0 0	Benthey & Loch, Leicester*	8,275 11 3
Bower Bros.	10,590 0 0		
W. Wall	9,917 0 0		

* Accepted.

CURRENT PRICES.

FORAGE.

		£	s.	d.	£	s.	d.
Hay, best	per load	4	0	0	4	7	6
Sainfoin mixture	do.	3	10	0	4	10	0
Clover, best	do.	4	5	0	5	0	0
Beans	per qr.	1	9	6	—		
Straw	per load	1	8	0	1	18	0

OILS AND PAINTS.

Castor Oil, French	per cwt.	1	10	0	1	11	6
Colza Oil, English	do.	1	12	9	—		
Copperas	per ton	2	0	0	—		
Lard Oil	per cwt.	1	19	0	—		
Lead, white, ground, carbonate	do.	1	4	10	—		
Do. red	do.	1	0	4½	—		
Linseed Oil, barrels	do.	1	13	0	1	13	3
Petroleum, American	per gal.	0	0	6	—		
Do. Russian	do.	0	0	5¾	—		
Pitch	per barrel	0	8	6	—		
Shellac, orange	per cwt.	3	0	0	3	5	0
Soda crystals	per ton	3	2	6	3	5	0
Tallow, Town	per cwt.	1	5	0	1	6	0
Tar, Stockholm	per barrel	1	8	6	—		
Turpentine	per cwt.	1	11	1½	1	11	3

METALS.

		£	s.	d.	£	s.	d.
Copper, sheet, strong	per ton	86	0	0	—		
Iron, Staffs., bar	do.	8	15	0	10	10	0
Do Galvanised Corrugated sheet	do.	12	10	0	13	0	0
Lead, pig, Spanish	do.	17	12	6			
Do. do. English common brands	do.	17	17	6	—		
Do. sheet, English, 3lb. per sq. ft. and upwards	do.	21	0	0	22	0	0
Do. pipe	do.	23	0	0	—		
Nails, cut clasp, 3in. to 6in.	do.	12	0	0	13	0	0
Do. floor brads	do.	11	15	0	12	15	0
Steel, Staffs., Girders and Angles	do.	8	5	0	9	0	0
Do. Mild Bars	do.	9	2	6	9	10	0
Tin, Foreign	do.	124	10	0	125	0	0
Do. English ingots	do.	130	0	0	—		
Zinc, sheets, Silesian	do.	23	10	0	—		
Do. do. Vieille Montaigne	do.	24	5	0	—		
Do. Spelter	do.	18	15	0	18	17	6

TIMBER.

HARD WOODS

Ash, Quebec	per load	3	17	6	4	10	0
Birch, Quebec	do.	3	12	6	3	17	6
Box, Turkey	per ton	7	0	0	15	0	0
Cedar, 1in., Cuba	per ft. sup.	0	0	3	0	0	3½
Do. Honduras	do.	0	0	3 3/8	—		
Do. Tobasco	do.	0	0	3½	—		
Elm, Quebec	per load	0	12	6	5	10	0
Mahogany, Average Price for Cargo, Honduras	per ft. sup.	0	0	4 11/16	—		
Do. African	do.	0	0	3 13/16	—		
Do. St. Domingo	do.	0	0	6 7/16	—		
Do. Tobasco	do.	0	0	4½	—		
Do. Cuba	do.	0	0	5 9/16	—		
Oak, Dantzic and Memel	per load	3	15	0	5	7	6
Do. Quebec	do.	4	12	6	5	0	0
Teak, Rangoon, planks	do.	8	5	0	13	10	0
Wainscot, Riga (Baulk)	do.	3	15	0	5	15	0
Do. Odessa Crown	do.	3	15	0	5	15	0
Walnut, American	per cub. ft.	0	3	0	0	4	0

SOFT WOODS.

Fir, Dantzic and Memel	per load	3	0	0	4	0	0
Pine, Quebec Yellow	do.	4	7	6	6	0	0
Do. Pitch	do.	2	14	0	3	6	0
Laths, log, Dantzic	per fath.	4	10	0	5	10	0
Do. Petersburg	per bundle	0	0	10½	0	0	11
Deals, Archangel 2nd & 1st	per P. Std.	12	15	0	18	0	0
Do. do. 4th & 3rd	do.	12	10	0	13	15	0
Do. do. unsorted	do.	11	0	0	12	10	0
Do. Riga	do.	6	15	0	8	10	0
Do. Petersburg 1st Yellow	do.	10	5	0	15	15	0
Do. do. 2nd „	do.	8	15	0	9	5	0
Do. do. Unsorted „	do.	5	5	0	13	0	0
Do. do. White	do.	8	5	0	11	15	0
Do. Swedish	do.	10	10	0	19	10	0
Do. White Sea	do.	11	0	0	18	0	0
Do. Quebec Pine, 1st.	do.	19	5	0	—		
Do. do. 2nd	do.	18	15	0	—		
Do. do. 3rd &c.	do.	9	0	0	9	15	0
Do. Canadian Spruce, 1st	do.	10	10	0	11	15	0
Do. do. 3rd & 2nd	do.	8	15	0	9	0	0
Do. New Brunswick	do.	7	5	0	8	0	0
Battens, all kinds	do.	7	15	0	10	5	0
Flooring Boards, 1in. prepared, 1st	per square	0	12	3	0	14	9
Do. 2nd	do.	0	13	6	—		
Do. 3rd &c.	do.	0	10	3	0	12	0

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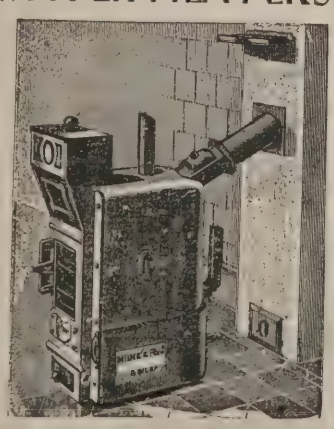
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COMING EVENTS.

Wednesday, November 7.

GEOLOGICAL SOCIETY OF LONDON.—Meeting at 8 p.m

RUSKIN SOCIETY OF BIRMINGHAM.—Dr. F. J. Furnival on "Reminiscences of Ruskin," 8 p.m.

EDINBURGH ARCHITECTURAL SOCIETY.—Mr. W. J. Blain on "Some Scotch Houses."

ROYAL ARCHÆOLOGICAL INSTITUTE.—Mr. H. S. Cowper on "Antiquities Collected in North Africa, Egypt and Asia Minor, 1899 1900." Mr. J. Lewis André on "Miscellanea Heraldica." 4 p.m.

BRITISH ARCHÆOLOGICAL ASSOCIATION.—Mr. R. Newstead, F.E.S., on "The Roman Remains Discovered at Chester, 1896-1900." 8 p.m.

BUILDERS' FOREMEN AND CLERKS OF WORKS' INSTITUTION.—Ordinary Meeting at 8 p.m.

Thursday, November 8.

SHEFFIELD SOCIETY OF ARCHITECTS AND SURVEYORS.—Mr. Beresford Pite on "The Crafts and Art of Brickwork."

INSTITUTE OF ELECTRICAL ENGINEERS.—Opening meeting of the Session. Address by the president, Professor John Perry, F.R.S., 8 p.m.

SANITARY INSTITUTE.—Lectures and Demonstrations for Sanitary Officers: Part I. Professor Henry Robinson, M.I.C.E., on "Sewerage," 8 p.m.

Friday, November 9.

ARCHITECTURAL ASSOCIATION.—Mr. L. L. Macassey on "The Legal Position of the Architect," 7.30 p.m.

GLASGOW AND WEST OF SCOTLAND TECHNICAL COLLEGE ARCHITECTURAL CRAFTSMEN'S SOCIETY.—Lectures on "Specification of a Roof," Mr. D. Ritchie on "Timber," Mr. J. M. Bowman on "Slating and Plumbing," and Mr. J. Marshall on "Glazing."

BIRMINGHAM ARCHITECTURAL ASSOCIATION.—Mr. T. S. Elgood on "Different Types of Classic Ironwork," 6.45 p.m.

Saturday, November 10.

BRITISH INSTITUTE OF CERTIFIED CARPENTERS.—Meeting at Carpenters' Hall at 6 p.m.

Monday, November 12.

SURVEYORS' INSTITUTION.—Ordinary General Meeting at 8 p.m.

LONDON INSTITUTION.—Sir Robert Ball on "The Earth's Beginning," 5 p.m.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.—Professor Lanciani on "The Latest Excavations in the Forum," 8 p.m.

Tuesday, November 13.

SANITARY INSTITUTE.—Lectures and Demonstrations for Sanitary Officers: Part I. Professor Henry Robinson, M.I.C.E., on "Sewage Disposal," 8 p.m.

Wednesday, November 14.

NORTHERN ARCHITECTURAL ASSOCIATION, NEWCASTLE-ON-TYNE.—Opening Meeting of the Winter Session. Address by the president, Mr. William Glover, F.R.I.B.A.

INSTITUTE OF SANITARY ENGINEERS.—Meeting of General Purposes and Finance Committee, at 3.30 p.m.; of Election Committee, at 5 p.m.; and of Council, at 7 p.m.

SANITARY INSTITUTE.—Lectures and Demonstrations for Sanitary Officers: Part II. Mr. W. Hunting, F.R.C.V.S., on "Signs of Health and Disease in Animals Destined for Food, when Alive and after Slaughter: Tuberculin and other Tests," 8 p.m.

CONTRACTS OPEN.

PARISH of WILLESDEN.
TO IRON HOUSE BUILDERS.

The Guardians of the Parish of Willesden desire to receive TENDERS for the ERECTION of a Temporary IRON BUILDING for the accommodation of 30 infirmary patients in the grounds of Temporary Infirmary, Rockhall, Cricklewood.

Persons willing to Tender can obtain particulars of the requirements of the Guardians and a form of Tender on application to me, at my office as below.

Tenders, accompanied with plan and detail specification, must be signed, sealed, endorsed "Tender for Iron Building" and delivered at my office not later than TWELVE o'clock noon on WEDNESDAY, NOVEMBER 14th, 1900.

The Guardians do not bind themselves to accept the lowest or any Tender.

By order
J. HUTTON HAYLOR.
Clerk to the Guardians.

Guardians' Offices,
No. 329 High Road, Kilburn, N.W.
November 1900.

TO BUILDERS and CONTRACTORS.

The Guardians of the Woolwich Union require TENDERS for the ERECTION of TWO COTTAGE HOMES, a RECEIVING WARD, and OUTBUILDINGS, upon their site abutting upon Lodge Lane and Long Lane, Bostall Heath, Plumstead.

The drawings and conditions of contract can be inspected, and bills of quantities obtained, at the Office of the Architects, Messrs. CHURCH, QUICK AND WHINCOP, William Street, Woolwich, any day from the 7th to the 14th inst. (both days inclusive).

A deposit of £2 2s. will be required, which will be returned upon receipt of bonâ-fide Tender.

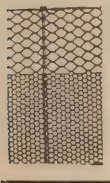
Tenders must be upon the form supplied and addressed to me, endorsed "Tender for Cottage Homes," by ELEVEN a.m. on WEDNESDAY, the 21st inst.

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TOM CUTTER,
Clerk to the Guardians.

Union Offices, Woolwich,
November, 1900.

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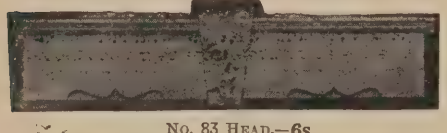
GATES, &c.



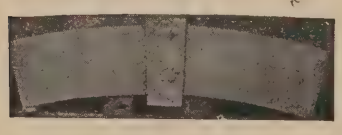
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THE BVILDERS' JOVRNAL & ARCHITECTVRAL RECORD

November 14, 1900. No. CCCI

Effingham House, Arundel Street, Strand, W.C.

An Architectural Causerie.

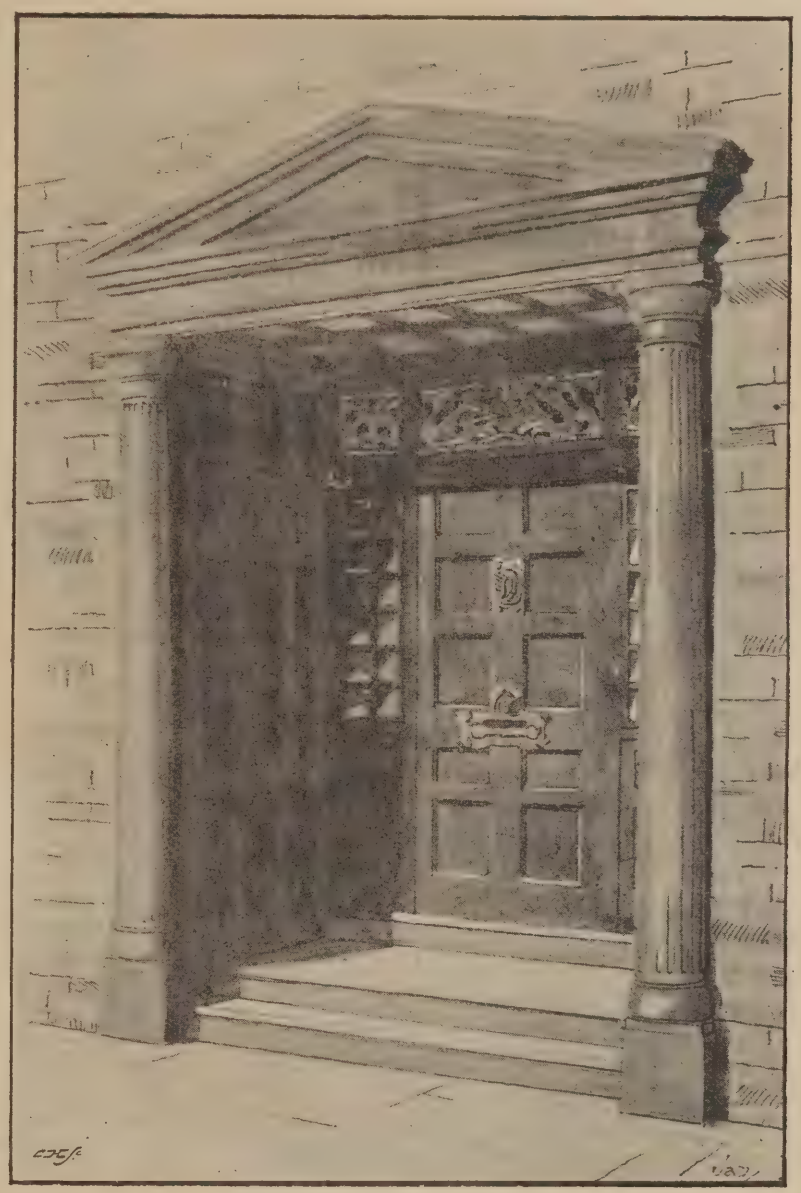
"Render unto Cæsar."

That we are living in an age of draughtsmen seems to be borne out by the plain test of market values. In the assistant class it is the "good draughtsman" who can command a pay out of all proportion to his knowledge and experience, and to his possession of those qualities which would make him more than another a competent master of building. Who is the young fellow that can escape from the thraldom of being tied to one office, and as a free-lance can both make more money and have a better time? Who is it that can throw back his head and expand his chest, look dread principals straight in the eye and speak his mind freely to them; before whom the said principals, grey-headed men, place their poor sketches with all the hesitating diffidence of a first-year's pupil; who can arrange his own times and seasons, and take a day whenever he wants to do so; who can stay in his rooms when he will and draw perspectives or do "washing," or go for a time to this office or that, and average pretty nearly his pound a day throughout the year; who can be sure of a good autumn holiday, which he plans to suit his own convenience, and not that of the manager of an office; and who all the time may buoy himself with the reasonable hope that some day he is pretty sure to "pull off" something and burst on the world as an architect in fact? It is not the man whose judgment is the most matured, whose knowledge of material is founded on experience, whose strains and stresses are irreproachable, who is the most reliable business man, who, in short, has all the more solid qualifications. It is his showy brother of the ready pencil, the clean line, and the trick of using his brush, who can draw with "snap" and print divinely in many strange characters.

And how, on the other hand, is it with those who belong to the class of principals? Surely here again it is the draughtsman-architect who is the shining light. A great living master is reported to have said that he could get on quite well without any "fools of assistants" about him. Another great one, but recently dead, believed that the architect's own hand should draw every detail of the building. "No architect can attend properly to more than two works at a time, and," he would say "that is just one too many, only a man must live." The names of these two are names to conjure with, and the slight clues I have given will be sufficient for their identification by many. One could add instance to instance of this kind to point a similar moral, till one is almost forced to the conclusion that it is by the way of the draughtsman-architect alone that any good thing can come. It would seem to be only reasonable. The mind that conceives the work can surely best guide the hand that translates the conception into line and measurement. The more minds through which the idea has to pass on its way to paper the more must its crispness be worn away.

Yet that such need not necessarily be always the case is proved by another set of instances, in no wise so numerous, it is true, but none the less telling and credible. There is one in particular which recent years have brought to light that I should like to refer to. It is unfortunate that for reasons which I need hardly point out I am unable here to give names. This handicaps me necessarily with all but the few readers who will be able to recognise the persons meant. An architect, who is a truly great designer of buildings of an almost monumental dignity, the soundness, thoroughness, scholarliness, yet withal the individual vigour of which will keep them alive when most of our contemporary work has been dismissed from men's minds with the forgotten "plates" that illustrated it, was known by a few to be one of those who *do not draw*. In and about his office, in what actual capacity I know not, but presumably as his chief draughtsman, was one of the cleverest of the younger men in the profession, and to his credit (in spite of his own emphatic disclaimers) was frequently laid the excellence of the master's work. Yet that clever draughtsman is now in a practice of his own, a draughtsman-architect among the best of them, and in his old place another reigns—that other a man trained in a completely different school, though in his way none the less able. Now here comes the circumstance which gives my instance its point. The work which comes from the office still maintains its excellence, and more than that, its subtle individuality. This seems a strong proof that the hasty judges of our architect were wrong, that he himself and not his draughtsman has all along been the man whose was the mind to conceive and direct what the hands of others but carried out. The above is only one case in point. Let us take another, that of the architect of numberless beautiful churches. It would surprise not a few to hear that the author of such exquisite work, this master of lovely detail, draws hardly at all except in a kind of crabbed shorthand to be understanded only by the expert.

So then there are two sorts of architects, those who draw and those who do not draw,



DESIGN FOR A FRONT DOOR. BY E. S. HARTLEY.

and we may take it that both do good and bad work irrespective of whichever class they belong to. We need not attempt to say whose is the better method, or even that one method is preferable to the other. It may be that those of one class draw because they have not the faculty of imparting their ideas otherwise, or in default of capable assistant-draughtsmen, and that those of the other class do not draw because their practice is so large that they have not time for it. But we do wish to protest in the strongest terms against the very common fallacy that it is impossible for a man who does not draw to produce good work. To produce it, that is, not merely as principal of the office from which it emanates, but out of the personal exercise of his own creative faculty. The fallacy is particularly common amongst assistants and young architects, even amongst the very young fellows who are engaged in drawing out the non-drawing architect's work. They are rather apt to pose as the actual authors of it. Such a feeling of creative possession does it give to draw a thing in the spirit in which it ought to be drawn, that it is almost inevitable that this should be so. Indeed, it is quite right and proper, for, as I say, the feeling of having created comes naturally from the draughtsman's having so entered into the spirit of what he has drawn as to have drawn it as it should be drawn. When you have finished your sketch of Gloucester tower, you should feel as if you had just designed it (or all of it but that clumsy expedient at the corners of the parapet), and not old Abbot Seabroke 450 years ago. Even when you have finished copying your orders out of "Chambers" you should feel as if you were in truth their designer. But you should be very careful, while indulging this feeling to the utmost, frankly to recognise that it is a somewhat fallacious one, and apt to set light heads a-swelling, and loose tongues a-boasting. It is thus that "ghost" stories get about. My friend, it is a beautiful drawing of Gloucester tower you have made, but you will not forget who really designed it. Then have the frankness to own also that it was not you who designed Mr. X's beautiful Newgate Street elevation, which you also drew. Mr. X may be magnanimous enough to allow you to continue in the idea that you did design it. He himself knows better. But the public does not, and the public is apt to believe what it is told. Whether it believes it or not, if you ask it to, look at the position in which you are placed. You are either a humbug, or you are serving one. You are either a humbug or a "ghost," an unsubstantial being who has sold himself for a few pounds a week.

J. B.

The Unity of Arts. At the last banquet of the Sculpture Society of America, Mr. John La Farge, speaking for the Society of Mural Painters, said, somewhat sarcastically: "We cannot teach the architects because, officially, they know more than we do. A young architect of twenty-one knows more than a painter of seventy. What we want is a man conversant with the three arts (painting, architecture and sculpture) practising one, but in sympathy with the others. It is for the extension of that feeling that our society is founded." If the last statement is true the mural painters are false to their trust, as such expressions as the one quoted are certainly not productive of a better understanding between the men who practice the three arts referred to. Whatever the shortcomings of the architectural profession at large may be, it is unquestionably true that the average cultured architect is more conversant with the part that both sculpture and painting play in his art than either the painter or the sculptor is with architecture.

A. M. T.

On Reflection.

Baths for the Poor. We are glad to find that the proposal of Mr. W. R. Court, engineer and chief superintendent of baths at Liverpool, for providing baths for the poor (a proposal discussed in our issue for September 27th, 1899) has been so far developed that a Local Government Board enquiry has been held into the Corporation's application to borrow money for the purpose. The scheme is to erect on a site immediately adjoining the docks a building in which would be provided a large number of rain or shower baths, and a certain number of slipper baths. As we have already pointed out, for the working classes—people whose employment makes them very dirty—there can be no doubt that the shower bath is the best possible arrangement, for it cleanses the bather from head to foot and carries away the soiled water at once; whilst, on the average, less water is needed than for slipper baths, and it is possible to reduce the charge for admittance. At Liverpool it is proposed to make the charge as low as one penny. It will be possible to have a hot or a cold spray, as desired, though, as the temperature of the water will never exceed 90°, there will be no danger of the bather scalding himself. In Germany, Austria, and America this system of cheap baths for the people has been practised with much success, and we hope that the Liverpool scheme will receive the sanction of the Local Government Board. As a nation we observe a singular reluctance to adopt new methods or systems; this has been the case in regard to technical education; but we now find out, to our cost, that the old idea is too limited, and it is therefore some consolation, now that our eyes are opening a little, that we see the foolishness of a studied complacency.

Street Regulations. In June last a conference was held between the London County Council and the several local authorities of the metropolis with regard to certain street regulations, and a committee was then appointed to report on the decisions which were arrived at. This committee submitted its recommendations at the adjourned meeting of the conference held on Wednesday last, and it is to be wished that those which were adopted will be carried into practical effect by the central authority and the new Borough Councils. The present condition of the streets is most unsatisfactory, for not only is it the custom to constantly tear up the surface in order to lay or repair gas, water, and other mains, but there is no thorough and regular cleansing. The conference recommends that all streets paved with asphalt, wood, or granite setts should be well washed after sweeping; a system which, though extensively adopted on the Continent, has received little attention in this country; it is the only way in which the streets can be effectively cleansed. In this particular the asphalt roads are especially suitable. Leadenhall Street (asphalt) is an example of proper and systematic cleansing, while the Euston Road (wood) is a standing disgrace because of the filthy condition in which it is allowed to remain. As to the Embankment, despite the thousands of pounds which have already been spent in the endeavour to produce a proper surface, no satisfactory result will be obtained till wood or asphalt replaces the present macadam. We agree that greater supervision of the scavenging is absolutely essential to secure the efficient cleansing of the roads and footways of the metropolis. The mud at present thrown up by passing vehicles is of a most objectionable kind. Another recommendation which has received the approval of the conference is that the section of the Public Health Act, 1891, compelling local authorities to remove snow from the footways should be repealed. This means that householders would have to clear away their own snow. But as local authorities have hitherto been singularly lax in performing the duties imposed on them by the section in question most householders would not notice the change. There is, no doubt, force in the argument that the authorities of the many towns which form London already have their hands full with the cleansing of the roads, one district alone having 124 miles of streets to look after. But it is properly the duty of the local authority to keep its streets and pavements clean. Naturally there was a recommendation that all wires and pipes should be placed in subways; but this very necessary reform has been so often pleaded, so often approved, and so seldom carried out, that one tires of its advocacy and wishes that authorities would face the large initial expenditure once and for all, enabling them to keep their roads in a proper state, and getting rid of a great source of inconvenience and annoyance.

The Marble Arch. It has been rumoured that the famous Marble Arch designed by Nash is to be removed, but we see no sufficient reason for such an act. In 1827 it stood opposite Buckingham Palace, and was afterwards placed in its present position at the north-east corner of Hyde Park; it has become a London landmark, familiar to all visitors and always of interest to Londoners, and it would therefore be a pity to take it away. If it is considered out of place, probably Decimus Burton's screen at the opposite side of the park will be considered similarly out of place. But we think both are well situated. There is one matter relating to the Marble Arch which is more worthy of consideration. It is that some sculpture should be placed on top of the Arch: this was the first intention, and the equestrian statue of George the Fourth now in Trafalgar Square was intended for the position. As the Arch stands at present it looks more incomplete than out of place.

Berlin's Housing Problem. It is now becoming generally understood that almost every city has the dread housing fiend to grapple with. Bombay has a huge problem; Paris is, perhaps, too light-hearted to unduly trouble herself about such matters; but at Berlin the question of providing houses for the poorer classes is assuming an alarming aspect. In the opinion of General Booth, who was recently in the great German capital visiting his wonderful organisation, though Berlin outwardly looks less destitute and the new tenements are larger than those we are familiar with, the conditions under which the poor live are very distressing, and nothing is done to prevent tenants taking in lodgers, a practice which is very common and very deplorable. Two reasons for the present dearth of dwellings are that the land in Berlin is freehold and is enormously increasing in value. The magistracy of Charlottenburg has decided to offer municipal land at cost price to a building company for the erection of dwellings for workmen in the employ of the municipality, for officials and for school teachers, and the city has started with £50,000 a fund for providing houses for destitute and homeless families. This would be considered too socialistic in this country.



THE CHURCH OF NEWTON NOTTAGE. DRAWN BY R. MORTON NANCE.

THE CHURCH OF NEWTON NOTTAGE, GLAMORGANSHIRE.

BY R. MORTON NANCE.

THE old church which forms the subject of the accompanying sketches lies within a few hundred yards of the Severn, and in days gone by the weather-beaten tower, with its saddle-backed roof, was no doubt a welcome sight to the mariners who braved the perils of Sker, Tuskar, and the Nash (names suggestive of angry seas and rending planks) to run their ships up on the beach which formed the port. Since many years, however, the ships have deserted to a newer harbour a mile or two away, which, in its turn, is falling behind in the race that has made such hives of activity of the seaports most fortunately placed to tap the South Wales coalfield; and now the only relics of the former status of Newton Nottage as a port are some disappearing mooring-posts on the beach, and the inn sign of "The Jolly Sailor."

Of the past, too, buried in the sandhills that have been blown up by the Atlantic gales, is a great part of the village, where from time to time the shifting sand discloses the ruined walls of houses. The last great inroad of the and took place, as we are told, in the early years of the sixteenth century, and although the frequency of neolithic remains in the sands shows that it has not been altogether the work of a few centuries to pile up these mountains of sand, there is no doubt that a vast portion of arable land and many dwelling-houses were then overwhelmed.

Close to the church, with its water protected from sand by a hood of stone, is the ancient well of St. John the Baptist. It stands at a corner of the village green, and, according to the set of the tide, is either the resort of the villagers with their pitchers, or left to the cackling regiments of geese that evidently consider the place their own; for the spring has an outlet above low-water level, and the propitious time to obtain a supply of the sacred fluid is just after the turn of the tide from flow to ebb, which has given rise to the idea that it ebbs and flows contrary to the sea.

Near the well were lit the bonfires on St. John's Eve which were expected to strike terror into the hearts of the foul dragons that, according to popular belief, spoilt the good water of the well and brought death to the drinkers thereof.

The dedication of the church is also to the Baptist, and a head carved on a projecting stone near the top of the tower is supposed to represent that saint; while the fact of St. John having been chosen as their tutelary saint by the societies of flagellants would no doubt account for the subject of the carving on the stone pulpit, which represents the flagellation of Christ in a remarkably quaint and archaic manner. Two grim-visaged men, in mediæval costume, hold either end of a most substantial cable which is knotted round the feet of the central figure, and raise in their right hands most murderous-looking knouts. Upon the canopy above are carved two weird angels bearing, apparently, a cup, although its shape is sufficiently vague as to have allowed it to be considered an hour-glass.

To enter this strange pulpit with dignity requires some little practice; for it is approached by a small flight of stairs winding in the wall, and the arch leading into the pulpit is so low that to walk upright is to court disaster. The same doorway in the wall gave access to another flight of steps, leading to the rood-loft, long since demolished.

The carving of the whole pulpit is so rude as to have suggested that, with the font and the south porch, it was a legacy from the earlier church that was built here in Norman times; but there can, I think, be no doubt that it is work of the fifteenth century, when most, if not all, of the existing church was built. The carving on the exterior of the church is exactly what might have been expected of the same man when something less ambitious than figure work was demanded of him—the angels and foliage all have a species of family likeness. One likes to imagine him a local self-trained stoneworker, with an excellent idea of proportion and general effect, working out his ideas in his own way. At Candleston, a few miles across the sandhills, is a beautiful old perpendicular fireplace, which seems to be the work of this same craftsman.

By whomsoever produced, it is very interesting work and full of energy and character. The whole building, indeed, owing partly, perhaps, to its situation, has an air of dis



THE PRIEST'S DOORWAY, NEWTON NOTTAGE CHURCH. DRAWN BY R. MORTON NANCE

tinction and personal charm. It has suffered a little from the restorer and improver at different times. The old stone roof has gone, and most of the windows have been replaced.

The Rev. H. H. Knight (who, in his book on this parish, written in 1853, did so much to preserve old memories), mentions a saint's bell-turret at the south-east corner of the nave, and on the wall below it, a fresco of Adam and Eve, both of which had even then disappeared.

But in spite of modern improvements, the old tower, with its beautiful doorway, still stands double-buttressed against the westerly gales, and bids fair to do so even when the old prophecy is fulfilled, and ships are moored to the tree above it, when the sea returns to cover the sands.

THE REVIVAL OF GOTHIC ARCHITECTURE.*

By HALSEY RICARDO.

UNTIL the dawn of the fifteenth century after Christ the art of architecture had been one continuous art that had grown from the actual needs of the people who were developing it. Unlike in appearance as Egyptian, Greek and Roman architecture are to Gothic, they are alike in respect to their origin and the purpose that breathes through them.

What was wanted was provided in the frankest way from the materials nearest to hand, the behaviour of the materials was watched and analysed, and the experience gained was made the stepping-stone to further progress and new applications. Out of the materials themselves, their requirements and their humours, came the design—their failure showed them the limits of their constructions in one direction, whilst it showed them the possibilities in fresh.

The Romans, for example, dowered with a natural cement, found at the time the Cæsars were establishing the Empire, and when their expansion and prosperity grew with most amazing rapidity, that they could build with greater ease and with less time in concrete than they could with wrought stone, and following on this they soon found that they could build in their new material far larger and more adventurous edifices than they could dream of attempting in either stone or brick. So, too, the mediæval builders discovered, observing how their walls gave way under the pressure of their vaults, that if they strutted these walls at the proper positions with raking shores they could balance their vaults how and where they liked and, where desirable, do without the intervening spaces of masonry—and thus we arrive at the Baths of Caracalla and the Cathedral of Amiens.

Architecture was a growth—varying, according to the nature of the soil it found itself rooted in, in its outward appearance—modified from time to time by fresh grafting as the nature of the passions and ambitions changed under which it grew; but the growth was straightforward, the sap coursed along its natural branches, which spread out and ramified into special groups of foliage and highly complicated blossom; it stood with its roots in the deep past and its topmost branches aspiring to the zenith.

The revival of learning, which brought with it the revival of the arts, converted this tree to a pollard, checking its natural growth. For a time there was so much life in the plant that it threw up fresh thickets of branches and saplings—but the pruning-hook of learning and the withies of taste were for ever checking and directing the sprouts, so that gradually life faded away from the trunk, and grubs and beetles built in the wood of it, where before birds had nested in its leafage.

Hitherto architecture had been spontaneous; it now became self-conscious. Mediæval architecture was the expression of a popular enthusiasm for building which went hand in hand with the piety of the people; it was popular and it was sincere.

The architecture of the Renaissance was individualistic; it was not popular, it was infidel and insincere. Our mediæval churches and cathedrals were raised by guilds of craftsmen, assisted and furthered by the people around them. Stones and timber were hauled by amateurs, in their enthusiasm, money was collected by self-denying ordinances, for the aggrandisement of the monuments they were raising in their city. What was novel in the outcome of their structures had its origin in what was familiar; it might surprise by its strides in the line of development, but it was always intelligible.

By the time of the fifteenth century the elements of weakness had already appeared in the guilds, and when the Renaissance took them over as a going concern it found them highly specialised, with a tendency to individualism disintegrating them. Still they had in them such stores of knowledge, experience and discipline as took centuries to dissipate. The leading sculptors, painters and architects of the Renaissance had been bred up in the shops; they knew what could be done with the materials under their hand, they knew what the standard of excellence should be and what the standard of adventure. The decay that was bound to come, came slowly; at first there was no evidence of it at all; the fund of tradition was copious, and the leaders of the new modes of expression came from their own bands of fellow-workers and still worked amongst them. But they spoke a strange language: they came back from their travel with sketches and measurements of things long gone to ruin, of things alien and hostile to their modes of thought. To recall the Augustan age of literature and architecture was to the ordinary mind an uncalled-for phantasy, and to the religious mind an offence.

Architecture became dependent upon great patrons who supported it from without, when it had previously been inspired from within, and with this change all the arts became an inexplicable cult for the rich and the leisured—the craftsmen only co-operated in ignorance and without heart. Puzzled and checked by the exotic nature of their instructions, they relied more and more upon the oracle's guidance, their sense of responsibility in the matter lessened; and the fund of tradition was not only obscured and confused, but dwindled from want of concert. As architecture grew more learned, more correct, and more pedantic it grew more frigid, more wooden, and more wearisome. New styles were evoked to touch the jaded senses; men travelled farther and farther afield—all Italy was ransacked. Robert Adam journeyed to Dalmatia: Greece and Syria were reached. But other influences were on foot. Toward the end of the eighteenth century the doctrine of man's brotherhood to man had proclaimed—and then asserted—itself: a new spirit was astir and so potent that it changed, with us gradually, in France with violent upheaval, the bases of society.

New modes of thought showed themselves in poetry, literature, and subsequently in legislation. Closely following on this came the welding of England into one unanimous single-handed defiance of Napoleon, and—the contest decided—the great expansion of our influence and our commerce. The old social boundaries were either enlarged or broken down; the tolerant satisfaction or the weary acquiescence

*Paper read before the Liverpool Architectural Society on November 5th, 1900.



THE STONE PULPIT, NEWTON NOTTAGE CHURCH. DRAWN BY R. MORTON NANCE.

in things as they were was flung away, and in the passing of the Reform Bill men thought that a new era had dawned and that again there would be the vision of Astraea Redux. But in this upheaval of the old landmarks and solution of old ties many looked back fondly on the past and tried to find in the glamour of romantic history a compensation for the hurry and scramble of the present. They tried to lead two lives—by daytime they were in the toils of the nineteenth-century wielding and controlling the new forces of steam and electricity, with this great globe of ours hitherto immeasurable, with huge continents of unknown and fearful country, now shrunk to a measurable sphere, surveyed and explored, and traversable both safely and punctually—and then after business hours they surrendered themselves to the Wizard of the North and steeped themselves in the romance of the Middle Ages.

The Church, roused by the new temper and bade put its house in order, heard the summons, and obeyed. Whilst the Tractarians were devoting themselves to the examination of the sources of church authority and church discipline, the Camden Society set itself to investigate the authorities for its ritual and the history of its buildings. It was natural when trying back to turn to those periods when faith was strongest, emotion most creative, and passion most intense. The world of Religion and Art gazed back hungrily to the thirteenth and fourteenth centuries and proposed to set their house in the order of that time. But in this Gothic Renaissance there was this essential difference —there was no help from the craftsmen. When the first Renaissance flooded the land, it found the guilds in active life, and it took them over, with their traditions and their craftsmanship, and though it diverted them from the accustomed channels, the divergence at first was one of detail more than of principle. But the Gothic Renaissance found no such band of workmen to incorporate. Tradition there still was, though greatly starved and weakened—but, such as it was, it appeared to the Gothic architects incompatible with the New Gospel in Art, and the action of the Gothic Revival was to stifle and quench the few sparks that still lingered. The sudden reversion to the methods of workmanship of the Middle Ages was a new perplexity to the worker. While, on the one hand, in his shop, he was coming into possession of extended powers of machinery and appliance, he was bidden to put them aside for the new doctrine, or else make his machines simulate hand work. No wonder the Gothic Revival seemed to him a mere fashion, an affectation, and that architecture itself was a mystery and a creed that had its fashions and shibboleths; and, based on no actualities either of needs or the properties of materials, had no principles nor sense in it, but must be done blindly according to the instructions. Work done under such conditions must necessarily be tired weary stuff; the workman's criterion of excellence was inapplicable as a standard to the supposed mediæval temper, and he had no other—puzzled and disheartened he set himself doggedly to his task, to do his day's work loyally, but mystified, and in the end indifferent as to the purpose of his labour. Meanwhile the Revivalists, in the full industry of their zeal, proceeded, by the bitter irony of circumstance, to destroy the evidences of the style they were labouring to reproduce by every means that knowledge and feeling could give them, Gothic buildings were overhauled, furbished up, and restored throughout the land, so that more ruin was done by fifty years' attention to our examples of mediæval construction than the neglect of centuries had been able to accumulate. The work of the restorers did not pass without protest by those who more fully understood in what the nature of true Gothic consisted.

The foremost, the ablest, and the most eloquent of these was Ruskin, whose teaching had a power that might be denied, but could not be disregarded. Into the cause of Gothic architecture he threw the weight of his knowledge, his observation, his analysis; he met his opponents on their own ground, and the force of his logic stripped the facts of the case bare; to take a lower line of argument than his was to write oneself down as merely selfish and worldly; to rise to the higher level and attempt to contend with him there was a flight few attempted. He defined the nature of Gothic architecture in words no other man could have used, and which, despite the weight of the whole architectural profession arrayed against him, in the end prevailed. But the end was slow in coming, and meanwhile most of the important Gothic monuments disappeared under the process of restoration.



THE SOUTH PORCH, NEWTON NOTTAGE CHURCH. DRAWN BY R. MORTON NANCE.

Ruskin preached a doctrine difficult at that time to accept; and when the Oxford Museum was built avowedly in conformity with his teaching, and embracing the principles that he had enunciated, its failure, or partial failure, in the direction of beauty expected from it, helped to confirm the impression that Ruskin's doctrine was impracticable. But, as he pointed out, how can we expect the workmen of to-day to match themselves against the craftsmen of the past, when for the past three centuries we have been training them in other methods, cramping their individuality and discouraging their research and turning our backs on the inheritance that was the mediæval builders'. Such craftsmanship as theirs can only be acquired by the same slow methods under similar apprenticeship.

Of the architect leaders of the Gothic Revival, the men who seem to me to have had the foremost place in bringing about the Revival, and whose work was vitalised by their passion and sincerity, are Pugin, Street, Burges, and Butterfield. Before Pugin's time, broadly speaking, such Gothic architecture as was being produced was Gothic in seeming only. That the author of the "Waverley Novels" should inhabit a Gothic structure at Abbotsford was but proper, nay, it was almost incumbent upon him, as well as consonant to his taste, and Mr. Blore, his architect, was ready to fall in with so amiable a whim; so various territorial magnates considered that it was due to their ancestry that they should be living in middle-aged castles, and therefore transformed their Georgian dwellings into battlemented and machicolated imitations of the defences of the Barons when war raged throughout the land.

But with Pugin a far deeper note was struck. The Gothic Revival with him was a matter of conviction—strong as life, deep as death. For him the Middle Ages contained the true gospel, the Roman Catholic religion, the true faith. He set himself to reproduce the conditions of past time, old methods of life, old methods of construction. He saw well enough that to effect this properly he must reproduce the mediæval workman, and so far as he was able he established workshops and schools in which to train his men. We see now that this recalling of the past to serve as the present was a fond dream. It was not so evident then. At the back of the artists of the Gothic Revival was the great bulk of public opinion sympathising with them and strengthening their hands. Moreover, in his churches and convents he was providing for the survivors of the Middle Ages, for men who lived and worshipped much as their ancestors did.

So far as the conditions of the case could help him, they did; but his red-hot enthusiasm prevented his seeing how special they were. His restless activity forced him into polemical writing, enthusiasm winged his pen, zeal barbed it. He set himself to convince his hearers that the Gothic style, besides being

national, was the only rational style, and in consequence economical, and his patrons compelled him to make his words good. His great knowledge of old work forced him to see the glaring discrepancies between that work and his, but he had his excuses; the money, this time, would not permit sturdy walls and a stout roof, but the next time that should be amended. He undertook far more work than mortal man could manage, but he meant to have breathing time by and by, and the work meanwhile was of immense use in educating his workmen. His enthusiasm was contagious, and the schools he founded endured for a generation after his decease.

His knowledge was prodigious and his memory tenacious; he had a great facility in draughtsmanship, and his learning and his pen carried him into positions that could not honestly be realised. To us now, with our extended sources of information, his learning does not appear so colossal, whilst the substitutes and imitations of the real effects that he was trying to reproduce abate in us something of our esteem for his sincerity. But through his work breathes a spirit of lofty piety that kindles and purifies what he did. The work of an ardent beautiful soul, it stands, a possession to us, the record of the ferment and the passion of the mid-century, and made valuable by the quantity of noble feeling it contains.

With Street the case is somewhat different. He, too, was passionately in earnest, and his enthusiasm carried him impetuously into numerous undertakings. But on him was thrust, to a much greater extent, the weight of modern conditions. The churches he built were for reformed congregations, and though he and his school of thought tried to some considerable degree to ignore these reforms, yet there was much that had to be accepted. In his mind he recognised this, and desired to accept it loyally, but the spell of the past was upon his heart and his terrible facility with the pen carried him beyond the limits that he had appointed to himself. The gift of scholarship, the stores of his memory, stayed his hand where the conditions of the case required him to be creative; the attempt to recall features that once had life and bid them live again, because they were endeared to us, showed itself, for instance, in the Great Hall of the new Law Courts. When that design was clubbed and bludgeoned down by the Government of that day into less than half the area that it properly and originally demanded, it was clear that the attempt to preserve the hall was a fond one, and that in good sense, the hall should go. But a fine hall is an idea that speaks to every one, still more to the connoisseur, and most of all, to the architect. The hall was built to the cruel detriment of the comfort of the courts, the great vaults hang over it, gloomy and deserted, it was his heart's darling whilst he lived, and now that he is dead it serves mainly to guard and enshrine his monument.

With William Burges we have another temperament, and, in the main cast of it, far more mediæval. Not lacking in earnestness, and with a scholarship fully as ripe as that possessed by either Street or Pugin, his learning sat more easily on him, and there is a kind of sunny laugh in the buildings that grew up under his hand. He carries us back to the days of the Decameron, and puts one amongst Bocaccio's audience, and one is startled to find how vivid and real the dream is. He picks up the tools of the mediæval craftsman, with an echo of the laughter of hundreds of years ago, and works his stone with so convincing an air and with so much humour that it surely must be quickened into life. Burges had the power of transfusing himself amongst his craftsmen. His sculptors and painters kindled at his ideas and played up to him. All through his work you see not only the evidence of his feeling and his imagination, but also the pleasure of the artist-workman. There is great animation and romance in what he does, and we hurry along almost in breathless amusement as we follow him in his work. He tells us stories of doughty deeds and perils escaped, of damsels under enchantment, of wizards overthrown: we have Ivanhoe and the Talisman over again in terms of stone and painting. The days of knight-errantry are to come back again—ah! if they only could! Nevertheless, Burges' influence was a curiously impressive one: with all his devotion to, and scholarly application of, that particular period of mediæval work that struck his fancy, he was able also to incorporate the poetry of his time that he felt, and to show that architecture, saturated with his romantic personality, had a nearer kinship with the models he was copying than any other individualist's work, because of the glow of human feeling still warm in it.

The last name that I shall deal with to-night in connection with the Gothic Revival is Mr. Butterfield's, and it is his special and lasting merit that he was more than a revivalist architect—he was an architect in the wider and fuller sense of the word. He saw clearly and accepted loyally the conditions of the times in which he lived, and his structures embrace them frankly and cordially. He had studied the mediæval buildings with a closer and deeper analysis than Pugin, and with a greater reverence than Street, and he set himself to build for the necessities and ritual of the present day, using the Gothic vocabulary as his mode of expression. He was called by his own contemporaries, and himself accepted the designation of, Gothic architect, but his masterful individuality was poles asunder from the Gothic temper. Except so far as they appreciated and respected his knowledge of his materials, there was no co-operation from his workmen—everything was settled before the work was begun—down to the last detail, and no growth was permissible beyond what had already been foreseen. But he knew his materials well, what they had done and what they could do, and throughout his work they have a contented air widely different from the usual tired look that most walling has. How should it be otherwise under the present conditions of work? What does the mason of to-day know of the history of the stone as it lies on his bunker? What does he know of its behaviour after it has left his hands? The stone has come from miles away from a quarry he has never seen, and it is going to be set in a job miles away, which he will never see. Beyond the pride of doing his work truly according to the details given him, he can take no pleasure in his work; he has no scope for his own pleasures, his prejudices, his knowledge, and his work looks weary and mechanical, reflecting his own mood. It is a searching testimony of Mr. Butterfield's true feeling for his materials, and sympathetic prescriptions for their handling, that his buildings have a happy smile about them, as if they enjoyed being there. And this is gained, not by affected construction, not by any attempts at the sentimental and the picturesque—his buildings are not meant to appear as survivals, somehow hitherto overlooked, of the Middle Ages; they are planned for modern purposes, built of modern materials in modern methods, and everything is sound and durable about them. And in and through them all burns his deep sincerity. A man of strong convictions, and perfectly fearless in consequence, he heaped up his masses in simple logical answer to the requirements set him, and they became in his hands solemn, romantic, pious. There is nothing wayward, exuberant, or exotic about his work; it is the outcome of a quiet deep mind, not easily troubled, not easily influenced. To the great questions of his time he had made his answers, or else stood aloof; in his own craft he had trained himself so thoroughly as to be beyond the reach of doubt or misgiving; simple-minded, and in the true sense humble, he knew what it was to be a master in his art, and, unvexed by the perplexities that assail the most of us and strong in the fervent religious feeling that surrounded him and added to his own, he spent on his buildings the gift of an earnest soul fulfilling its appointed duty. That intense conviction, that sympathetic support of the many feeling and working with us, is ours of to-day no more. That the Gothic Revival would prevail and sweep all before it, as soon as its merits had made themselves known, was never doubted by Pugin and the men of his day. They looked forward to all England accepting the Gothic style as the recovered vernacular, and that whereas at the outset of the revival the tradition had to be made anew, they hoped that in course of speedy time their individualism would be merged and absorbed in the general growth of the style. It was a fond hope. By their enthusiasm, by their learning, by their sincerity, they produced buildings of taste—as we are doing still—but it is the Art of Taste, not the Art of Architecture. We must look elsewhere if we want to see living architecture, living and growing. We must consider what are the themes that touch the national conscience, the successes and powers that we pride ourselves in. We must recall the determination that England came to in mid-century, that if there must be poverty amongst us, at least it shall not go ignorant and diseased; that the afflicted shall be soothed, the industrious encouraged, the feeble protected. We turn to our schools, our asylums, our hospitals and our libraries, and we find a living architecture there. We pride ourselves on the great forces that we have harnessed to do our daily work, our railways, our shipping and our fleet, and we find in the harbours, docks, and the great railway arches that stride across our roads and waterways an architecture that is growing, because it is real and living. And paradoxical as it may sound, it is architecture so long as it is frankly constructive and to the purpose and does not affect the trappings of a past style or allow itself to be diverted from its proper ends to conform, or modify itself in a self-conscious effort, to some supposed standard of beauty. As soon as the engineer attempts to invest his building with architectural detail, he introduces an element that is exotic and artificial. Some day, let us hope, his work will gather strength and sprout naturally into ornament and beauty—the beauty that is born from the wise use and distribution of the materials and quickened by the workman's feeling that his work has been done well and his pleasure in the doing. For the present we must content ourselves with the bare bones of our art, viewing our requirements frankly and squarely in the face, tabulating and systematising our knowledge in construction and extending our powers in that line with the utmost experiment of research; and so using our knowledge that the work that has to be done may be done simply and straightforwardly and that the craftsmen employed may help to further our work by recognising the drift and sensibility of our purpose, and consequently, by their appreciation, advancing our ideas a step. Where the men are interested, there their work becomes interesting, and that is the quality we want our buildings to have.

Instead of being dumb masses of dead scholarship, the shrines of habits and thoughts of a world long since passed away, our buildings will speak to us of our aims and our shortcomings, and whilst we resolve to ennoble the former, we may trust with our fuller knowledge to lessen the latter.

Life to-day is greatly different from the life of the eighteenth century, and the architecture of our day, do what we will and protest how we may, shows itself in exact response to our mode of life. Like puppies, we find ourselves in possession of huge paws, and we have not as yet grown up to them. Our proportions are as yet immature, and we are incessantly being measured by the standard of the full-grown races that have preceded us. Unlike puppies and too experienced and saddened to be child-like, we allow ourselves to be over-much troubled at the awkwardness of our figure and the clumsiness of our gait. Painfully self-conscious, each sprawl disconcerts us, and we aim at standards of deportment that are beyond our years and alien to our dispositions.

One feature of the present time is our feeling for corporate action and corporate life. Our knowledge which has taught us to annihilate space and time has not made us happy, but it has brought us sympathy with those around us, and given us charity. Our world is infinite no more—but the definition we have gained, has not brought us either conviction or comfort; doubt and perplexity runs through what we do, and what we think, and reveals itself in our art,

which is the reflex of men's minds. With the world to choose from, never before was self-consciousness so eclectic and its choice so crippled. The canons of taste are now clamouring for simplicity, showing how tired we have got of the trappings and upholstery of past styles, and how insufficient they are to hold our interest after their novelty has worn off; and in this simplicity lies our hope that we may touch the heart of things, take our problems frankly and loyally, and try to work them out in common sense, using our knowledge of construction to further our powers of design, not to cramp them by enabling us to raise buildings of impossible appearance; and our knowledge of what has been done in past time to be our guiding spirit in respect to the aims, the methods and the piety of the master builders—our forefathers.

WATER ENGINEERING.

ON Tuesday in last week the Institution of Civil Engineers opened its eighty-second session. The new president, Mr. James Mansergh, in the course of his inaugural address, said that he thought it would not be inappropriate for him to begin with a few remarks upon one or two departments of water engineering, in which knowledge had advanced or practice varied since 1878, when the famous water-engineer, Mr. J. F. Bateman, occupied the presidential chair. The most valuable and practical gain had undoubtedly been our enlarged insight into the very important work done by the ordinary sand filter, which at that time was not expected to do more than remove from the water such suspended matter as was visible to the naked eye. Since then germs, whether known simply as micro-organisms or as bacilli, bacteria, &c., had come very much into evidence, and had to be taken account of as potent agents for good or evil. The specially interesting thing about them to the water-works engineer was that, notwithstanding their minuteness they were almost entirely removed from water in the ordinary working of a sand filter. The signal service rendered by chemical methods in detecting sewage contamination might be said without exaggeration to be conspicuously reflected in the diminished mortality from typhoid and cholera in this country. There were many waters contaminated to a very slight extent only, and the question forced itself upon practical men whether these must be wholly avoided, or whether they could be rendered fit for domestic purposes by some simple process of purification, such as storage in large reservoirs or filtration through fine sand. But the changes effected by sand filtration being from a chemical point of view quite insignificant, the nature of the services rendered by this method of treatment remained obscure until an entirely new interpretation was placed upon them by the now well-known bacteriological methods of water examination. The importance attached to such examination was based on the suspicion that most natural waters might at any time contain bacteria capable of producing disease, and, although the majority were innocuous, a guarantee was required that no harmful ones should reach the consumer. This in the present state of knowledge could be secured only by the removal of all bacteria irrespective of their harmful or harmless nature, and therefore the value of a process was estimated according to the efficiency with which it did this. Whether it was right to do so was a question upon which he was bound to say he had always had a slight misgiving. We were still groping in the dark as to the work these ubiquitous micro-organisms were designed to do in the economy of nature. Might it not be wiser to assume the majority of them to be actively beneficent instead of being simply harmless? But this pessimistic view need not trouble us much, for health statistics proved that the risk of harm arising either from the presence in the water of so-called pathogenic organisms or from the removal of the harmless ones was so small that it might be calmly disregarded.

After some observations on use of stone dams for the construction of impounding reservoirs, Mr. Mansergh remarked that the hydraulic engineer probably represented the most ancient branch of engineering practice. This led him to enumerate some important hydraulic works of ancient times, beginning with a dam built across the Nile at Kosheish when Mena desired to build Memphis nearly 5,800 years ago. He proceeded to give a somewhat detailed account of the various aqueducts by which ancient Rome was supplied with water, drawing for his facts on the work of Sextus Julius Frontinus, who was appointed water commissioner of the city early in the second half of the first century of the Christian era. As to the amount of the supply in Frontinus's time, Mr. Mansergh said he had always thought there must be some exaggeration about the figure of 312 million gallons a day sometimes stated, and he agreed with the conclusion that a more likely quantity to be carried by the nine aqueducts in existence early in this era was 70 million gallons a day, 25 millions being lost or utilised *en route*, and 45 millions delivered into the city. But, as all the aqueducts were seldom in working order at one time, it would be right to make a still further deduction and reduce the quantity to 32 millions, equivalent to 32 gallons per head per day, assuming the population to have been one million. This might not seem a very large quantity, considering the volumes employed for baths and fountains, but, on the other hand, for purely domestic purposes the greater part of the people used only such water as was carried to their homes in jars. Many local sources were also available.

Mr. Mansergh next commented on the law of underground water, and, finally, discussing the water supply of fifteen important cities in the United Kingdom, Europe, America, and Australia, he called attention to the fact that, with a partial exception in Rome, all but one had their supplies administered by the public authority as directly representing the ratepayers and consumers; and he expressed the opinion that the fourteen were right, while the one (London), whose supply was managed by the directors of private companies, was wrong.



THE WEST DOORWAY, NEWTON NOTTAGE CHURCH. DRAWN BY R. MORTON NANCE.

Correspondence.

The Origin of the Term "Galilee."

To the Editor of THE BUILDERS' JOURNAL.

SIR,—I have been reading quite a small collection of learned derivations of this word, It is surprising that the equally learned authors of these derivations should wander hither and thither through the Hebrew dictionary in their search, rather than, aided by the merest knowledge of philology, look at home.

One of the first things we learn in philology, if we have not already discovered it for ourselves by experience or observation, is that people will insist on pronouncing words in the easiest way—or the way easiest or nearest to themselves individually. Servant girls excel in this, and no doubt it is to them that we owe the term "banister," which probably now is quite classical and appropriated to the stair balusters. It is individuals such as these that find gall*e*y a much easier word than

gallery, and I have often heard the fast disappearing galleries of churches spoken of as "the gallelies" by members of this useful though despised and ridiculed class. Gallely (not Galilee) must, therefore, have nothing to do with the land of Palestine or the language of the Hebrews, but be merely a corruption of the word "gallery" or "galery" from the Low Latin *galeria*, a long porch (*porticus*). The ecclesiastical language has always been Latin, and, therefore, if "gallery" in the mouth of a servant-girl did not become "gallely" and so indicate the derivation, we ought first to go to the Latin before rushing off to Hebrew. As *galeria* is a long *porticus*, so most of the so-called "galilees" are large if not long porches; but whereas porches usually face north or south, "galelies" or "gallelies," on the other hand, are porches that face west, either at the west end of the church, as at Durham, Ely, Peterborough, Fountains, or in some other position (but still facing west), as that at Lincoln on the west side of the south transept; or else there is a division internally at the west end of a church, as at Leominster Priory, where a step called the "Galilee (galely) step" runs across the first or western-most bay of the north aisle and nave.

Yours truly,
BANISTER.

Low Side Windows.

To the Editor of THE BUILDERS' JOURNAL.

SIR,—Pray allow me space for a reply to Mr. J. Russell Larkby's criticisms, on page 262 of your issue for October 31st, of my low side window theory. It is, as he says, a "vexed question," and without hoping to convert him to my view, I wish to remove any misunderstanding that may have arisen from some of the statements in my previous letter.

1. I did *not* quote Bedyll's letter as referring "*exclusively* to monastic establishments": indeed, my intention was to show that his remark as to the blocking up of openings in walls used as outward confessionals by the friar-confessors related primarily to such apertures in the outside walls of our parish churches and dependent chapels. The context of Bedyll's letter shows, I think, that this reference to the friars and their peculiar mode of hearing confessions is in the nature of an interjection, not strictly relevant to the subject on which he is writing—namely, the reluctance of the nuns of Sion and their spiritual advisers to accept the new title of Henry the Eighth as Supreme Head of the Church of England.

2. Apart from any particular theory of the dozen or more that have been advanced to account for these peculiar openings, it is a fact beyond dispute that they are rare in certain districts and non-existent in others, while, on the other hand, they abound in perhaps the majority of our English counties. This alone points to an irregular use, unknown or barely tolerated in some dioceses, sanctioned and encouraged in others. If the ringing of a sanctus bell were the object for which this class of windows was brought into being, such would not be the case; and, which further disposes of that explanation, it is well known that a sanctus bell-cot and low side window often exist side by side in the same church; or, which is the same thing in effect, a central tower and the window adjoining it in the chancel.

Mr. Larkby is quite correct in saying that low side windows are (for some reason I cannot explain) the exception in Kentish churches. Some time ago I published in "The Antiquary"* a list of examples known to me in that county, and they numbered only twenty-two. Since then I have met with one or two more; but undoubtedly the proportion to the number of churches is very much smaller than in such counties as Surrey, Sussex, Hampshire, Lincoln, or Northants. And in the churches of Kent, near London, as Mr. Larkby remarks, very few are to be found. Eynsford and Hartley—where two exist (one retaining its original shutter)—Meopham, Chalk, and Frindsbury are exceptions that Mr. Larkby may be glad to know of.

3. I have all along contended that the unequal distribution of these windows corresponds to the influence of the friars, which would be greater in one locality than in another; but I do not suppose that the friars *only* used these openings. I can even imagine that they came to be used when made, or were even in exceptional cases expressly built, for some other purpose altogether—e.g., the display of relics to a string of pilgrims (as must have been the object of two low side windows in the east wall of the chancel at Faversham, Kent); so many handy uses could be suggested when once such openings were in existence for the primary purpose of confession. That they are infrequent in the town churches—though I could quote many examples, nevertheless—only points to the fact that the friars found other more convenient means in the great centres of population of getting at the people. Their practice, as is well known, unlike that of the monastic orders proper, was to build their churches in a town or its suburbs, and to spread themselves abroad through the adjacent country, commonly journeying in couples. Mr. Larkby says that two low side windows in one church are comparatively uncommon. I cannot quite agree to this. Taking Sussex, for example, out of about seventy cases of churches with a low side window, at least twenty-one have two; one, if I am not mistaken, has three.

Mr. Larkby quite mistakes my meaning if he supposes that I intended to draw an analogy between the manners and customs of the anchorites and those of the friars. Everyone knows, of course, that they had very different ideals as to the religious life; that of the one being seclusion from the world, and that of the other missionary work of the most active and popular character. But the fact on which I insist is that both classes of "religions" were in the habit of attracting certain of the laity to resort to them for the purpose of making confession; and in the case of the anchorite, immured for life in a narrow cell, he could have heard these confessions in no other way than by means of the narrow barred and shuttered external aperture, which served him for light and air, the passage of food, &c. Here then is a low side window in all its characteristics, saving only that it is in a cell attached to the church, instead of in the wall of the church itself; and confession, beyond all question, was made at such openings in such cells. Is there anything so very unreasonable in supposing that the low side window of the church itself was put to a similar use? The thickness of the walls, *pace* Mr. Larkby, would be no difficulty, and the sills, where not actually niched-out, as at Warlingham, Doddington, Kent, and elsewhere, were commonly made flat on the inside to allow a person to sit on them. But of course it was never intended that priest and penitent should come to too close quarters.

Yours truly,
PHILIP M. JOHNSTON.

* For March, 1900.

Guide-Books.

To the Editor of THE BUILDERS' JOURNAL.

LONDON, N.W.

SIR,—As a genuine guide-book writer may I be allowed to add somewhat to the article on "The Average Guide-book," which appeared in your issue for last week. There are two sides to every question, and I wish to put the case of the not always fortunate compiler of local guides. Undoubtedly there are many guide-books (and not always cheap ones) which are written without local knowledge; but unless they have some very special recommendation they rarely survive the first edition. Guide-book architecture is often a wonderful thing; but are not architects themselves sometimes to blame for the extraordinary muddling up of styles? While one of our guides was actually in the press I received information that an important addition was being made to a building of some historical interest which I had described. I wrote to the architect and received the information that the building was in the Early English style. After the book was published and I was able to visit the completed erection I was disgusted to find that it was built in the Tudor style. Again, what is one to do when expected to describe one of those marvellous structures which consist of all styles mixed gloriously together but to write it simply "Gothic" or "Classic"?

It often happens that an individual having local knowledge cannot properly express himself in writing; and when trying to make his knowledge available and readable for other people, such a person is almost bound to copy and perpetuate similes which should have been decently smothered and buried long ago. Often local writers are unfitted to compile guides because the interesting places in their district have become too common to them to be properly appreciated. They rhapsodise over the new chimney-pot on Mr. Brown's house, and leave antiquities which have plenty of history attached to them without a word.

At the same time it must be admitted that one of the worst punishments that could be inflicted on some writers of guide-books would be to place them in a locality about which they had written with only a copy of their own misguiding guide to enlighten their way.

Yours truly,
B. C. DEXTER.
Editor, Millgate's "Kentish Guides."

Fletcher's "History of Architecture."

To the Editor of THE BUILDERS' JOURNAL.

BELFAST.

SIR,—I shall be glad if any of your readers can put me in the way of getting a copy of Banister Fletcher's "History of Architecture." I have tried Mr. Batsford and several other booksellers, but without success.—Yours truly,
PUPIL.

An Underground Architecture.

To the Editor of THE BUILDERS' JOURNAL.

LONDON, S.W.

SIR,—How does "G. W. H." propose to drain his buildings ten storeys below the ground?

Yours truly,
M. J.

THE BUILDING TRADES' GIFT.

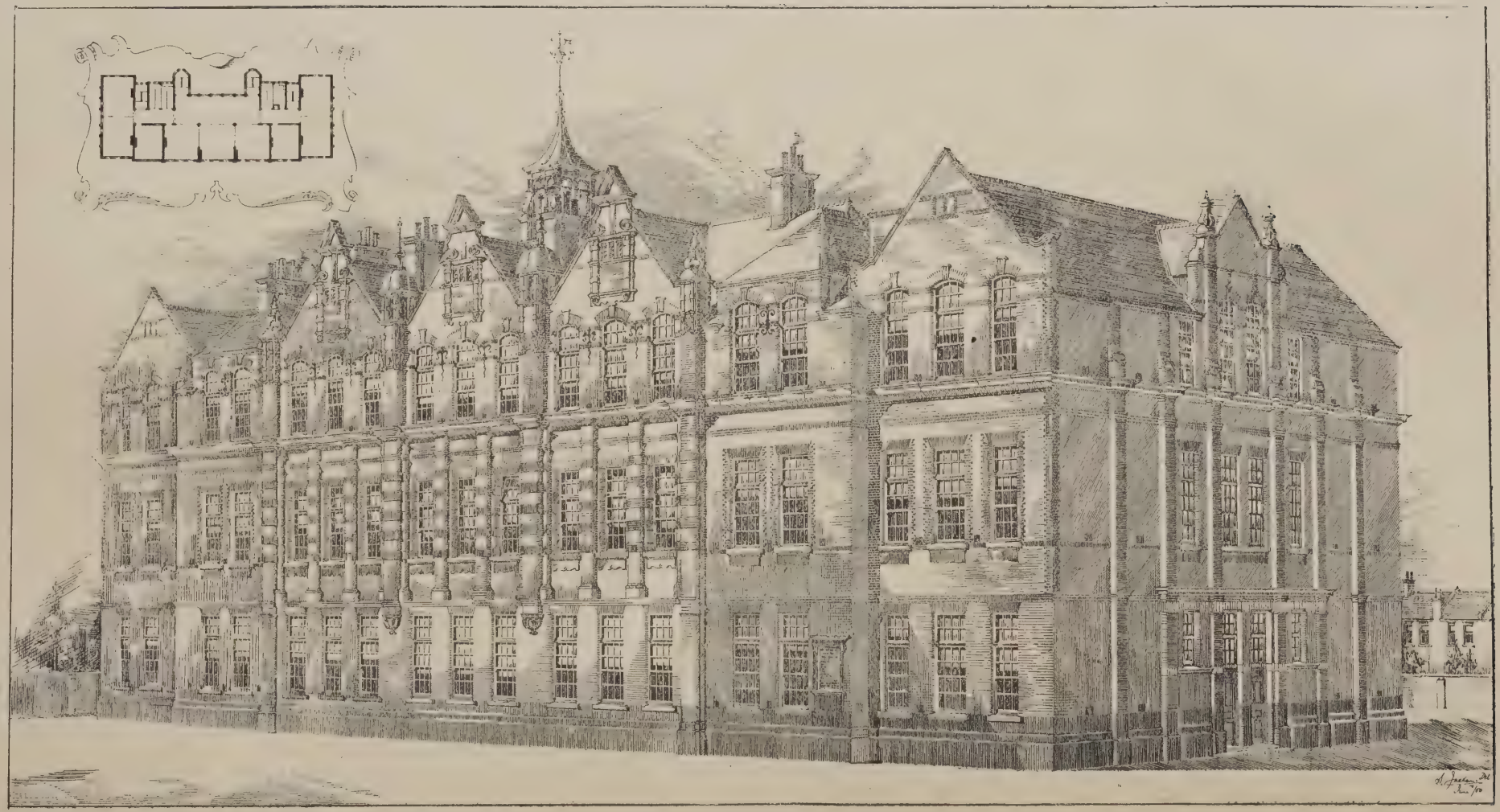
MR. T. F. RIDER, as honorary secretary to the Building Trades' Gift to the Nation, announces the following additional subscriptions which have come to hand:—

	£	s.	d.
The Building Trades of Walsall (per Mr. W. Wistance)	200	0	0
The Birmingham Master Builders' Association (per Mr. W. Sapcote, third instalment)	100	0	0
Messrs Holloway Brothers	52	10	0
The Nottingham Master Builders' Association (per Mr. W. J. Barton, second instalment)	47	5	0
Workmen of Messrs. Holloway Brothers	25	2	1
THE BUILDERS' JOURNAL Shilling Fund (second instalment)	14	17	9
The Employés of Mr. Walter Wallis (per Mr. A. Sweetman)	7	11	0
Mr. T. W. Heath and Workmen, Kensington	3	3	6
Workmen of Messrs. T. Rider and Son	3	0	0
Mr. A. S. Turner and Workmen	2	12	0
Messrs. G. Candler and Sons and Workmen, Brixton	1	18	9
Mr. C. Kibley and Workmen, Plumstead	1	17	0
Workmen of Messrs. Barnes and Co., Shoreditch (third contribution)	1	17	0
Mr. Burkitt (per Mr. Robert Neill)	1	1	0
The Yorkshire Federation of Building Trades Employers (per Mr. W. R. Thompson)	0	17	6
Messrs. H. Stevens and Co., Southampton	0	8	6
Messrs. M. and E. Whewell, Blackburn	0	6	0

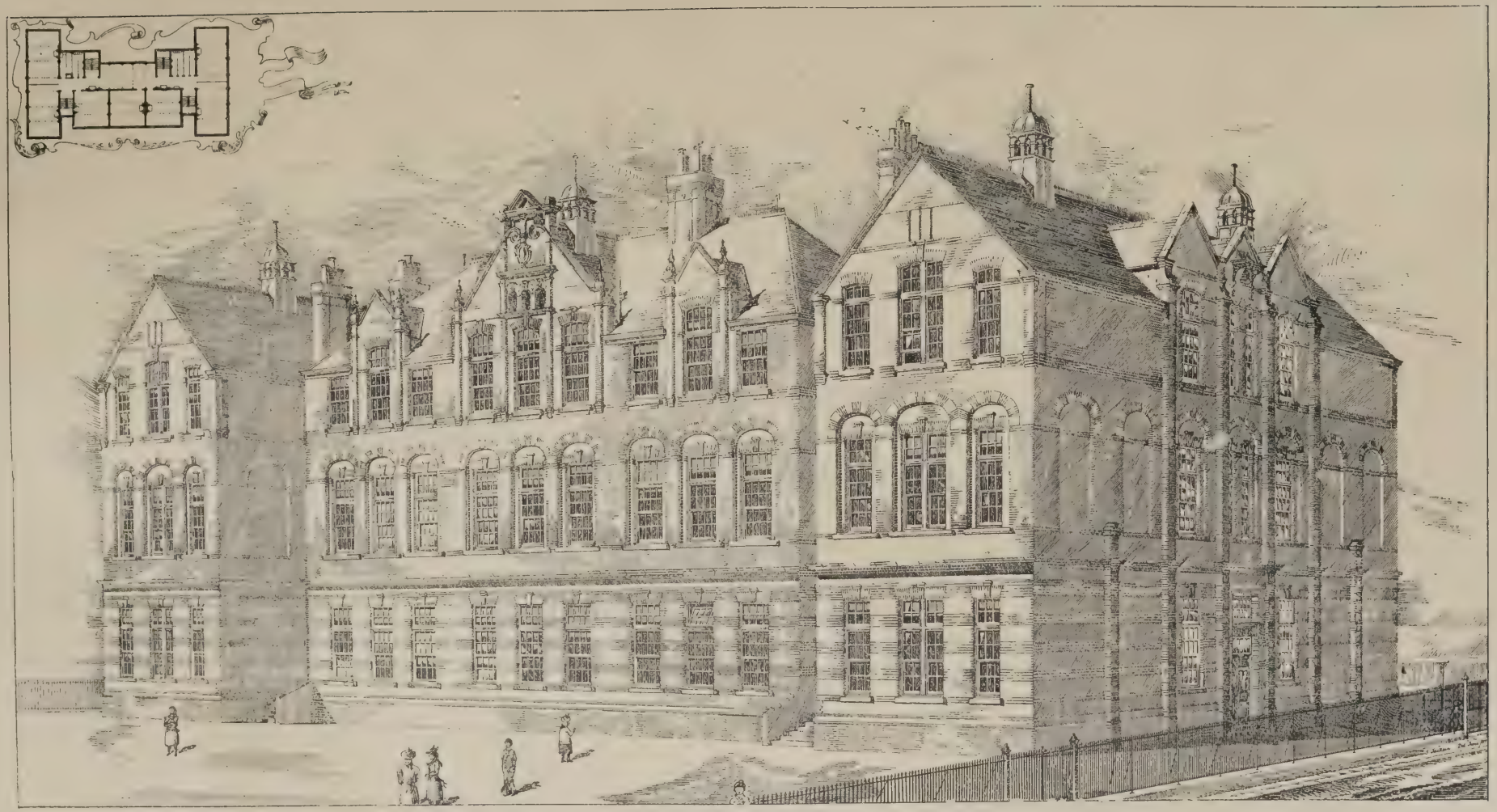
The Glasgow Institute of Architects held an extraordinary general meeting on Tuesday, Mr. David Thomson in the chair. A special resolution was confirmed bringing the declaration required from members of the local institute into confirmity with the declaration of the Royal Institute of British Architects. At the same meeting reference was made to the death of Mr. Young, architect of the Glasgow Municipal Buildings and other important works, and the secretary was instructed to minute an expression of sincere regret thereon. At the close of the general meeting a meeting of the Alexander Thomson Memorial Trustees was held, under the presidency of Mr. T. L. Watson, for the purpose of examining the drawings and sketches submitted by Mr. D. Rome Guthrie, the Alexander Thomson travelling student. Descriptive notes of Mr. Guthrie's journey were read by Mr. M'Gibbon, and the trustees considered that the drawings and notes afforded highly-satisfactory evidence of his having made due improvement of his travels during at least three months.

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Supplement to
THE BUILDERS' JOURNAL AND ARCHITECTURAL RECORD,
Wednesday, November 14th, 1900.



KENSINGTON AVENUE BOARD SCHOOL, EAST HAM. S. JACKSON, Architect.



ESSEX ROAD BOARD SCHOOL, LITTLE ILFORD. S. JACKSON, Architect.

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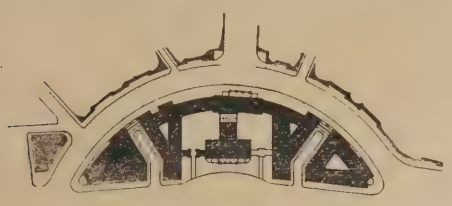
Bricks and Mortar.

APHORISM FOR THE WEEK.

There is no genuine love for art without an ardent love for humanity.—F. HORN.

Our Plates. A CRITICISM of the Holborn-Strand designs appeared in our issue for October 31st. The Essex Road School was erected by the Little Ilford School Board, Essex, and was opened in August, 1898. Little Ilford is an ecclesiastical parish within the area of the district governed by the East Ham District Council. A scheme for the amalgamation of the Little Ilford School Board with its larger neighbour the East Ham School Board was promoted and took effect in March last. The school is built to accommodate 1,582 scholars—582 infants on ground floor, 500 girls on first floor, and 500 boys on second floor. The site comprises an acre and a half, and in the playgrounds latrines, caretaker's store, tank room, and caretaker's cottage are erected. The total cost of the buildings was £14,315. The Kensington Avenue School is now being erected by the Little Ilford School Board to accommodate 1,573 children—541 infants, 516 girls, and 516 boys. The corridors, cloak rooms, and mezzanine floors are fireproof throughout. The dadoes to the corridors are in salt-glazed bricks. A feature in the plan is that the three central classrooms and the central portion of the corridor, on each floor, can be converted into a large central hall, movable partitions being provided, as shown on the plan. The heating to all the classrooms and teachers' rooms is by means of open fireplaces, and in the corridors and cloak rooms by hot water. A caretaker's cottage is also being built in the playgrounds. The contract sum is £20,566. The architect for the two schools is Mr. S. Jackson, 65 Fenchurch Street, E.C., and the builders are Messrs. Gregar and Son, Jupp Road, Stratford, E.

Holborn-Strand Designs. THE present position with regard to the designs submitted for the Holborn-Strand thoroughfare is that Mr. Norman Shaw and the Council's superintending architect have presented a joint report to the Improvements Committee, and they have singled out three designs as containing architectural features which commend themselves to their judgment. The Council's valuer has been instructed to prepare a report on the financial aspect of these three designs, and when that is ready the Committee will come to a decision. Officially, not one of the names of the architects of the eight designs which have been sent in is known yet, although very good guesses are being freely made on all sides. Even the authorship of the three designs recommended by the assessors has not yet been declared; the Committee only knows them by numbers. At last week's meeting of the Improvements Committee it was proposed that the sealed envelopes containing the architects' names should be opened, but after some discussion it was decided to keep the names sealed up until the Committee had come to a final decision.



HOLBORN TO STRAND THOROUGHFARE. PLAN OF DESIGN No. 23.

Egypt Exploration Fund. AT the fourteenth annual general meeting of the Egypt Exploration Fund held on Wednesday last at the Geological Museum, Jermyn Street, Sir John Evans (president) occupying the chair, the treasurer stated that the total assets of the exploration fund, the archæological survey, and the Græco-Roman branch amounted on July 31st last to £3,806. This sum was to be appropriated as follows: To the exploration fund, £2,180; archæological survey, £621; Græco-Roman branch, £1,004. The president then delivered his address, in which, after referring to the loss by death of several eminent supporters of the fund, he detailed some of the work effected by the fund, and some of the progress made in Egyptology. Research in Egypt appeared never to have been prosecuted with a greater degree of activity than it had been during the past season. The hon. secretary followed with his report, in which he pointed out that, though they were an English society, they were largely indebted to American support, nearly half of their aggregate income for the past year having come from the United States. At the conclusion of the secretary's statement Professor Petrie delivered an address. Step by step, he said, the past had been won back to them, and the mysterious ages, which no man ever hoped to know again, had been laid bare to them. Seven cycles of civilisation, a thousand years or more apart, had taken them back to the beginnings, with strides for which the two cycles in Europe, the classical and the mediæval, scarcely prepared them. Such was the wider aspect of human history which the work, solely of English exploration in Egypt, now put before them.

Marylebone Chapel. DURING last week the 500th anniversary of the foundation of what is probably the smallest church in London, though one of the most interesting—the Parish Chapel of St. Marylebone—was celebrated. It stands at the top of the High Street, unknown to many lovers of antiquity and unnoticed by the general public, but containing a fine collection of monuments to noteworthy persons. On an altar tomb to the family of Deschamps, near the vestry door on the south side of the churchyard, Hogarth has represented the "Idle Apprentice" playing marbles with his companions; while the interior of the older building, pulled down in 1740, is shown in Hogarth's picture of the "Marriage of the Rake" now at the Soane Museum in Lincoln's Inn Fields. The famous architect, James Gibbs was buried in this church. He designed the Radcliffe Library and the New Quadrangle of All Souls College, Oxford, the new building at King's College, Cambridge, the Senate House at Cambridge, the Duke of Newcastle's monument in Westminster Abbey, the Church of St. Martin-in-the-Fields, and other well-known buildings. He left £100 for the enlarging of the church, and is commemorated by an unpretending monument, on which the fact is stated. Not the least interesting living features connected with the church are the children of the Marylebone Charity School, in their picturesque, old-world costume, so well represented in Miss Florence Small's picture exhibited in the Royal Academy of 1894. Lord Byron and probably "little Dombey" were baptised in the chapel, and it is to be hoped that no injury will be done to it on account of the parish authorities refusing to maintain it any longer after having put it in thorough repair.

The White House. A FEW years ago an estimate was given of the cost up to date of the White House at Washington, when it was found to amount to about £466,400. This included furnishing, repairs, and improvements to the grounds. From Washington to Grant the salary was £5,000 a year, but in Grant's time it was doubled, being even then, relatively to the cost of living, less than Washington's. To-day the various allowances of all kinds, which are on a liberal scale, bring the value up to about £14,000 a year, and the President of the United States is richer at that than the President of the French Republic, as so very much less in the way of expense is expected from him.

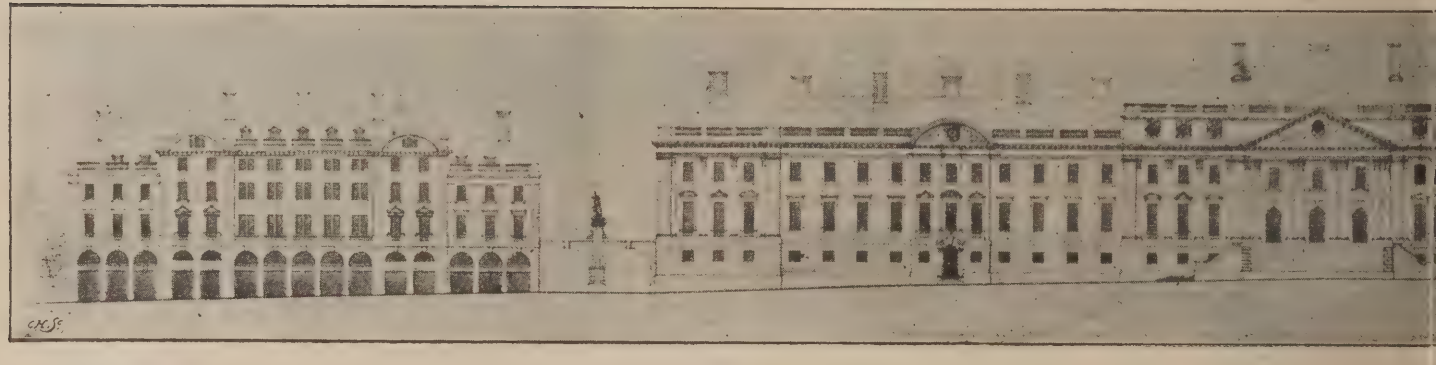
An Old Sign. THE gilt half-moon which projected from a very old house in Holywell Street, so familiar to passers-by, has been removed to the home of the London County Council, where it is to form the nucleus of a museum of London antiquities. The house, though closed and doomed, still stands, immediately to the west of the covered way from the Strand now known as Half-Moon Passage, though at one time it bore a much less respectable designation. The eastern corner-post at the Holywell Street end of this passage used to be adorned with a curiously-carved lion's head and paws, which are now to be seen in the Guildhall Museum. It has been suggested by Mr. Norman, in his "London Signs and Inscriptions," that this may have had some connection with Lyon's Inn, with which a continuation of the passage on the other side of Holywell Street at one time communicated. Diprose, in "Some Account of the Parish of St. Clement Dane," tells us that the half-moon was once the sign of a tradesman who was staymaker to George the Third. It is thought by some that, as Holywell Street is but a little way outside the City boundary, and the Guildhall Museum already possesses a most interesting collection of old signs, the half-moon should be restored to the companionship of the Lion, its near neighbour for perhaps a couple of centuries. The lower horn of the moon was a modern restoration.

Hassan's Mosque at Cairo. THE famed mosque of Sultan Hassan at Cairo, dating from the latter part of the fourteenth century, is to be repaired, but the fact that Herz Bey is architect to the Committee for the Preservation of Monuments of Arabian art in Egypt may be taken as a guarantee that there will be no "restoration." A book on Sultan Hassan's mosque, written by Herz Bey, and published by the Committee, should be read by such visitors to Grand Cairo as feel interested in its monuments. The Committee to which he is architect was founded nearly twenty years ago. Since then, and largely through the influence of Lord Cromer, the people of Egypt, and of Cairo in particular, have manifested a regard, unknown in earlier times, for the preservation of their historic buildings. It is estimated that the repair of Sultan Hassan's mosque will cost £40,000 sterling.

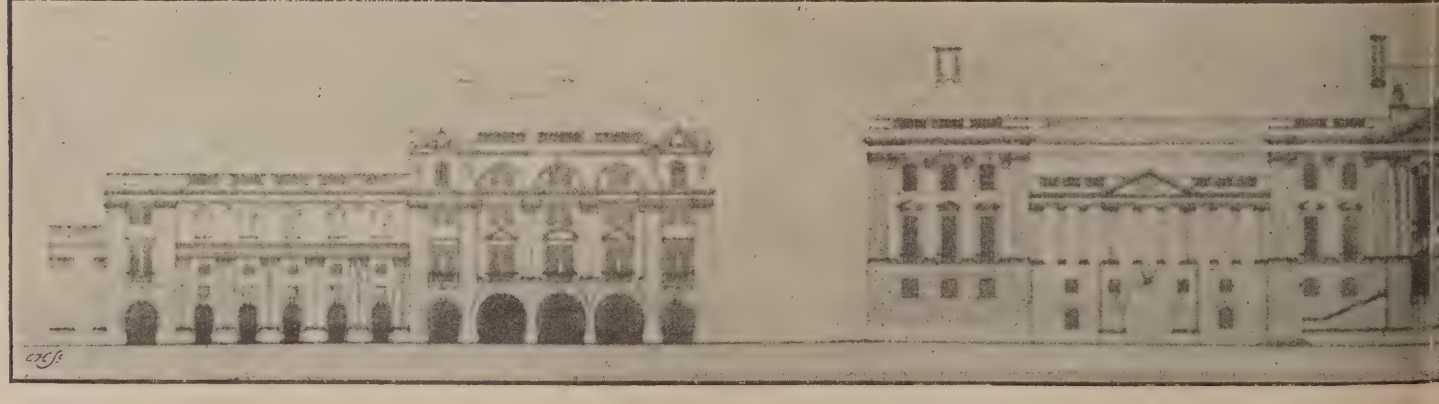
County Architect for Lancashire. AT the last meeting of the Lancashire County Council, held at Preston, the recommendations of the Finance Committee were adopted. These included "that, in lieu of Mr. Henry Littler's present appointment as architect to the Standing Joint Committee, he be appointed county architect for all County Council and Standing Joint Committee purposes, including the supervision of all county buildings, at a nett salary of £1,200 (without pension), with all necessary staff and offices provided for him; and that such appointment be made subject to the following terms and conditions, that is to say:—1. That the salary commence as from March 31st, 1900, in lieu of all fees in connection with the extension or alteration of the county offices. 2. That the balance of his fees agreed to be paid him for the Preston Sessions House be paid on completion of the buildings. 3. That he be not allowed to take any private practice, but may act for the Lancashire Inebriates Acts Board if asked to do so. 4. That the appointment be determinable by either side on giving three months' notice. 5. That £1,000 per annum of the total cost of the county architect's department be charged to the general police account." The question of such an appointment arose about five years ago, and as there were three departments in the county administration in which the employment of an architect was necessary—the Asylums Board, the Finance Committee, and the Standing Joint Committee—those bodies took up the question. At that time the Asylums Board declined to favour the appointment; the Standing Joint Committee desired it, while the Finance Committee withheld their approval on account of the action of the Asylums Board. Mr. Littler was appointed as architect to the Standing Joint Committee alone at a salary of £600. It is thought that his new appointment will prove a financial advantage to the Council.



ELEVATION OF NORTH



ELEVATION OF SOUTH

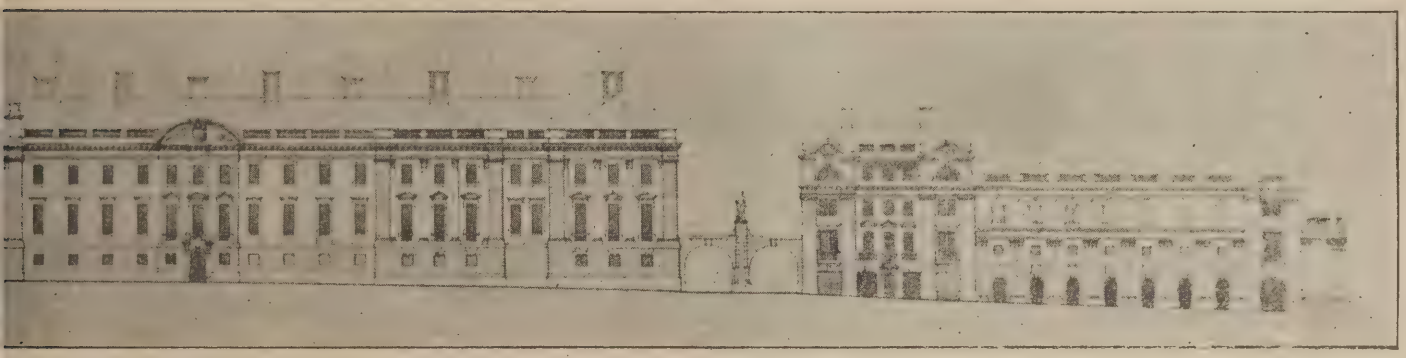


ELEVATIO

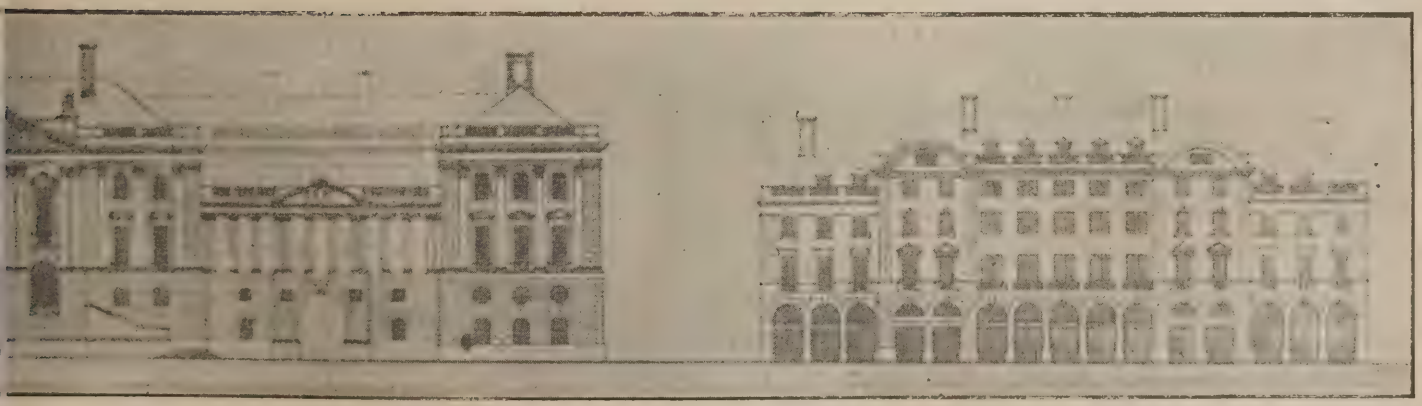
THE HOLBORN TO STRAND



OF CURVED STREET.



OF CURVED STREET.



STRAND.

OUGHFARE. Design No. 23.

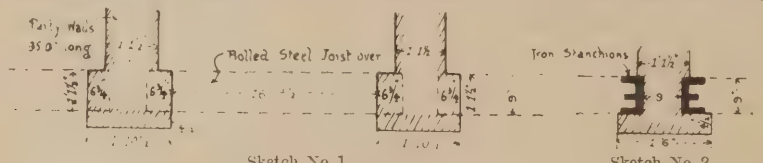
Enquiries Answered.

The services of a large staff of experts, including all those engaged on "Specification," are at the disposal of readers who require information on architectural, constructional, or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Supporting Ends of Girder.

X.Y.Z. writes: "Sketch No. 1 shows an opening over which a wall, floors, &c., have to be carried on steel joists 4½in. back from the face of the piers. Local by-laws will not allow the ends of joists to approach nearer than 4½in. to centre of party wall, which permits a bearing of 6¾in. only. The weight transmitted by the end of each joist is 9 tons, total 18 tons on each pier. Would a brick pier of size shown be sufficient to carry this weight, or would iron stanchions have to be built in, as shown by sketch No. 2? The brick pier cannot be larger than shown. Spons' engineers' tables give 5 tons per ft. super. as the safe weight for brick piers. The area of the pier in sketch is 1·91 × 1·12 = 2·1392ft., and would therefore only carry 10·6960 tons; but would not the adjoining party wall assist the pier? I find steel joists 10in. × 4½in. will carry 9·25 tons each. Is it enough to lay them side by side, or should they be joined; and, if so, would bolting through the web with distance pieces be sufficient?"

Rolled joists side by side are commonly bolted together by distance pieces every 3ft. or 4ft. The holes being in the centre of the web do not reduce the strength appreciably. The safe



Sketch No. 1. Sketch No. 2.

SUPPORTING ENDS OF GIRDER.

load upon brickwork, with a 4in. York stone template of full area interposed, is:—

	Tons per sq. ft.	
Blue brick in cement ..	9	= ½ of fracture load.
Stock brick in cement ..	6	= ⅓ "
Stock brick lias mortar ..	5	= ¼ "
Stock brick in grey lime mortar	4	= ⅓ "

with a maximum for dead loads of 50 per cent. more than above, and a reduction when height of pier exceeds six times its least thickness, namely, w = tons per ft. sup. as given above, r = ratio of height to least thickness; safe load tons per sq. ft. $= \frac{24\,w - wr}{18}$. In the present case the pier being securely bonded into party wall may be considered capable of bearing the full load. 1ft. 10½in. = 1·875, 1ft. 1½in. = 1·125. 1·875 × 1·125 = 2·1 sq. ft. Stock bricks and grey lime mortar, dead load 6 tons per ft. 2·1 × 6 = 12·6 tons total load on whole pier, which is therefore insufficient to carry 18 tons. If the pier were built from footings upwards of stock bricks in cement it would be just strong enough, but there would be no margin to allow for contingencies. HENRY ADAMS.

Corrosion of Iron when Built In.

BIRMINGHAM.—LE SOUPÇON writes: "I have always considered it a mistake to make use of hoop-iron (either galvanised or coated with tar or paint) in brick walls as an agent for strengthening or bonding them, particularly in outer walls. The objection to its use has often been noticed in taking down old buildings where it has been used; there has invariably been more or less of a fracture by reason of corrosion and consequent expansion all along the course where the iron was inserted, with the result that the wall was considerably weakened. Am I right in this? Further, while R.S. joists are very extensively used (and with great success) in the construction of suspended concrete flooring, I hold that it is not wise to use iron in large concrete blocks such as engine beds for large and powerful engines running at high speeds, and where it is absolutely necessary to prevent vibration. Therefore in a block of 4 to 1 concrete 24ft. square on plan and 13ft. deep, is it wise to use 5in. cast-iron pipes in which to insert the engine foundation bolts, afterwards to be grouted in cement, the bolts and pipes to be built into concrete 11ft. deep? The pipes are not galvanised or covered with any kind of paint. Will corrosion occur and cause fracture of concrete?"

If the hoop iron is new when built in and not rusty before it is painted, tarred, or galvanised, and the wall is built of sound hard bricks with proper damp-proof course, there ought to be no danger of serious corrosion. If our correspondent has "often noticed" the contrary he ought to have looked for the special cause. Iron cannot rust without access of air and moisture; therefore, in dry foundations iron embedded in cement-concrete is practically everlasting. The high steel-frame buildings in New York, twenty or thirty storeys in height, are resting upon such foundations. For foundation bolts in engine beds the writer's practice has been to use a square hollow box of wood, about 3in. × 3in. × 3ft. long, made out of 1in. stuff, and to draw it upwards from time to time as the concrete is deposited. Afterwards, when the bolts are inserted, leaving them alone or grouting in. The cast-iron pipe may be used if preferred and left in without any fear of bursting the concrete. In an account of the Broadway Chambers, a modern office building in New York, 235ft. high, the architect of it, Mr. Croydon T. Purdy, says: "The direct contact of Portland cement in the form of grouting seems to be one of the surest methods of preventing corrosion." Again, he says: "For exterior walls nothing has been found to so perfectly protect the steel embedded in them as first-class hard burned brick, laid in cement mortar, and this is also the best protection against corrosion." HENRY ADAMS.

Counterbalance of Cantilever.

BRIGHTON.—Assoc. San. Inst. writes: "With reference to 'G.A.T.M.'s' answer on page 229 of your issue for October 24th, is there not an error in taking moments about the fulcrum $16\frac{2}{3} \times \frac{y}{2} = 5 \times 5$ and not $33\frac{1}{3} \times \frac{y}{2} = 5 \times 5$, which is equal to 'G.A.T.M's' method $A = \frac{2 \times 5, \times 5}{1\frac{1}{2}}$ where A = Z? Mr. Middleton has calculated the load A as distributed and acting at the centre of wall $\frac{y}{2} \times A = \frac{2 \times 5 \times 5}{3} = 16\frac{2}{3}$ tons is identical with $Z \times \frac{y}{2} = W \times l$ where A = Z."

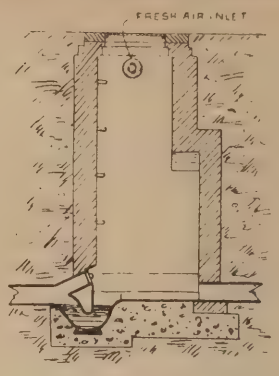
The thickness of the wall should have been stated as 18in., or 1½ft. Our correspondent has evidently assumed it to be 3ft. thick, when the calculations would be right.

G.A.T.M.

Ventilating Drains.

LLANGOLLEN.—SANITAS writes: "Kindly state the best method of ventilating the drains of a house situated about 90ft. above the town, and connected with the main sewer."

The ordinary method of constructing a disconnecting chamber for stoneware drains is shown in the accompanying sketch, the fresh-air inlet being placed near the *top* of the manhole. By this arrangement any accumulation of sewer air within the upper part of the chamber is prevented. If the bottom of the manhole has been constructed with an intercepting trap and a *whole* split pipe (i.e. a pipe properly prepared for splitting, but still intact),



VENTILATING DRAINS.

as indicated in our correspondent's sketch (not reproduced), it is recommended that the fresh-air inlet be directly connected to the trap inlet marked R (on correspondent's sketch). The fresh air will then have direct connection with the house drains, the sewage passing through the chamber in closed pipes instead of the usual open channels. T. E. C.

Books and Articles on Perspective Drawing.

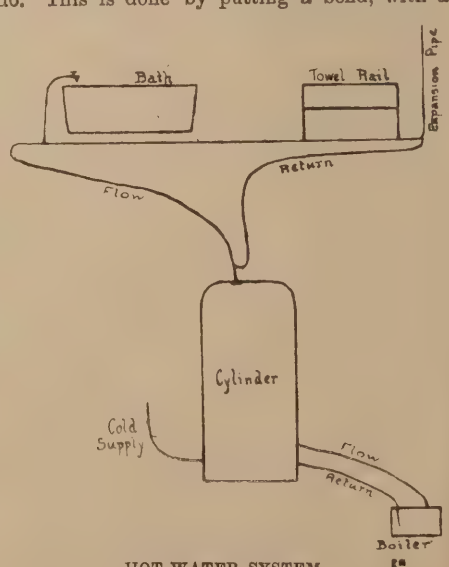
PRESTON.—NOUVEAU writes: "Which are the best books published on architectural perspective dealing with the subject in an elementary manner, and showing the quickest methods of obtaining the necessary vanishing points, heights, &c., sufficient for making perspective sketches of villas, business premises, &c.? Have a series of articles appeared in your journal on this subject?"

"Linear Perspective," by G. A. T. Middleton, A.R.I.B.A., 1s.; "Architectural Perspective," by F. O. Ferguson (2nd edition), post free, 3s. 3d. These books can be obtained from B. T. Batsford, 94 High Holborn, W.C. An article on "Perspective in Everyday Practice," by W. N. Cumming, appeared in the BUILDERS' JOURNAL for the following dates:—October 28th, 1896; November 4th, 1896; December 9th, 1896; March 3rd, 1897; March 17th, 1897.

Details of Hot-water Supply Apparatus.

WOLVERHAMPTON.—P.M.T. writes: "Which is the best method to adopt in connecting the pipes for a bath for hot water upon the cylinder principle, allowing a return pipe for the purpose of heating a towel rail? Do you think the principle shown in the accompanying sketch is a good one? I shall be glad to know which text-book on hot-water heating you would recommend."

The sketch shows an apparatus on the cylinder system, in a simple form, but lacking some details essential for efficacy. The flow-pipe from boiler enters cylinder about 8in. from the bottom and does not appear to extend up inside a little more than half-way, as it should do. This is done by putting a bend, with a



HOT-WATER SYSTEM.

iece of pipe in it, on to the flow connection nside the cylinder; or, the same result can be btained by connecting the flow-pipe at a igher point outside. This pipe must terminate n or at the cylinder $\frac{5}{8}$th of the way up from ottom to top. Another omission is the empty- ng cock or branch which must be put some- here below the cylinder. The cock should ave a loose key (to be taken away) so that it nay not be used by the servants. The sketch hows the secondary flow-pipe extending from he top of the cylinder, circulating past the ath to a towel-airer. This is a satisfactory rrangement, but the secondary circulation has s return connected wrongly. The return is hown connected to the flow, so that although here is a circuit there is only one connec- ion to the cylinder. This will not work. he secondary return must enter the side f the cylinder 4in. from the top, or it an come through the top and project down nside 4in. It must not terminate lower. as sizes of boiler, cylinder and parts are not iven, no opinion can be expressed regarding hese. The only text-book dealing fully with he two subjects of heating by hot water and omestic hot-water supply is "Hood on Warm- ng Buildings," published by E. and F. N. Spon, imited, 125 Strand, London, W.C. F. D.

Tracing Cloth.

CHORLTON-CUM-HARDY, MANCHESTER.—. B. writes: "Which is the proper working ide of tracing cloth, the glazed or the dull ide?"

The glazed side of tracing cloth is that most ommonly drawn upon, the surface being first ubbed with chalk or with india-rubber. When halk is used there is a chance of the pen icking up some which may have been left on he cloth and thus causing an imperfect line to e drawn. On the other hand, while there is o necessity to use chalk when making a rawing on the reverse side of tracing cloth, he lines cannot be so easily removed as on the lazed side, should a mistake be made.

ooks on Vaulting and French Renaissance Architecture.

ILKLEY.—R. F. writes: "Please name a book n vaulting which gives complete working draw- ngs showing the whole process of projection, c., with a full and clearly-written description f how the drawing is set out. I should also ke to know of one or two good works on rench Renaissance architecture."

The best book on vaulting is Professor Willis' aper read before the Royal Institute of British rchitects, and published in their "Transac- ons" for 1842, a copy of which can be btained from Mr. B. T. Batsford, 94 High olborn, for 5s. nett. "Rational Building," eing a translation of the article "Construc- ion" in the "Dictionaire Raisonné de l'Archi- ecture" of M. Viollet-le-Duc, will also be use- ul. The cost is 12s. 6d. nett. Nearly all books n French Renaissance are large monumental ooks of plates; such as Sauvageot's "Palais, hateaux, Hotels, &c.," four volumes, folio, with ngraved plates, price £10 10s. nett; Berty's La Renaissance Monumental en France," two olumes, price £3 10s. nett.

Builders' Levels.

FROME.—Z. S. C. writes: "Can you kindly dvise where to get a builder's level, as low in rice as is consistent with a thoroughly reliable nstrument?"

Apply to Mr. Clarkson, 28 Bartlett's Build- ngs, Holborn Circus, E.C.; Mr. W. F. Stanley, and 5 Great Turnstile, Holborn, W.C.; or lessrs. T. Cook and Sons, 8 Victoria Street, .W.

Books on Practical Masonry.

SOUTH WIGSTON, LEICESTER.—R. M. writes: Who is the publisher of Purchase's book on Practical Masonry'?"

"Practical Masonry," by W. R. Purchase price 6s. 3d. post free), is published by Mr. . T. Batsford, of 94 High Holborn, W.C.

EXCAVATIONS AT CAERWENT.

DISCOVERY OF ROMAN HOUSES.

CONSIDERABLE interest is still being taken in the excavations at Caerwent, near Newport, Mon., and at the recent meeting of the Caerwent Exploration Fund, held under the presidency of Lord Tredegar, a report on the work done was submitted by Mr. A. E. Martin, F.S.A., the hon. secretary. The subscribers passed a resolution expressing their sense of the loss they had sustained by the death of the Marquis of Bute, who had been a valued supporter of the fund, and whose loss to archæology in general, said Lord Tredegar, would be very great.

The site of the excavations is a piece of ground about three acres in extent, and forming part of a larger field which it is hoped, if funds permit, to excavate completely in the course of the next two years. Indications are not wanting that the whole field contains buildings of considerable interest and importance. Upon the extreme east edge of the plot of ground which is at present under examination two of the brick pillars which supported the floor of a hypocaust have been found, and they are so well preserved as to suggest that if it is possible to continue the explorations of this interesting building discoveries of great importance may result.

The houses which have so far been discovered are remarkable for the solidity of their construction and the strength of their stone walls. In one place the foundations had been sunk to a depth of 12ft. in order to obtain the requisite degree of strength. Masonry so good is not frequently found in England, except in the camps of the wall of Hadrian, which crosses England from the mouth of the Tyne to the Solway. It is, for instance, incomparably superior to the work which is seen in the walls of the houses at Silchester, though that was a far richer and larger city. The city walls, too, are remarkably fine. The line of them is traceable on all four sides, especially on the west and south. On the south side they are in excellent preservation, portions of them still standing 20ft. high on the outside. On the inside they are not visible to so great a height—that is, they do not stand entirely free, but are to a certain extent embanking walls, as is clear from the existence of two lines of weepholes, one above the other, at certain points. Three bastions were added at a later date to the south wall, in the portion between the south gate and the south-west corner, probably with the object of strengthening the wall, which shows signs of having been extensively repaired.

The mention of the walls raises the problem as to the origin of Caerwent. Without going into the matter deeply (those who wish to do so may be referred to Mr. A. T. Martin's paper in the proceedings of the Clifton Antiquarian Club for 1894), it may be stated shortly that it is probable that Caerwent was originally a Roman camp, marking a stage in the Roman advance into South Wales posterior to the occupation of Gloucester, and anterior to the foundation of the legionary camp at Caerleon. An invariable maxim of the Romans was to secure newly-conquered territory by the construction of a military road, protected by fortified posts; and thus it is that the Roman road from Gloucester which secured the conquered territory of the Silures, which is still the high road into South Wales from the east, passed through the centre of Caerwent (Venta Silurum) and went on to cross the Usk at Caerleon (Isca Silurum). But at the time from which the buildings now under investigation date, it is probable that Caerwent had almost entirely lost its military character, and had become nothing more than a small country town. Owing to the inclemency of an English winter it is impossible to leave the buildings open without adequate protection, and this would be extremely costly. It will therefore be necessary to restore to cultivation the plot which has been examined this year, and to deal with another at the commencement of next season, if funds permit this to be done. The unique interest of the site, and the importance of the discoveries already made, and still more of those which may be expected as the centre of the city is reached, should surely serve to arouse such a degree of archæological enthusiasm in the neighbourhood as will ensure a continual influx of subscriptions. The honorary treasurer is Mr. A. E. Hudd, 94 Pembroke Road, Clifton.

Builders' Notes.

Mr. John Cross, a well-known builder, of Hutton, died recently at the age of seventy-five years.

Welsh Slates for the Transvaal.—The first consignment of slates for the Transvaal took place the other week. They were shipped at Portmadoc. Several other consignments are to follow. Trade is, however, very slack.

Leeds Corporation Candidates.—The Leeds Building Trades Federation requested the whole of the candidates for the Corporation to send answers to the following questions:—1. Are you in favour of all building materials removed from insanitary areas being destroyed. That no part of any such shall be employed again in the erection of dwelling houses. Will you assist in stopping such practices? 2. Are you in favour of the Corporation adopting and carrying out the provisions and amendments made from time to time in the Housing of the Working Classes Acts, 1890 to 1900. Will you vote for the same? 3. Are you in favour of an all-round system of workmen's trams, the property of the Corporation, of half-fare for the ordinary stages, that is, full fare for one return journey per day. Will you vote for the same? 4. Are you in favour of a Fair Contracts Committee being formed from the various committees, who shall be the authority to investigate breaches of the fair contracts clauses, who shall hear the employer and employees' case together as a committee?

London County Council.—At last week's meeting of the Council the report of the Improvements Committee in relation to the widening of London Wall and Blomfield Street was discussed. In the first part of the report the Committee recommended the Council to adhere to its decision to refuse to contribute towards the widening of London Wall between Albion Place and Circus Place. The second part of the report recommended that the estimate of £5,000 submitted by the Finance Committee should be approved, and that the Council agree to contribute one-half of the nett cost of the widening of Blomfield Street and London Wall between Finsbury House and Circus Place, proposed to be undertaken by the City Corporation, such contribution not to exceed the sum of £5,000. The Improvement Committee also recommended that the estimate of £51,443 submitted by the Finance Committee be approved, and that the Council accept the offer to sell for £50,000 the fee-simple in possession of their property fronting the western side of Millbank Street and the northern side of Church Street, having an area of about 12,500 sq. ft., and needed for the widening of Millbank Street, the trustees also arranging with the lessee for cancelling the building agreement. The Improvements Committee also recommended that, subject to the local authority consenting to the proposed tramway from High Road, Tooting, to the county boundary at Waterfall Bridge and agreeing to contribute one-third of the cost of the necessary street widenings, the Council should apply to Parliament for powers to widen Merton Road, the total nett cost of which is estimated at £28,000. The three foregoing recommendations were adopted after discussion. In reply to a question, the chairman of the Parks Committee said that a letter had been received from Mr. Henry Burt declining to accept the contribution of £7,000 by the Council towards the purchase of the Alexandra Palace, on the ground that the conditions imposed by the Council could not be accepted. The chairman of the Fire Brigade Committee, replying to a question, said the Committee were considering the question of adopting motors for their fire-engines.

Keystones.

A New Board School at Hendon is being erected at a cost of £20,245.

A Stained-Glass Window at St. Just-in-Roseland Church has been erected.

A new Customs House at Southampton is to be erected at the new entrance to the docks by the platform.

"Some Scottish Homes" was the title of a paper read by Mr. W. J. Blain before the Glasgow Architectural Association last Wednesday week. The paper was published with illustrations in our issues for February 17th and 24th, 1897.

A Proposed Clock Tower in Torquay.—As a memorial to the late Mr. Mallock, for many years member of Parliament for the Torquay Division, it is intended to place a clock tower in Torquay and a brass in the interesting old parish church of Cockington.

St. Ethelburga's Church, Lyminge, Kent, one of the oldest churches in England, has just been reopened after being placed in much-needed repair. The fabric had suffered severely from old age and inclement weather, and the renovation was undertaken to save it from further decay.

A new Police Station at Highgate is being erected. The site cost £1,300, and adjoins the new police court in Archway Road. A site has been purchased for a new station at East Finchley, and the one in course of erection on the site of the old Grecian Theatre, City Road, is approaching completion.

A New Refuse Destructor at Lambeth has been erected by the Strand District Board on the foreshore, opposite Somerset House, at a cost of £10,241. The destructor is of the Horsfall type, and comprises six separate furnaces. It will consume about 80 tons of refuse per day at an estimated expenditure of £2,562.

Major-General Baden-Powell and a Cardiff Builder.—Mr. John Garbett, of Crynant, who is building a new terrace in the town, the foundation-stones of which were laid on Mafeking Day, determined to name it Baden-Powell Terrace, and, having written to the gallant officer, received a reply from Pretoria saying he felt proud and highly honoured, and hoped it might have a bright and prosperous future.

The Interior of the London Pavilion has been practically rebuilt. The decorations of the music-hall are in cream and gold, relieved by terra-cotta draperies, whilst the panels are filled with allegorical pictures in Louis XV. style. This is the work of Mr. J. M. Boekbinder. The stage has been lowered 4ft., and there is an uninterrupted view from all parts of the house. The seating accommodation has been considerably increased, and a saloon placed underneath the stalls.

The Church Crafts League, which was inaugurated in February last by a number of influential clergymen and artists, under the presidency of the Bishop of Rochester, announces its first annual general meeting for the evening of Tuesday, November 20th. The meeting will be held at Bishop's House, Kennington Park, and will commence at 8 p.m. A limited number of tickets will be available for the use of non-members, and the secretary requests that early application for these be made to him at the Church House, Westminster, S.W.

Truro Cathedral to be Completed.—The Executive Committee of Truro Cathedal Building Fund have received sufficient money to justify them in giving the order for the full contract which will complete the nave and west front, and western towers to the eaves of the nave roof, thereby completing that portion of the building which is being erected in memory of the late Archbishop Benson. At the conclusion of the work £159,000 will have been spent on the cathedral, and there will only remain to be added the great central tower and two western towers, estimated to cost a further £15,000.

The Restoration Works at Pluscarden Priory have happily been stopped.

Mr. Henry Andrew Harper, a well-known painter of pictures of Jerusalem and the Holy Land, died recently.

New County Schools at Hengoed have been opened for girls. Messrs. James and Morgan, of Cardiff, are the architects.

A Bust of the Queen, by Mr. E. Onslow Ford, R.A., has been placed in the saloon of the Mansion House, City, E.C.

St. John-the-Baptist Church, Great Marlborough Street, W., has had a new pulpit, screen, and choir stalls added.

The Tooting Bec Asylum, S.W., is to be enlarged by the addition of receiving home for children, from plans by Messrs. A. and C. Harston.

The Rhosybol Board School, Anglesea, is being warmed and ventilated by means of Shorland's patent Manchester grates, supplied by Messrs E. H. Shorland and Brother, of Manchester.

A Memorial to Sir Thomas Dyke Acland is proposed to be placed at Oxford in the shape of a bust or tablet. Subscriptions should be sent to the London and County Bank, Oxford, or to Prof. J. A. Stewart, Christ Church, Oxford.

The William Black Memorial Tower is being erected on Duart Point, in the Sound of Mull, at an estimated cost of £1,563. Mr. R. S. Leiper, R.S.A., is the architect. The lighting will be by compressed gas contained in a tank under the light, which will require no attention, but continues night and day.

Suggested University for the North.—Lord Barnard formally opened last week the new science buildings, costing over £4,000, attached to the North-Eastern County School, Barnard Castle. In the course of his speech he advocated the endowment of a University for the north of England similar to the Birmingham University.

Collapse of Buildings at West Hampstead.—Last week the centre of a large block of shops and flats in course of erection in Mill Lane, West Hampstead, collapsed, and the front of the buildings, which had reached the third storey, fell to the ground. The workmen engaged on the building had fortunately not arrived at the time of the collapse.

"Peggotty's Hut," Great Yarmouth, immortalised by Charles Dickens in "David Copperfield," is to be sold to-morrow by public auction. This historic house, which stands on the site of the "Old Boat," is a great attraction to visitors during the summer months. Original portions of the wood, also the two windows of the boat, are still in possession of the present occupier.

Testing of Weights and Measures.—The Bristol Master Builders' Association recently had under consideration the question of testing weights and measures, and a copy of the local regulations prepared by the chief inspector, Mr. Frederick Newton, are now being issued to the members. The method of procedure adopted has saved the department a good deal of unpleasantness which would have arisen had the question been approached in any other way.

All Hallows Church, Blackborough, has had a new spire added, the old spire having become both unsightly and dangerous. The old spire ran straight up from the lower base, of the shape known as a "brooch." Under the new scheme a tower, with battlements, has first been erected. The tower has a lead flat, and from this on iron girders the spire proceeds, and is built to about the same height as the old one. The church stands on a hill nearly a thousand feet high, and the spire is consequently a landmark for miles around. The new spire is what is known as a "shingle" spire made of heart of oak and steel frame, plated with lead. A trap door opens to the lead flat, so that there will be easy access for future repairs without the necessity of erecting costly scaffolding, as had to be done on this occasion. Within the tower a new Council Chamber has been made for the use of the Church Council.

New Patents.

These patents are open to opposition until December 17th.

1899.—Wall Decoration.—24,516. A. E. HORTON, Bristol Street, Birmingham. The wall must have a smooth clean surface, and is first given the tint desired to form the background. A piece of lace, muslin, or similar material is then dipped into an adhesive and spread over the wall surface. The textile material may be woven in colours.

1900.—Self-lighting Gas Burners.—12,390, H. E. GRAY, 191 Fifty-fifth Street, Brooklyn, U.S.A. The burner has a lever, pivoted in the centre, with a chain attached at each end, and a pivoted arm carrying a piece of material which becomes incandescent when the gas impinges on it. Ignition takes place only when the gas is partly turned on; when the gas is full on the movable arm is automatically carried away from the light.

Water or Sewage Purification.—12,861. H. H. LAKE, 45 Southampton Buildings, London, W.C. (communicated by the Jewell Export Filter Company, 15 Broad Street, New York). This continuous process for the purification of water and other liquids is as follows:—Generating sulphurous oxide, passing the oxide into water, passing the sulphurous acid so formed over iron, oxidising the resulting solution, subjecting it to the action of a suitable precipitant, and separating the water from the resulting precipitate.

Smoke-consuming Furnaces.—14,828. G. SCHNEIDER, 4 Stubenranchstrasse, Schoneberg, Berlin, and G. DERTZ, 8 Quellhöfe, Cassel, Germany. The fuel is introduced from below, so that the smoke and gases given off are consumed by the incandescent layer above. The feeding is accomplished by a hinged box under the grate having a slide at the bottom. The fuel is passed in at the side and is then pushed up into the grate.

The following specifications were published on Saturday last, and are open to opposition until December 24th. A summary of the more important of them will be given next week. The names in italics within parentheses are those of communicators of inventions.

1899.—21,931, BURLEY AND ROGERS, fasteners for lamps, doors, &c. 22,606, DOULTON, gas and water-supply valves for water heaters. 23,112, SQUIRES, garden tiles. 23,976, MATTHIAS, smoke-consuming apparatus. 24,038, ARSCHAOULOFF, vertical sliding water-tight doors. 24,080, SLOAN (*Martin*), direct-acting pumps. 24,873, DAVIDSON, centrifugal fans and pumps. 24,952, THOMAS, means for affixing corrugated sheets of metal to roofs. 24,973, BELDAM AND COLES, fire sprinklers. 24,993, WEST, syphon flushing-cisterns. 25,028, PAGE (*International Metal Lath Company*), expanded metal structures. 25,089, BEASLEY, BEASLEY junior, AND BEASLEY, hack-cap for use in brickmaking.

1900.—586, TURNBULL, stop valves. 5,524, SMITH, painter's tool. 11,553, STEPHENS, keyhole guards. 12,524, PETREANO AND COMPAGNIE GEREBALE D'INCANDESCENCE PAR LE PETROLE ET L'ALCOHOL, burner for heating or lighting purposes. 13,367, OUSEY (*Globe-Wernicke Company*), sliding doors for book and other cases. 14,260, LANGE, cutters for worming wood screws. 15,059, PURNELL, firegrates. 16,167, METZ, paving of roads and other surfaces. 16,452, BÖRNER AND SCHURK, handles for tools. 16,473, PIKHART, incandescent mantles. 16,636, WEBER, angle-irons. 16,650, PETER, vices.

The Carnot Monument at Lyons, recently unveiled by President Loubet, is of gigantic proportions. A statue of M. Carnot stands against an obelisk, surmounted by a winged figure symbolical of France. At the base are figures of two youths bearing the escutcheons of Cronstadt and Toulon, while a feminine figure representing Lyons lays a funeral wreath at Carnot's feet. The memorial is the work of MM. Naudin and Grauquie.

THE ARCHITECTURAL ASSOCIATION.

THE LEGAL POSITION OF THE ARCHITECT.

BY L. L. MACASSEY.

A MEETING of this Association was held last Friday night, Mr. W. H. Seth-Smith, President, in the chair. The minutes having been read and confirmed, the following gentlemen were elected members:—Messrs. P. J. Bartlett, R. M. E. Carey, C. M. Childs, W. L. Clarke, H. A. Coldman, P. M. Collcutt, F. J. Cox, R. T. Congreve, W. S. Dakers, J. W. H. Farrow, S. T. Hennell, R. M. F. Huddart, W. C. Lemaitre, A. C. MacGeorge, R. H. Nicol, C. E. Power, E. T. L. Smith and F. Worrow.

On the motion of Mr. Seth-Smith, a vote of condolence with the family of the late Mr. William Young, F.R.I.B.A., in their bereavement was passed.

The following paper was then read by Mr. L. L. Macassey, jun., who had put it in form from notes prepared by his father, Mr. L. L. Macassey, who was not able to attend on account of illness:—

The capacities in which an architect requires to act are numerous and carry responsibility. At times he is called on not only to advise his client on matters of architectural moment, but often compelled to be a quasi-legal adviser and constantly obliged to assume the *rôle* of arbitrator between his employer and those engaged in carrying out his designs. In each capacity the law invests his actions with different legal consequences with which every architect should be acquainted. Members of the profession are presumed, in the eyes of the law, to be thoroughly versed in all matters requisite for properly advising their clients. "The public profession of an art," said Mr. Justice Willes, in *Harmer* v. *Cornelius*, 28 L.J.C.P. 85, "is a representation and undertaking to all the world that the professor possesses the requisite ability and skill." Indeed, the great principle of English law applicable all to such professions is that the architect must

Display Reasonable Skill and Care,

and if his employer suffer damage by reason of his failure so to do, for it the architect will be held responsible. There are in reality but few decisions bearing directly on the liability of architects, for the honour of the profession has been singularly well maintained. The knowledge of legal relations is essential to every architect. It is, indeed, a part of the reasonable care and skill he is obliged to possess. Without it he cannot fail to put himself and his employer in many injurious positions.

Now the employment of an architect may be divided under two main heads: his employment as a skilled adviser to his client and his employment during the execution of works as an agent of the client. Both branches of service come under the function of contract.

As a Skilled Adviser

the architect may be employed to give evidence, to make valuations of property, to act as arbitrator, and to prepare designs for intended buildings; and the latter is most frequently the form his employment takes. When, however, the buildings come to be erected, a contractor is generally called in, and as between the building owner and the contractor the architect acts as agent.

In dealing with the duties of the architect, reference must first be made to the retainer, for often the validity of his agency depends on his being properly retained. In most transactions between employer and architect

A Valid Contract

can generally be implied from the course of business letters between the parties, and if no terms are arranged the architect will be entitled to reasonable remuneration. It is always best, however, to have the conditions of service and the terms of payment settled before the work begins, and so avoid misunderstandings. A short letter from the architect reciting the terms will do, for, even though not acknowledged, the employer is legally bound if he acquiesces and allows the work to go on.

When, however, the employment will last for a year, the agreement should be in writing and signed by the employer (21 Car. II., c. 3, s. 4), the provision made by the Statute of Frauds. But the mere fact that the employment has extended beyond a year will not of itself bring the case within the statute. In fact, to make the Act apply, it must appear from the terms and subject matter of the agreement that the employment will not be completed within the year (*Peter* v. *Compton*, Skin 353), and it should also be noted that an agent of the employer, if duly authorised, may sign for him.

In cases where an architect is employed by a corporation, his retainer must be of a more formal character than when a private individual is the employer. As a general rule, contracts with corporations are only binding when under seal. Thus it has been held that a medical officer employed by a Board of Guardians must be appointed under seal (*Dyte* v. *St. Pancras Board of Guardians*, 27 L.T. 342).

But a contract not under seal may be binding upon a corporation in certain cases, that is, if it is with respect to matters necessary or incidental to the functions or business which the corporation has been created to carry on. What these matters are it is somewhat difficult at times to decide. In *Nicholson* v. *Bradfield Guardians* (L.R. 1, Q.B. 620) it was held that a dealer who supplied coal to the workhouse under an agreement not under seal was entitled to recover the price. Probably thus an architect retained to do repairs would not require to be retained under seal by a corporation, but if to construct new buildings and works he would.

As regards contracts with local and sanitary authorities, reference must be made to Section 174 of the Public Health Act, 1875, which enacts as follows (38 & 39 Vic., c. 55, s. 174, s.s. 1):—"Every contract made with an urban authority whereof the value or amount exceeds £50 shall be in writing and sealed with the common seal of such authority." The decision in *Hunt* v. *Wimbledon Local Board* turned on this point (3 C.P.D. 208, 4 C.P.D. 48). The plaintiff had been employed by the Board's Surveyor under their express authority to prepare plans for new offices for the Board. When the tenders came in, however, it was found the lowest considerably exceeded the estimate. The scheme fell through, and on the plaintiff suing for his fees for the preparation of his plans the jury found that the offices were necessary for the purposes of the Board, and that the plans were necessary for the erection of their offices. But it was held by the Court that Sub-Section 1 of Section 174 of the Public Health Act, 1875, was mandatory, and *as the amount was over* £50, and the contract not under seal, the plaintiff could not recover.

But in *Younge and Co.* v. *Mayor, &c.*, of Royal Leamington Spa (8 App. Cas. 517), the defendants' engineer, with their approval and consent, called in the plaintiffs under the specification to finish up a contract abandoned by a former contractor. The work was completed and the defendant board got the benefit of it, but the plaintiffs failed to recover, as there was no contract under seal.

But Section 174 does not apply unless it is apparent at the outset that the amount of the work or the value of the services rendered will exceed £50. Thus, in *Eaton* v. *Basker* (7 Q.B.D. 529) a medical man agreed verbally with a Sanitary Authority to attend fever patients in tents at 5s. 3d. per tent per day. His bill ran up to £100. It was held that he was entitled to recover, as the contract was not one exceeding £50 and requiring a sealed agreement within the meaning of the Act, as at the time it was entered into the parties had not ascertained it would exceed that amount.

What, then, do these cases show us? Firstly, this, that an architect, to be

A Properly Authorised Agent,

should not accept a retainer to prepare plans for a Corporation or Local Authority unless under their common seal, if in the latter case his percentage or fees exceed £50. He may find it impossible to sue for his fees, and in the carrying out of the works he may, as the agent of the Corporation or Local Authority, have perfectly *bonâ fide* made arrangements with builders and contractors which, however, his employers are in a position to repudiate, placing him in the undeserved position of having, in in the eyes of the law, acted as an agent without authority, and rendering himself liable to the builders or contractors.

Even at common law, apart from the Public Health Act, the Corporations or Local Authorities might disclaim all contracts, however small, he had made on their behalf, and an agent, though honestly acting in a believed authority, is liable under the rule in *Collen* v. *Wright* (8 E. & B. 647) and *Firbanks Exors.* v. *Humphreys* (18 Q.B.D.(C.A.)62), which renders him personally liable. An architect may, however, if retained to advise at day fees, recover his fees against a Local Authority under *Eaton* v. *Basker*, although they do exceed £50.

The architect to a Local Authority, if he be a permanent official, may, however, be lawfully appointed under Section 189 of the Public Health Act by resolution entered on the minutes, as in *Smith* v. *Hirst*, 23 L.T. 665, and in such a way appointed may act as the Local Authority's agent without fear of consequences.

So an architect may be validly appointed or merely temporarily retained by School Boards acting under the Elementary Education Act, 1870, Section 35, and Rule 7, Schedule III., by a minute of the Board, countersigned by the chairman and by the clerk (*Scott* v. *Great and Little Clifton School Board*, 14 Q.B.D. 500).

At the outset I pointed out that the architect who holds himself out for and accepts employment must possess, and bring to bear upon the discharge of his duties, a reasonable amount of

Skill and Care.

But the obligation does not apply alone to architects. Solicitors, doctors, dentists, and many other persons engaged in professional and technical matters are subject to the same liability. The question then arises, What is a reasonable amount of skill which must be possessed by an architect? And the answer to this is not very satisfactory. No general rule can be laid down. The circumstances of each case must be taken into consideration. It is not enough to act to the best of one's skill and ability, one must act in a skilful manner (*Jones* v. *Bird*, 5 B. & A., 845). What would be a skilful manner under the particular circumstances seems to involve much greater knowledge and ability to-day than it did 50 years ago. The law considers the advance of science and human requirements. But before going into details let me mention one exception. If an employer accepts the services of an architect to carry out certain work, and knows that the architect has had but limited experience and training, he does so at his own risk. And if by reason of the inexperience of the architect damage occurs, the employer cannot, in the absence of negligence, hold the architect liable therefor. When, however, the fact of an architect's incompetence for the work becomes known to his employers, they are justified in dispensing with his services before the expiration of his engagement (*Harmer* v. *Cornelius*, 28 L.J.C.P., 85).

As the first illustration of absence of reasonable care and skill, one may deal with the introduction into a design of some novel invention the success of which has never been tried, or the undertaking, in the first instance, of work of a very doubtful result. In the case of the doctor or solicitor there is no implied warranty as to results. The doctor may do his best and the patient may die, the solicitor may take every needful step and yet lose his case. But these contingencies do not come to the aid of the architect; he is

Bound to Avoid Experiment

at the expense of his clients; and unless he sees his way to a successful result the work should not go on. In *Duncan* v. *Blundell*, 3 Stark 6, 5 M. & P., 548, Mr. Justice Bayley said:—"A professional man should not undertake work when he does not know whether he can succeed or not." The law, however, is very indefinite as to what length an architect may go in doubtful work. Direct authorities are wanting, but reasoning from analogous decisions discloses the principle that to be free from liability he should acquaint his employer fully with the hazardous nature of the work, and obtain his consent thereto, and satisfy himself, after in

vestigation, that with the adoption of proper methods the work may be carried out successfully. In an old case of *Slater* v. *Baker and Stapleton*, 2 Wilson, 359, where surgeons had used a new instrument for operating with disastrous results, the Court said "this was the first experiment made with this new instrument, and if it was it was a rash action," and allowed the action. But in case of an action against an architect in respect of unsuccessful work, it would appear from *Chapman* v. *Walton* (10 Bing, 63) that the fact that he took the steps that all architects in his position would have taken will be a good defence. A clear distinction should be drawn between mistakes in policy on the part of the employer and

Incompetent Procedure

on the part of the architect. A wooden building like a Norwegian hotel is much cheaper than a stone erection; if the architect builds it of wood according to instructions and of proper dimensions he is not answerable if it does not stand the weather.

As sometimes happens, the employer is dissatisfied after the completion of the work with the result of the design, and tries to throw responsibility on the architect. What is the position of the architect? With respect to all matters of policy on which the client is competent to form an opinion, as, for example, the arrangement of particuiar rooms in a house, and of which he has approved, he is estopped from turning round afterwards upon the architect and charging him with want of skill. But the employer is not deemed to be competent to determine minute matters of detail, such, for instance, as to whether or not particular members are of proper scantling. Should girders break or walls crack from causes that the architect ought to have foreseen, the latter will be liable for want of reasonable skill.

The position of the architect

In respect of Plans

prepared by him is of special importance, and how he is affected by any errors or insufficiencies either in them or the specification. The case of *Thorn* v. *The Lord Mayor of London*, 1 App., Cas. 120, may be regarded as the leading authority. There the facts were these:—The plaintiff had contracted with the Corporation of London to build a bridge across the Thames according to the plans of the City Engineer. Certain caissons for the pier foundation were included in the work, and these the contractor found he could not construct according to the plans and specification Another method, with the consent of the engineer, had to be adopted, and the contractor sued for the extra expenditure he had so incurred. It was held, however, that he could not succeed, as there was no warranty. on the part of the defendants that the works as proposed were capable of being carried into execution. The usual clauses were in the specification. It will thus be seen that, under ordinary plans and specifications, architects as against contractors cannot be made liable for their insufficiency. So that if a contractor undertakes to do a thing that is impossible at the outset, he may refuse to carry out the contract on the ground of impossibility of performance according to the decided cases; yet where he has once entered on and completed the work, he cannot claim in respect of any extra expense occasioned by the work being impossible or impracticable.

Liability for Defective Drawings.

The liability of the architect towards his employer for defective drawings is, of course, different, and we must distinguish defective drawings by reason of the work being infeasible, and defective drawings prepared in a careless manner. An architect, in the absence of special agreement, is bound to make sufficient preliminary investigation to satisfy himself that his proposals are practicable. Thus, in the case of *Moneypenny* v. *Hartland*, 2 C. & P., 378, the plaintiff had been employed to prepare an estimate and other particulars for a committee proposing to erect a bridge. He relied on the borings that had been taken by a surveyor previously employed by the committee, which turned out incorrect. The estimates were exceeded in consequence, and the plaintiff, when he sued for his fees, failed to recover. It is rather difficult to say whether the committee would have succeeded in an action against the architect. Could they have shown appreciable damage, I am inclined to think they could, for his neglect of ordinary skill and care.

In respect of defects in the drawings arising out of careless preparation, it would probably only be when the employer had been put to extra expense thereby that he would take proceedings against an architect. This, as we have seen, is not likely to happen. But if it should, the architect is undoubtedly liable for want of skill and care.

As against the public few cases have occurred in which architects have been held

Liable for Failure

of their designs. A case is *Mosdell* v. *Mitchell and others* ("Times," January 20th, 1891), in which the widow of a workman brought an action under Lord Campbell's Act against a building owner, his contractor and architect, for the loss of her husband, who was killed by the walls of a house falling upon him, which were too light to bear the strain. The house had been designed by the defendant architect for the defendant builder. During the hearing the jury, on the suggestion of the judge, stopped the case against the building owner, and gave a verdict for £500 against the builder and architect jointly.

As illustrative of the care that the law exacts from an architect in his capacity of skilful adviser, one may mention the case of *Crabb and others* v. *Brinsley* (5 T.L.R. 14), in which the defendant had been retained to advise on the character and condition of certain houses in Holborn proposed as security for a mortgage. The defendant reported that the houses were good security. The plaintiffs made an advance of £1,500, but the premises were afterwards sold for £410. There were two actions, and in the second action the plaintiffs recovered the full amount of their advance, viz., £1,500, as against the defendant architects. The law appears well settled that the architect must bring to the discharge of his duty a reasonable amount of skill and care.

We may now assume that the architect has completed his drawings and specifications for some intended work, and that the building owner has approved of the documents and is desirous of obtaining tenders. The architect, as a rule, is called upon to investigate the character of the different tenders submitted, and his duty is to advise impartially. In a case of *Miller* v. *Wilson*, reported in the "Building News" of August 6th, 1886, the plaintiff, a building owner, sued an architect for advising him to accept a particular tender under which alterations to his house were carried out, and which were the highest of those sent in. After a great deal of conflicting evidence on both sides, eventually the jury found for the defendant architect. Plainly, an architect's duty is to advise which of the firms who have tendered are most likely to do the work the cheapest, but in the most satisfactory manner, and bring it to a satisfactory conclusion.

With the acceptance of a tender by the employer, and the entering into of a contract, the architect enters upon a wider sphere of duty in acting as his employer's agent. His duty, then, is to faithfully carry out the work according to the plans and specifications, and

To Exercise a Competent Supervision

to ensure satisfactory workmanship and materials being obtained.

An architect during the construction of the works has not authority to deviate from plans or specification in the slightest without his employers' consent. When no express authority is given, an architect can only bind his employers in respect of acts done or orders given in the general course of his employment, and these are confined to such as are absolutely necessary for carrying out the work. The authority of the architect is really but of very limited extent. In the words of Chief Baron Alexander in *Rex* v. *Peto*, the 1 Y. and J. 37, he is a "person who ought to be in general, but an onlooker of the owner to see that the work is accurately performed." *Cooper* v. *Langdon* (9 M.W. 60) is an instructive case. There, according to the drawings and specifications, a certain wall was to be of brick, for which stone was substituted by the builder. The building owner took action for breach of contract and succeeded. The defendants claimed that he made the alteration at the instigation of the architect, but there was no authority shown on the part of the architect to bind his employer in respect of any deviations from the drawings.

The authority to make alterations or additions is usually conferred by the building contract, when it is conferred at all, and the architect must keep strictly within its terms. Thus in *Rex* v. *Peto* (quoted above) the architect had had the power to order "additions or omissions." The work consisted in building a custom house with piled foundations. The architect had the house built without piled foundations, and it was held that this was not an omission, but, in reality, a variation which was not in the power of the architect to order.

A matter of great importance is the question of quantities, and on this a few observations may be offered. It is extremely doubtful whether an architect is allowed

To Retain a Quantity Surveyor

without express authority from his employer. Much depends on the terms of the architect's retainer. Thus, in *Waghorne* v. *Wimbledon Local Board* ("Times," June 4th, 1877), the defendant board instructed their surveyor to prepare plans and specifications and procure tenders for the erection of a mortuary chapel. The surveyor instructed the plaintiff to take out the quantities. He did so, and sent in his bill in the ordinary way. The Board refused to pay, but the Court held that, as the Board had instructed their surveyor to procure tenders, and as tenders could not have been submitted without bills of quantities, there was implied authority to the surveyor to retain a quantity surveyor.

Where, however, the architect is not directed to procure tenders, it is exceedingly questionable whether, apart from a distinct custom in the profession, an architect, on his own initiation, should retain a quantity surveyor; in fact, it is so doubtful that it is much better not to do so (*Moon* v. *Guardians of Witney Union*, 3 Bing. N.C. 114, cf. *Evans* v. *Carte*, "Times," May 28th, 1882). For should the architect retain a quantity surveyor without authority, he will be personally liable for that gentleman's reasonable charges, and it matters not that he retained him in perfect good faith and convinced of his authority to do so (*Collen* v. *Wright*, 8 E. and B., 647). In a case, *Gordon* v. *Blackburne* ("The Builder," February 1st, 1879), the defendant, an architect, had requested the plaintiff to take out quantities for a building he had been instructed to prepare plans for. The quantity surveyor did so, and applied to the architect for payment, by whom he was referred to his employers. He then proceeded against the architect, and recovered his fees.

The architect should not prepare the quantities himself. It is objectionable for many reasons, as the quantities are often

Paid for by the Builder.

The general law prohibits an agent from making any profit out of his agency apart from his own proper remuneration by his employers. And it is only a custom to the effect stated that would enable an architect to receive any money from the builder in respect of quantities.

In the case of inaccuracies in bills of quantities, what are the liabilities of quantity surveyor and architect? The quantity surveyor is appointed by the owner. To the owner, then, and to him alone is the quantity surveyor responsible at all. There is no privity between the quantity surveyor and the contractor, and therefore no liability to the contractor, apart from fraudulent misrepresentation, although, as was held in *North* v. *Bassett* (1 Q.B. 333), there may be a reasonable and good custom that the builder should pay the quantity surveyor's charges.

Whether the architect or a quantity surveyor takes out the quantities, it is to their employer that they will be liable, and to him only, for negligence and want of care. But as the judge remarked in *Priestly* v. *Stone* (4 "Times" L.R.

730), quantity surveyors are not liable apart from negligence. What they do is to submit their quantities as the result of their calculations, and to the best of their belief correct. There is the obligation on the builder taking those quantities to satisfy himself of their accuracy.

The two principles of law governing the liability of architects, viz., the application of reasonable skill and care, and their keeping within the limits of their authority as agents, must now be applied more immediately to their conduct during the execution of works.

At such a time an architect's duty is to exercise a proper supervision, so that the employer gets as good a building as he bargained for. In *Ellisen* v. *Lawrie* ("Times," February 19th, 1878), owing to the improper attention given by an architect to the laying and jointing of sewer pipes in connection with a dwelling-house, foul gases penetrated into the residence, causing illness in the family. The plaintiff, the owner, sued the architect for the cost of repairs and for medical expenses, and succeeded in his action. Of course, the question of what constitutes proper supervision must be left to the discretion of the architect, who knows the character of the work, and more especially the character of the contractor engaged upon its execution.

The liability of the architect in respect of

Alterations and Omissions

has already been dealt with. It should be mentioned that he has no authority of himself to call in a quantity surveyor, as is often done, to measure up deviations and extras. That was the course adopted in *Plimsaul* v. *Lord Kilmorey* (1 T.L.R., 48) by the architect in respect of building operations at St. James's Theatre. It was held that he had no right to do so, and that even if there was a custom for the architect to employ a quantity surveyor it could not reasonably apply to the measuring up of extras.

Dealing with the question of extras—a most trying one often to architects—most specifications provide that extra work shall only be executed on being ordered in writing by the employer or the architect. No definition exists of what constitutes extras, though many have been suggested, and the builder may refuse to carry out certain items of work, claiming them as extras, unless on written authority, items which the architect may consider within the contract. But an order in writing may be given under protest and will not be construed as against the architect or the employer as admitting the contractor's contention. The position of the architect as against the contractor is this: If the specification provides for a written order, a written order there must be before the contractor can claim payment (*Thames Iron Works Company* v. *Royal Mail Steam Packet Company* (13 C.B. [N.S.] 358), and if a contractor executes work with this provision without a written order, he has, if there has been no waiver of the condition, no redress against anyone. But supposing the specification is silent, then the architect cannot without express authority from his employer order extra work. If he does so, and holds himself out as possessing, or acts without that necessary authority, he renders himself personally liable to the contractor in respect of the extra work so ordered (*Collen* v. *Wright*).

Passing on to the architect's duty in respect of

Measuring up,

that involves the same application of reasonable care and skill. The accuracy of the work must be considered in respect to the magnitude of the job, and is altogether a question of degree. Thus in *Corbett* v. *Richmond and Chandler*, reported in the "Building News," May 18th, 1888, the plaintiff was an architect, and sued the defendants (his employers) for balance of his commission in respect of the erection of certain premises in Manchester. The defendants resisted on the ground of the architect's negligence in measuring up work with the result that the contractors were paid £537 more than they were entitled to. The official referee to whom the Judge referred the case said £537 on £10,000, the value of the premises amounted to only ¾ per cent., and with only such a difference between the defendants' and the plaintiff's figure on such a job, it was absolute nonsense to charge an architect with negligence. He had never known a case in which negligence was charged against a professional man on such insufficient grounds. Towards the contractor the architect is not liable at all in respect of measuring up except on the ground of fraud.

Much the same state of things exists in regard to certificates. To the employer the architect is responsible for negligence in granting certificates, whether it be a progress or a final certificate; and the fact that by the terms of a building contract a final certificate is to bind both builder and employer, does not bind architect and employer. Thus, in *Rogers* v. *James* (8 T.L.R. 67) the plaintiff was an architect who sought to recover a balance of fees in connection with the supervision of some houses. The defendant (his employer) counterclaimed for negligence, in that the architect had not insisted on the builder putting in certain concrete in foundations. The architect pleaded that he had deducted the value thereof from the balance of the contract money payable to the contractor under his final certificate, and that it, under the usual clause in the specification, was binding on both employer and builder. The jury found that the plaintiff had been negligent. The Judge held, and his view was maintained by the Court of Appeal, that the clause binding employer and builder did not apply as between architect and employer.

When the issue of the architect's certificate is a condition precedent to the payment of the contractor, an architect is often perplexed to know how he stands if, from reasons of dissatisfaction with the work, he is unable honestly to grant the certificate. Is he liable to an action at the hands of the contractor? It must be remembered in connection with this that the architect is in no way the servant of the contractor, and owes him no duty different from that which he owes to all mankind. The case of *Le Lievre* v. *Gould* (1 Q.B. 491), was an action against an architect for negligence in discharging his duty by. The plaintiff was a third party who had not retained or paid the architect, and, moreover, the negligence was practically admitted. But the action failed. Lord Esher's judgment contained the following sentences:—"What duty is there where there is no relation between the parties by contract? In the absence of contract an action for negligence cannot be maintained when there is no fraud. And in *Stevenson* v. *Watson* (4 C.P.D., 148) the plaintiffs, certain builders, took action against the defendant architect in respect of his certificate being insufficient, alleging that he did not exercise care and skill in ascertaining the amount due to them, but not alleging fraud. It was held that the defendant in granting certificates was not liable for want of care or skill to the contractors. He was only bound to give an honest decision.

So that, therefore, an architect generally is only liable to a contractor in point of fraud, whether in respect of refusal to grant certificates or delay in granting them, or approval or condemnation of materials or workmanship, and other such matters. Lord Herschel very clearly and explicitly explains in *Peek* v. *Derry* (14 Ap. Cas. 374) what is fraud. "Fraud," he says, "is proved when it is shown that a false representation has been made (1) knowingly, or (2) without belief in its truth, or (3) recklessly, careless whether it be true or false.

If, therefore, an architect believes in the justice of his cause, let him refuse a certificate fearless of consequence, but on grounds, however, that he can stand over should the contractor proceed for a mandatory injunction to restrain the employer from keeping him out of his money.

There is an interesting case, that of *Ludbrooke* v. *Barrett* (46 L.J., C.P., 798), to illustrate what was held to amount to

Fraud on the Part of the Architect

in refusing to grant a certificate. The plaintiffs, being builders, had agreed to build certain buildings for one Ridgway on the condition that they should be paid on the defendant's certificate when the buildings were erected to his satisfaction. It was found that the architect had an interest in the matter, and that he had colluded fraudulently with the building-owner in refusing the certificate, and the action was allowed.

The architect has often, as was mentioned, to occupy the somewhat inconvenient

Position of Arbitrator

between the contractor and the employer. Acting as such, he is in the position of a quasi-judge, and, as such, is not liable to either the employer or the contractor for negligence or want of skill in making his award. He is, of course, personally liable for fraud, and that to all parties injured by his wrongful acts. In the *Tharsis Sulphur Company* v. *Loftus* (L.R. 8, C.P., 1), the defendant, an average adjuster, was retained by the plaintiffs to settle and adjust the proportion which the ship and cargo respectively were to bear the losses incurred during the voyage. When he had made his award the plaintiffs, in spite of their undertaking to abide by his decision, brought an action against him alleging negligence in making his award. It was held, however, that the action would not lie, and see also *Pappa* v. *Rose* (L.R., 7 C.P., 32 and 525).

Architects in their professional career are frequently and inevitably made the recipients of confidential information respecting the affairs of their clients, and not infrequently at some other stage of their career find themselves in the position of opponents to their former employers. It is not easy to decide what is confidential information, but, be it what it may, the decision in *Robb* v. *Green* (A.C., 315) and the words of Lord Justice Smith are imperative:—"It is a necessary implication which must be grafted on a contract of service that the servant undertakes to serve his master with good faith and fidelity, and it is a breach of this condition to use during or after the period of service confidential information acquired during it adversely to the employer or for the servant's own benefit." Plans belonging to a late employer, for instance, would be confidential, and if submitted to a new employer the Courts would issue an injunction against any architect so acting, and would compensate his late employer by damages for any injury incurred thereby. But where there is nothing confidential in the information, where it is merely a compilation of facts in everyone's power to make, if possessed of the requisite ability, there is nothing to prevent an architect using that for the benefit of himself or of his new clients.

It was mentioned at the outset that the law deems an architect to be acquainted with its general principles to ensure an observance of his advice by his client being free from injurious consequences. The precise extent of this knowledge is not clear. From *Jenkins* v. *Betham* (15 C.B., 188), we may gain some information. The defendants were engaged by the plaintiff, on his appointment to a living, to value dilapidations. They valued the dilapidations at too low a figure, because of their ignorance of the legal difference between outgoing and incoming incumbents, which they admitted. The Judge at the trial directed the jury that the defendants could not be held unskilful for not knowing the law as a lawyer did, but that they should be liable if they did not display such a knowledge of it as was ordinarily current. On a motion for a new trial the Court held that the defendants should have known the broad distinction existing between outgoing and incoming incumbents. So it seems that an architect may be required to know the broad principles of law applicable to matters within his everyday business, such as ancient lights and the right to vertical and lateral support, and that for damage arising to his employer through his ignorance of such questions he will be held responsible.

In conclusion it may be observed that many of the difficulties experienced and responsibilities undertaken by architects are such as with properly drawn specifications and carefully prepared plans should not arise.

THE DISCUSSION.

Mr. A. HARSTON, in opening the discussion on the paper, recommended a book on this subject, of which Mr. L. L. Macassey was part author. He advised architects never to give

an order in their own name; if they did not instruct the builder to order the goods, they had better order as agents for their clients.

Mr. HAMPDEN W. PRATT proposed a vote of thanks to Mr. Macassey, which was seconded by Mr. E. GREENOP.

Mr. H. T. HARE said, in regard to ownership of drawings, that he did not think the building owner could claim the preliminary sketches, as the architect was merely engaged to complete a building.

Mr. A. T. BOLTON thought it was difficult to get the legal profession not to look upon drawings as documents, as they were signed and therefore considered to belong to the owner. It was possible to erect a building without any drawings on paper whatever. The architect was usually looked upon as a policeman to keep the builder straight, but in the best sense he was really chief of the workmen, and should co-operate with the builder.

Mr. F. G. F. Hooper, F. J. Osborne Smith, C. H. Brodie, and Mr. W. H. Seth-Smith also spoke.

Mr. MACASSEY, jun., said, in reply, that it would be well, perhaps, if they had a definition of an agent. An agent was a person appointed by someone to act for him, and the acts of the agent were considered the acts of the principal. He might be a special agent or a general agent. An architect was the former. An architect must either act as agent for the builder, for the employer, or as a go-between. In the speaker's opinion it was most unsatisfactory, if not absolutely impossible, to act as a go-between; and it followed that you must have an architect acting as the agent for the principal. An architect had not authority to order extras himself unless he had the express authority of his client. He thought that it was becoming more and more necessary for architects to take steps to form the profession into a close one and obtain enactments for their protection. The great difference between the law of France and that of England was that in the former it was codified, whereas here we had to depend on decisions in previous cases.

The vote of thanks to Mr. Macassey was then accorded.

Under Discussion.

LOCKS—ANCIENT AND MODERN.

THIS was the title of the lecture delivered by Mr. H. W. Chubb before the Architectural Association of Ireland on Tuesday in last week. Commencing with the simplest form of security—a simple bar and pin—the lecturer referred to Egyptian locks, in wood, and Roman locks, in bronze and iron, which, he said, exhibited an increased degree of complication. The lecturer showed models of curious Chinese and Japanese padlocks at present in use. Early English locks were more in the form of those in modern use. Referring to a diagram of a beautifully designed key of the Renaissance period, he said that at that time before an apprentice was admitted to the Guild of Locksmiths, he was obliged to make a very fine key to be presented to the chief craftsman; and one or two years was often spent by the apprentice in making a single key. A characteristic of some German locks of the Middle Ages was that they had projecting guides to enable a person to find the keyhole when he came home on a dark night.

NORMAN MASONRY IN CORNWALL.

IN the course of a lecture recently delivered at the Plymouth Institution on "The Norman Remains in Cornwall" Mr. Edmund Sedding said that the Western peninsula had retained much of its primæval character undisturbed by the immense increase in population which has so much affected other counties in Old England. The mediæval buildings partook of the savagery of the grand natural surroundings. England became one great workshop under the influence of the Normans, whose noble buildings entirely superseded the lowly Saxon work in Cornwall, where none was now to be found. Mr. Sedding selected the churches of Morwenstow, Tintagel, North Petherwin, and St. Clether as illustrating the best and most characteristic work of the Normans. The work at St. Germains was the earliest and grandest, but in detail Morwenstow's north arcade had no equal in the county. The church at Tintagel had withstood the fury of the North Cornish gales for six centuries. The portions of the north arcade at St. Clether and North Petherwin are of much interest, but as in the case of the other two churches mentioned, they are very inaccessible. These arcades and the one at Morwenstow had circular columns with narrow jointed stones, with an average diameter of 30in. All the Norman capitals in the county had the square abacus to their capitals, but the caps at Morwenstow were circular and enriched by chevron work, shallow worked, like the Danish worked their details at this time. The arches at St. Clether and North Petherwin are pointed, as in the case at St. Germains, and were executed about 30 years later. The Normans were workers in freestone, which may explain the reason why so little exterior masonry is left in the county, with its ruthless winds and driving rain which soon causes decay, unless the stone is carefully watched and repaired by wise treatment. There are several doorways and fonts left, and the lecturer appealed for their preservation, as recording the faith and love of ages of craftsmen whose work as builders must ever stand prominent and be worthy of admiration.

BY-PATHS IN ARCHITECTURE.

UNDER the auspices of the students' section of the Dundee Institute of Architecture, Mr. G. S. Aitken, F.S.A, Edinburgh, lectured recently on "Some By-paths in Architecture." The lecturer, after prefatory remarks, submitted that a knowledge of landscape gardening was a very good thing for an architect to have. It was a trite remark that the house an architect built might be made or marred by its surroundings. Mr. Aitken then proceeded to give hints as to the laying out of grounds, commenting on the various trees and shrubs which might be employed. Passing on to speak of flower gardens, he said it would generally be conceded that while a certain amount of irregularity of plan and contour was advisable on that part of the grounds furthest away from a house, the immediately adjacent parts should be of a formal character, and in consonance with the architecture of the building. That admitted, it would not be difficult to determine the arrangement of the flower borders. Another by-path which the architect could follow with much profit was that of geology, because it was absolutely impossible that he could be fully equipped for his profession or be a competent judge of the materials he was called upon to handle without some precise information as to their origin and constituents. Water-colour drawing formed another by-path in architecture. It was quite needless to prove that every architect should be a colourist. Archæology was another instructive by-path, and in speaking on this subject Mr. Aitken illustrated how much valuable knowledge could be acquired by the study of ruins and ancient buildings. He subsequently referred to the study of heraldry as being still another useful by-path for the architect, and concluded by stating that there were special reasons why the architect should make a study of music. His own work would acquire rhythm and grace, and his studies on the mechanical side of music would qualify him to speak with authority when called upon to do so. The architect should no more step aside when in the course of his practice he was called on to design an organ chamber in house or chapel, or to devise a space for the bells which were to ring out from tower or steeple, than that he should withdraw from the consideration of sanitation and such other departments which were too often considered mere by-paths in architecture. But any or all the by-paths to which he had referred were not to be so absorbingly followed as to interfere with the attention which was due to the weightier matters of skilful planning, soulful design, sound construction, and healthful arrangements.

THE CRAFTS AND ART OF BRICKWORK.

ON Thursday last the first meeting of the present session of the Sheffield Society of Architects was held, when Mr. Beresford Pite, F.R.I.B.A., read a paper on "The Crafts and Art of Brickwork." He said the importance to a designer of full acquaintance with the nature and properties of the materials for which he designs need not to be stated at length. In order to give expression in work to the special qualities of a material, his knowledge of it must not only be technical as to its nature and manufacture, but historical, so that its traditional uses and suitability may be considered and reflected in design. There is a necessary harmony and relation between the means employed and the end to be attained in architecture, as in every work of beauty.

Beautiful design, sound construction, and satisfactory materials are each necessary to good architecture. The different expression of a wall erected in stonework and another built of bricks is an illustration of the importance of the material artistically. In that of stonework, the stones, from their size and natural beauty, give the wall its character and expression. The material is natural, and may be in itself delightful; the working of it, the bonding and jointing, and the cement—all are certainly important, but secondary entirely to the stone in the interest of the structure. In a brick wall the material is of no great interest; in spite of the dictum of Vitruvius, it is mean and humble; the uniformity of the sizes of the bricks and their smallness have this effect, but the interest and beauty of finished brickwork is very great. The mortar which embeds and encloses each brick unit, the bonding, regularity, and evenness of the whole composed of so many units are each factors of interest. The mortar, or cementing material, plays a much more important part than in the wall of masonry. Together with the bricks, it forms a concrete amalgam, rather than a structure of squared blocks. This character can be readily seen in the remains of Roman brickwork in England, notably in the fine wall at Leicester.

Mediæval and Elizabethan brickwork had much the same effect, the mortar joints being broad, but the work of the Georgian period witnesses a change of feeling. A finer quality of brick, suitable for carving and moulding into architectural forms, was largely used, and with it a fine and delicate mortar joint, the amount of mortar revealed on the surface of the wall being of the smallest possible extent. This work has more the characteristics of minute masonry. The bonding and planning of the courses of bricks became of greater importance with the decline of mortar, the strength of such walling being dependent on the distribution of the weight and thrusts on the body of each brick and not on its joints, the adhesive quality of the mortar not being a constructive consideration. Modern brickwork is a practical compromise between the mediæval and Georgian methods; the mortar joint is neither thick nor thin, and consistent bonding is often neglected, the use of powerful mortar being expected to make amends for it. In brickwork there is scope for fine handicraft and much human interest; and even a garden wall may be rendered beautiful and have character. The quality of texture and surface, which is valuable and important in all great work, can be imparted by a sympathetic study of even brick and mortar; true sympathy with the material that he uses will prevent an architect from lapsing into anachronisms in designing features unsuitable for execution in brickwork, and will also provide the student with a new stimulant to the enthusiastic study of the elements of fine buildings.

Newport (I.W.) Competition.—We understand that Mr. W. V. Gough, of Bristol, and Mr. A. A. Burnett, F.S.I., of Southampton, have been awarded the premiums of £50 each for plans for the new Free Library, Technical Institute, and County Offices at Newport, Isle of Wight, the plans of the former being adopted, subject to alterations, at an estimated cost of £9,500. There were 54 competitors, and six plans were selected by the assessor (Colonel Edis, F.S.A.); the authors of the remaining four were:—Messrs. Houston and Houston, London; Mr. C. A. Sharpe, Westminster; Mr. H. Chatfield Clarke, London; and Mr. F. A. Tugwell, Scarborough.

R. I. B. A.

THE FORUM EXCAVATIONS.

AT the meeting of the Royal Institute of British Architects held on Monday evening last (the president, Mr. William Emerson, in the chair), a paper was read by Professor Lanciani, Hon. Corr. Member, on the "Architectural Results of the Latest Excavations in the Forum."

The lecturer explained that the remarkable success of these excavations in a district which had been so often searched and laid bare was due to the fact that former excavations had always stopped at the higher level of ruins. As soon as the pavement of a street, house, or public building had been exposed to view, they were asked to stop without being able to ascertain what was under those structures. As it was known that the Roman Forum and the region of the Sacra Via had been swept by fire and rebuilt at least four times under the Empire, it was at last determined to probe that sacred piece of ground down to the level of the virgin soil wherever it was possible to do so without injury to the higher and later structures. The results surpassed their most sanguine expectations, especially from the archæological and historical point of view. The architectural discoveries, too, though modest, nevertheless merited special notice. By means of a series of photographic lantern slides the lecturer conducted his audience over the Forum and the Sacra Via, starting from the Comitium. Nearly two years had elapsed since the finding of the monument which they had identified as the Heroon, or empty grave of Romulus. The controversy about the nature, date and object of the monument had been decided in their favour, and it was now admitted that this was really the identical monument raised in honour and in memory of Romulus at the time when Rome was still ruled by the kings. The deification of Romulus was not a late Greek fable, as some recent critics contend, but a fact proved conclusively by these recent discoveries. The Heroon is, or was, composed of six parts or elements—namely, (*a*) the cenotaph, or empty grave, (*b*) the two lions which guarded it on either side, (*c*) the honorary pillar, (*d*) the stone inscribed with the *lex loci*, (*e*) the altar, (*f*) the sacrificial horn. The whole group was found embedded in layers of sacrificial remains under the level of the Imperial Comitium. Its site was indicated by a square enclosure surrounded by a marble transerina and paved with black stone, the famous "lapis niger" of Festus and Varro. The cenotaph was found filled up with earth and decomposed organic remains, without any trace of a cinerarium or ossarium; this is in perfect accordance with the Roman tradition and the popular belief in the fate of Romulus. The interest of this chain of discoveries culminated in the inscribed stele or pyramid still standing after twenty-six centuries on the identical site on which it was set up at the time of King Hama and King Servius. The inscription engraved on this rough block of tufa has been given the place of honour among the 95,000 epigraphic documents which have been collected all through the Roman Empire for the *Corpus inscriptionem*. It precedes by a couple of centuries what was considered up to the date of its discovery to be the very oldest specimen of the Latin language and Latin palæography, the so-called cup of Drenos, now in the Berlin Museum.

Continuing along the Sacra Via, Professor Lianciani referred to the results of the geological exploration of the ground, showing how the primitive path, which was irregular and winding, had gradually been transformed until, as buildings were erected on either side, it took a definite shape and was made to turn four or five times at right angles. Coming to the newly-discovered monument, the Basilica Æmilia, the lecturer said they had learned by experience the possibility of this extraordinary fact: that a building of the first magnitude like the Basilica Æmilia, proclaimed by classic writers to be the finest of its class in the world, could have been excavated to the very root of the foundations and deprived of its hundred columns, that tens of thousands of feet of its gracefully-carved marbles could have been burnt into lime or turned into new shapes and purposes, without a single record being left of the Titanic deed of destruction. Having briefly sketched the history of the place, the lecturer said that they had now learned that the building must have been gutted and wrecked in the great fire of 283 under the Emperor Carinus; and that it was hastily and disgracefully restored by the Emperor Diocletian in the clumsy style which characterised the patchwork of the Decadence. They had also learned that whatever parts were left standing of the Basilica at the end of the fourth century were pulled down in order that the materials might be used for building the church of St. Paul on the road to Ostia. The lecturer added, by way of consolation, that by tracing the lines of the foundation walls and by sorting the fragments of its architectural decorations they had been able to reconstruct the original design in plan as well as in elevation. A drawing of the restoration, the work of Signor Guiseppe Gatteschi, was shown on the screen. The Temple of Antoninus and Faustina, the next building reached, had been freed by their latest operations from its ignoble surroundings, and also restored.

The pavement of the Sacra Via which runs in front of the Pronaos is 4ft. higher than the original one, and there were five steps of the original stairs buried under the mediæval pavement. These steps have been uncovered and the Temple now appears in all the noble proportions of its original design. Discussing the Regia and its remains, the lecturer dealt particularly with two interesting relics of the building, namely, the circular structure in the inner hall, and the storepit or underground Tholos. The former is suggested to be the part of the sanctuary in which the spears of Mars were kept, while the storepit and the altar have been identified with the *Ops Consivia*, whose presence and worship in the Regia are attested by historians of early Rome.

Leaving the Regia, the lecturer next drew attention to the House of the Vestals. Entering the cloisters of the Vestals, the first monument met with is the pedestal of Claudia, the first and the only Princess of Vesta, who gave up her exalted position to embrace the Christian faith. Across the Nova Via one enters the newly-excavated colossal temple of the deified Roman emperors. Architects will find the temple a new and unexpected subject for study, so different is its plan and elevation from any known design of a Roman public building and so wonderful is its preservation. The building does not stand isolated on its own ground, but is connected with the Palace of Caligula and with the state stairs that descend to it down to the level of the Forum. It was already known from the discovery of similar stairs in the palace that the imperial architects, possibly the Emperors themselves, objected to steps, and that, whenever the plan of the building allowed it, they substituted for steps inclined planes, with an easy gradient of 6 or 7 in 100, interrupted by horizontal landings. The newly-discovered descent from the Palace of Caligula to the Temple of the Emperors is designed in the same way.

Lastly, the lecturer described the Imperial warehouse for Indian goods brought to light in the excavations. This establishment, officially styled the Horrea Piperatoria, was built by the Emperor Domitian, about 84 A.D., for the storage of the spices named and described by Pliny in the twelfth book of the natural history. The warehouses were wrecked and gutted in the fire which destroyed the whole quarter of the Sacra Via in 191 A.D., a few weeks before the death of Commodus. Considering the happy results of the excavations, the lecturer said their thanks were due to the Italian Administration of the Antiquities, and to their colleague, Commendatore Boni, for the scheme so cleverly planned and so skilfully carried through, and for their decision not to stop any more in the search at the level of the classic buildings of the Empire, but to reach wherever possible the lowest and deepest strata, contemporary or even anterior to the foundation of Rome. By following this scheme he felt confident they would ascertain the true origin of Rome, and the nationality and stage of civilisation of its original settlers.

A vote of thanks to Professor Lanciani was proposed by Mr. F. C. Penrose, and seconded by Sir Lawrence Alma-Tadema; Sir William Richmond, Professor Aitchison and Dr. Alexander Murray then spoke; after which the President put the vote, which was carried unanimously. The Professor returned thanks, and the meeting then terminated.

CLASSIC IRONWORK.

AT the meeting of the Birmingham Architectural Association held on Friday evening last, Mr. Thomas S. Elgood (of Elgood Brothers, Leicester) read a paper on "Different Types of Classic Ironwork," a subject to which he has devoted many years of study.

Beginning with Italy, he pointed out that though that country was the very home of the Renaissance, though the Italians produced such marvellous results in every other branch of art, yet they did not evolve any great and characteristic Renaissance style of ironwork. Rather, the different cities seemed to develop little styles of their own, that of Venice being very distinct from many of the others. (This was illustrated by sketches made in Pisa, Florence, Venice, and Verona.) The Germans, too, though they were so great in smithwork and so readily adopted Renaissance qualities in their armour, locks, and other articles, did not freely assimilate Classic ideas in their architectural ironwork, but wasted their ingenuity and strength upon the well-known puzzle ironwork, the flatness and insipidity of which is fortunately relieved in many cases by really good foliated and floriated crestings. When they took up the Rococo they overdid it in the most painful manner. The French, in the times of Louis XIII. and Louis XIV., produced that most remarkable and most Classic style known as the Baroque or Jesuit style, and embellished their buildings with gates, balconies, and balustrades designed in the best spirit of the Renaissance and executed with unsurpassed skill. (This was illustrated by many examples from Paris, Versailles, and Rouen.) Of the Rococo which followed, the lecturer had little to say, and few examples to show. Later, again, in the time of Louis XVI. and the Empire, a more simple and Classic taste returned, but not the wonderful genius of the Baroque period. In Spain at the end of the fifteenth and on through the sixteenth century the Plateresque (or silversmiths') style of ironwork grew up, giving to posterity all those wonderful screens or *rejas* in the great cathedrals at Toledo, Cuenca, and Palencia; also that wonderful gem—the pulpit at Avila, and balustrades like that at Burgo. The illustrations of these examples were taken from Mr. A. N. Prentice's book and were supplemented by a fine photograph of the exquisite Spanish Gates in Chester Cathedral, which are of the very best period. In England the so-called Queen Anne style of ironwork was developed. Small beginnings are noticeable as far back as Elizabeth; the most remarkable developments took place during the reign of William and Mary, particularly under Wren, who employed at Hampton Court and at St. Paul's Cathedral Jean Tijou as designer and Huntingdon Shaw as smith. Some of the best illustrations to the paper were from these two buildings, Mr. Elgood's favourite being the gates leading into the choir aisles at St. Paul's, which he spoke of as one of the very finest examples of the architectural treatment of wrought iron. Under Anne and the early Georges the style became more simple, and examples are too numerous to catalogue. They may be studied to advantage all about London, in the Cathedral cities, and at the Universities (particularly Cambridge), as well as in the gates to many country parks. Thus we have three great styles:—The French Baroque, the Spanish Plateresque, the English Queen Anne; and three lesser ones:—The Italian, the Rococo, the Empire; and of them all the most adaptable and most economic is the English.

Law Cases.

Embezzling an Architect's Money.—At the Tunbridge Wells Police Court on November 5th Nicholas Strange, an accountant, was charged with having embezzled sums of money amounting to over £300, belonging to W. B. Hughes, an architect and surveyor. From the evidence it appeared that the prisoner, who was engaged by Mr. Hughes as confidential clerk and auditor, was entrusted with large sums of money to bank, a part of which he occasionally appropriated to his own use. It was further alleged that he altered the office books and repeated the falsifications at the audit which he himself conducted at the end of each half-year. The prosecuting solicitor, Mr. W. C. Cripps, stated that the total defalcations appeared to be over £900, and more discrepancies were being discovered as the examination of the books proceeded. The prisoner was committed for trial at the assizes.

Apportioned Costs of Paving Improvements — The case of *Cawston* v. *Bromley Urban District Council* was heard in the Queen's Bench Division of the High Court of Justice on Thursday last. It was an award stated by agreement in the form of a special case. The Bromley District Council on February 13th, 1897, gave notice under the Public Health Act, 1875, to Mr. Cawston, of Bromley Hill, to sewer, pave, &c., a portion of Highland Road, Bromley. The notice not having been complied with the Council executed the works, the expense of which was certified by their surveyor at £717 11s. 9d. The surveyor declared that sum chargeable against the frontagers, and apportioned £372 12s 4d. as being the proportion payable by Mr. Cawston in respect of the frontages owned by him. Mr. Cawston disputed the apportionment, and in pursance of sections 150 and 257 of the Public Health Act, 1875, appointed an arbitrator. The Council also appointed an arbitrator. The arbitrators, having differed, appointed an umpire, who, by agreement, stated his award in the form of this special case. At the hearing before the umpire it was contended on behalf of Mr. Cawston that he was entitled to dispute the right of the District Council or their surveyor to charge part of the amount which was paid for work executed to the road on the ground that such amount related to a sewer already vested in the District Council. The Lord Chief Justice, in giving judgment, said that in his opinion this was an attempt to induce the Court to decide a question which had already been decided in the Court of Appeal ever since *Bayley* v. *Wilkinson* (16 C.B., N S, 161), and through a long series of cases ending with the Sandgate case (1892. 1 Q.B., 831) and the Folkestone case. In his opinion the surveyor's certificate for the purposes of the arbitration was binding upon the umpire as to the total amount. Mr. Justice Kennedy concurred.

Liability of Architect When Ordering Goods.—Mr. Justice Channell, sitting with a common jury in the Queen's Bench Division, recently heard the case of *Main* v. *Cotman*, which was an action to recover £38 odd, the price of goods supplied and work done. Plaintiffs' counsel said his clients were engineers and iron-founders, and defendant was an architect practising at Ipswich. The claim against him might be divided into three parts: first, the supply of a circulating boiler; secondly, repairing and re-fitting a triple gas-range; and thirdly, taking out an exhaust pipe and fitting it in another place. The defendant denied that the goods were sold to him, and denied that the work was done at his request, or for him at all. The chief question was whether the defendant ordered the goods, and whether he was liable. There was no dispute about the work being done, or about the prices charged being fair and reasonable. The order on which the action was based was given on Feb. 28th, 1898. Shortly before that date the defendant was acting as architect of the Crown and Anchor Hotel, Ipswich, and ordered a great number of articles and goods for the house. The plaintiffs sent in their bill to the defendant, who, very much to their surprise, took no notice of it. After repeated applications he said he was not liable. Still further correspondence took place, and the defendant suggested that a Mr. Quilter, who was the tenant of the hotel, was the person liable, and suggested that the plaintiffs should write to him. A letter was accordingly written to Quilter, who, however, forwarded it to the defendant. He denied that he had anything whatever to do with it, or that he was responsible in any way. Defendant's counsel said it was the duty of architects to give these orders, and, if every architect who did his duty in the ordinary way was to be called upon when a job was finished to put his hands in his pockets and pay all these people, and then to bring an action against his principal, the position of an architect would be a very precarious one. The action ought to have been brought against Mr. Quilter, who had been using the boiler for 2½ years. The jury found for defendant. Judgment accordingly, with costs.

Surveying and Sanitary Notes.

The Local Government Board Requirements for Sewage Disposal Schemes have been arranged in table form on a single sheet by Messrs. The Adams' Patent Sewage Lift Company, of York. This will be found most handy for the use of engineers, surveyors, &c.

London Sanitary Administration.—For the first time since the passing of the Metropolis Local Management Act of 1855 it is now proposed to enact drainage by-laws which that Act empowers the London County Council to adopt subject to the confirmation of the Local Government Board. The proposed by-laws have been forwarded to the Board, and Mr. Mark H. Judge has written to the Board pointing out that after a delay of nearly half a century "an opportunity should be given to the new Metropolitan Borough Councils to carefully consider these proposed new by-laws before the Local Government Board give them the force of law." The Public Health Committee report that they are "advised that the by-laws will be binding upon all parties, and that it will be the duty of the Borough Councils to see that they are observed."

Imperial Institute Road.—In February last the Building Act Committee of the London County Council received a letter from Her Majesty's Office of Works drawing attention to the removal of the University of London to South Kensington, and stating that the Senate considered it desirable that the name of the road in which the University buildings were situated should be altered from Imperial Institute Road to University Road, an opinion in which the Office of Works and the Treasury concurred. Apart from other considerations it appeared to the committee inexpedient to change the name to University Road, inasmuch as that name was already in use in London, and by their direction a communication to that effect was sent to the Office of Works. Letters were, however, subsequently received from the University of London stating that the Senate had adopted the name University Avenue, and that they desired that the Council would rename the road accordingly. After ascertaining that the London University was permanently located in the Imperial Institute Buildings, the Committee issued the notices required by the London Building Act, 1894, of the proposal to change the name, intimating at the same time that the Council was prepared to consider any objections. The attention of the Imperial Institute was specially called to the matter, and a communication has been received from the governing body strongly objecting to the suggested alteration, pointing out, amongst other considerations, that the expense of constructing the road was borne out of the funds of the Institute in accordance with the conditions upon which the site was granted for the erection of the building. Having carefully considered the matter, the Building Act Committee now state that they are not prepared to advise the Council to make any alteration in the name of Imperial Institute Road, and they have caused the University of London and the Imperial Institute authorities to be informed of their decision.

Professional Practice.

Grayshott.—A new church was consecrated recently. The building, which has been erected from designs by Messrs. I'Anson and Sons, architects, is in the Early English style, and consists of a nave, about 70ft. long, two aisles, and chancel with a tower which is not yet complete. The church is faced inside with local stone, and outside with Bargate stone, and Bath stone dressings, while the quoins are of Headley stone. Seating accommodation is provided for about 300, but this number was greatly exceeded at the consecration service. The seats are of pitch pine, the flooring is of wood blocks, and the altar, pulpit, and lectern are of oak; some of it, which is very old, having been taken from some farm buildings in the neighbourhood. The roof is covered with red tiles. The church has not been built, as is usual, by contract, but it has all been done locally under the superintendence of Mr. Foster, who has acted as clerk of the works, or general manager, under the direction of Mr. I'Anson, who, it should be mentioned, has given his services as architect. The total cost, apart from gifts, has been between £7,000 and £8 000.

Wycombe.—A new Church of St. John is to be erected in the Desborough Road. The architect is Mr. W. D. Caröe, of Whitehall Place, London, S.W. The limitations of the site lend themselves to the type of plan by which the whole congregation, occupying the nave, are under a single span. The seating accommodation of the church will be 741. There will be a broad nave and narrow aisles, the latter being merely passages. It is planned with a side chapel, choir and sanctuary organ chamber, &c. The morning or side chapel forms a south transept, from which the main altar is visible, and is thus serviceable for general as well as for special offices. It has been pointed out that it is essential that the building, if possible, should not abut the roadway. A narrow pathway has, therefore, been allowed on the south or West End Road side of it. A sanctuary will be low and side-lighted. The east end will be occupied by a reredos. The east window is in a clerestory over the sanctuary arch, and the whole of it will be visible from the west end of the nave. The floor will be raised to the level of the West End Road. By this arrangement, it is possible to place the vestries beneath the chancel, and thus secure the advantage of avoiding the covering of the restricted area of the site available with extended buildings. There are to be five entrances directly to the church, and one to the vestries. The nave is to be covered by an open timber roof of substantial construction, and the chancel by a barrel roof, which will materially assist the acoustics of the place. It is proposed to build of brick, and the amount of stone employed, except in the upper stages of the tower, is reduced to a minimum. While the tower itself does not come into the immediate scope of the present scheme, it appears on the design. The architect, on account of the oblong form of the church, has adopted the "saddle-back" covering, the height of the tower, by the way, being the same as that of the Parish Church. Until the upper stages of the tower are erected, the nave roof will be continued over it as a covering, and the whole will be complete in itself. The heating chamber is to be placed beneath the morning chapel sanctuary, and is thus very convenient for the discharge of fuel direct from West End Road. The detail of the style of the church is formed upon the developed "second pointed" work of the early part of the 14th century, a type of which Buckinghamshire boasts some exquisite examples. The cost of the whole fabric, exclusive of the tower, works out, at present prices, at £9,900, of which about £900 has to be spent before reaching the floor level; but it is only contemplated to complete a portion of the church at first. The first portion will cost £3,850, including £450 for temporary work, or if the sanctuary and the morning chapel be erected, £320 more. The cost of the tower will be about £2,000

Partick, Glasgow.—A new school has been erected for the Govan Parish School Board. The site on which the school is built consists of 7,056 square yards, and was purchased for 10s. per sq. yd. The school buildings, which were estimated to cost £18,940, occupy practically the centre of a square, and are bounded by four streets. The front playground is set off with rows of trees encircled with neat iron railings. The main building, which is three storeys in height, with accomodation for 1,348 scholars, is built of Locharbriggs redstone. The basement floor of the school contains laundry, manual instruction workshop, heating ducts, chambers, &c. The janitor's house is on the ground-floor level, and on this level the school proper commences, with separate entrances for boys, girls, and infants, where, occupying the central portion of the buildings, there is a large central hall. This hall is open through the entire height of the building, and is spanned, on the upper floor, by a bound roof, filled in with glass for lighting. There are also, on each floor, open balconies, supported by ornamental cantilevers, round the four sides of the hall. These balconies give access from the various floors to the classrooms of the several departments. At either end of the hall are spacious open staircases, and on the half-landings and main landings the cloak-rooms and teachers' rooms are placed alternately. Electric bells and speaking tubes from the central hall and headmaster's room communicate with the various floors; these special features forming a useful adjunct to the satisfactory working of the school. The various classrooms have been supplied with furniture and appliances of the best type. The heating and ventilating arrangements were designed and carried out by Mr. Preston, the Board's Master of Works, and are on the propulsion system. The temperature is raised by propelling fresh air, filtered through a specially-prepared hair screen, over steam-heated coils placed in the shafts leading to the several classrooms. This arrangement allows of each room to be independently heated. A large air propeller is driven by a gas-engine, which also drives grindstone, &c., for manual instruction workshop. In the laundry, which is fitted for sixteen girls, the boiling and drying are done by steam. The buildings, which were begun in August, 1898, are from designs by Mr. Andrew Balfour, I.A., architect, 110 Mains Street, Glasgow; the measurers being Messrs. Smellie, Taylor, and Browne, 167 St. Vincent Street, Glasgow; and have been erected under the superintendence of Mr. Samuel Preston, master of works to the Board. Mr. Rodie acted as clerk of works.

MANCHESTER ARCHITECTURE.

A CRITICISM OF RECENT BUILDINGS.

WE take the liberty of reprinting from the "Manchester Guardian" the following excellent criticism of buildings recently erected in that city:—

In any town where smoke and grime take as fast and lasting hold of stone as they do in Manchester, a building material should be welcome that can even partially defy such defacement. The shimmer of marble or granite in our climate, and with our surroundings, is apt to be inartistic in its effect—much as a jewelled ring is upon a coarse and dirty hand. Terra-cotta and the better kinds of brick are less open to this objection; but as used in Manchester, with very few exceptions, terra-cotta buildings are designed as for stone, and as if just coloured on the drawings or described in the specification as terra-cotta. That is making a bad use of a good material. Every building should surely be designed in detail to suit the special characteristics of the materials employed.

The new building called the Deansgate Arcade is, in the general treatment of the façades—especially the easterly one—and in detail, better adapted to terra-cotta than most others in Manchester. The design is not of the "wedding cake" description, and it suits the material in most respects well. This building is alone enough to show that there is no need in the use of terra-cotta to do violence to any artistic rule or sense. The elevations are dignified and suited to the purpose of the building. But even here there is one grave artistic fault, for which doubtless the architect would say that his clients are responsible. There is a vast mass of building over the wide shop fronts with no visible adequate support. This is an old problem yet to be satisfactorily solved. A minor point is that the terra-cotta blocks are in many cases too large for consistent terra-cotta treatment. Still, this is on the whole a satisfactory town building such as we are glad to see.

There is, unfortunately (with, of course, a notable exception), little besides in Deansgate to notice with approval. The Religious Institute and offices of the District Provident and Charity Organisation Society on the other side of Deansgate, next to the School Board offices, fall sadly short in many ways. The general treatment is confused and incoherent—it cannot be called design. The conditions, such as the varied uses and different heights required, lend themselves to a picturesque grouping and outline, of which, unfortunately, there is no trace in the building as we see it. Terra-cotta, too, is used without any serious attempt to give it the treatment for which the nature of the material calls. Artistically and architecturally it is impossible not to feel that a good opportunity—almost a great one—has been thrown away.

There is a striking façade in Fountain Street—the offices of the Guardian Society for the Protection of Trade. The ground floor, lofty enough to admit light duly in a narrow thoroughfare, is all of grey granite, which, by the way, would have been better if all polished or all unpolished. As it is, it suggests the idea of a face usually shaved of which only a part has to-day felt the razor. The first-floor windows are treated effectively and freshly, and the upper windows, forming a sort of continuous arcade, are excellent. Moreover, there is an absence of the so-called and miscalled ornament that disfigures so many of our more recent buildings.

A new building that has attracted a good deal of attention is the new warehouse in Piccadilly of Messrs. Horrocks, Crewdson and Co., and it deserves commendation for a certain freshness of design—a something that we have not seen here before. One is sorry that in a case where the architect has obviously had a pretty free hand as to expense there should be any serious faults. For such an important building there ought to be a befittingly important entrance. Yet one has almost to look for the door, and when found it is seen to be only a round arched opening, poor, if not actually mean, in design. The quasi bell-cot, too, on the front gable makes one wonder whether the architect had, when he got up there, come to the end of his resources; and no trouble seems to have been taken with the chimneys. It is remarkable that while our forbears, as a rule, made their chimneys a strong point in every design, knowing how a good chimney will redeem a plain or even a poor design, we of the present generation, or most of us, miss this point entirely. There seem to be plenty of ledges on which dust and dirt will lodge, and the rain, instead of helping to clean the elevations, will, it is to be feared, wash down the dirt from these projections and so cause much disfigurement.

Dignity and stateliness are one thing. Some architects in aiming at these only arrive at stiffness, coldness and hardness. Quite another thing is the cast-iron style. We feel grateful to Mr. Waterhouse for the promise he gives us, in the Whitworth Hall of Owens College, of something with less of cast-iron design in it than is his wont. The design is dignified, and some of the parts in detail—as, for example, the main entrance—are graceful and impressive. But the effect would have been much improved had the five front bays had some slight alternative treatment, both in the windows and in the panelling. It would take nothing from the dignity, but would take much from the stiffness. Witness that most dignified cathedral at Chartres—the skilful and ingenious alternation and the gain in artistic effect and interest. It is to be wished that the roof covering might be of reddish-brown or even purplish tiles. The light red tiles do not seem to have weight enough for such buildings. Also the gimcrack ridge crest would be better absent. The new Physical Laboratory (see BUILDERS' JOURNAL for July 11th last) excites regret that it should be so severely simple in its treatment. The details, though refined, lack due boldness, and thus a lofty and what should be an imposing building does not possess the impressiveness which its size and evident cost should give it. But it teaches one important lesson—the value of red brick. What a difference it would have made if all the dirty white brick buildings which make up the westerly part of the Owens College group had been of such red brick as the Physical Laboratory, and relieved, like it, with stone.

For a moment compare other buildings, modern and ancient. Whatever may be the merits or demerits of G. E. Street's London Law Courts, no one can deny that his mixture of red brick with stone is extremely clever, and is an absolute success. In York and in many parts of Yorkshire, see how perfectly effective is the way in which red brick and grey stone are intermingled, especially effective where there are also the rich red-brown tiled roofs. What a difference, too, in artistic effect would it have made to the Physical Laboratory had it been covered with brown or even purplish tiles, instead of very red ones on a building that was already quite red enough. The architect of the Physical Laboratory might have crowned his building with good chimneys. There was such a chance; why miss it? The chimneys are worse than poor; they are needlessly and objectionably ugly.

In the Women's Hospital in Oxford Street there is a far more consistent and reasonable use of terra-cotta than in the great insurance building nearly opposite; that is, a treatment more suited to the material, and much less suggestive of a stone design carried out in the humbler material. But (there is always a "but") one is very sorry to see the canal front so meanly treated—even worse than the west front of the Manchester Grammar School, though that is saying a good deal. In Manchester and Salford there are and have been many opportunities of giving due dignity to a river or canal frontage, which is sometimes better seen even than the street front; but few here seem to see that it is an opportunity to be used. At York, by the Ouse, there is a faint idea expressed in places that something ought to be done. We need not go to Venice for precedent. At Ghent and Bruges there is less magnificence but still very delightful treatment of water-side buildings of almost every conceivable kind. The great warehouse of the Tootal Broadhurst Lee Company, in Oxford Street, has on its southern side, next the canal, paid the courtesy to the passing public of a carefully designed front. There is another case in Messrs. J. Woolley and Sons' great building, seen as one approaches Exchange Station, where the conspicuous riverside has been architecturally treated—or rather a sample bit of the side; for, strange to say, the properly designed part stops a few feet from the corner, and the rest of the river front is little better than a wall with holes where wanted for light.

Of new public fountains in Manchester, that in Albert Square, simple as it is, is of really good artistic design; no architect, however eminent, need be ashamed of it. Another, though it takes us in spirit to that of Trinity College, Cambridge, is but a parody of the ancient fountain; it is poor and even mean in many of the details, and the water issues in the centre from a paltry earthenware vessel.

Liverpool Architectural Society.—The second ordinary meeting, fifty-third session, of this society was held last week, Professor Simpson presiding. Mr. Sebastian Pugin Powell was elected a Fellow of the society, Messrs. Frederick G. Barker and Matthew Honan were elected associates, and Messrs. Elliott Irvine Bingham, E. W. Evans, J. Anstice Harrison, T. Alwyn Lloyd, Edgar Quiggin student members. After the business of the meeting had been transacted, Mr. Halsey Ricardo read a paper on "The Revival of Gothic Architecture," which is printed in full in this issue.

THE CONSTRUCTION OF A ROOF.*

By GEORGE H. JONES.

IN our climate the roof of a building is of the first importance, for however perfect the structure, however elaborate the conveniencies and fittings, however artistic the decorations and scientific the sanitary arrangements, unless the roof is well constructed and watertight all the labour is in vain.

The subject of roofing generally (embracing as it does construction and materials) is too large to be dealt with in a short lecture like this, but a few notes will probably be of use.

Most of you have studied the construction of stone roofs and vaulting under that able instructor Laurence Harvey, at the City and Guilds of London Institute. Stone roofing and vaulting will always have a fascination for the members of this college, and rightly so. But I would urge upon those of our younger members, who have an ambition to become general foremen or clerks of works, the importance of studying the roofs of the carpenter. The iron roofs of our railway termini, markets, and other public buildings are also well worth the consideration and study of our members, though these structures are, as a rule, the work of the engineer rather than of the architect.

The chief use of a roof is, of course, to protect the inmates of the building from the extremes of temperature, from wind and rain. It must be designed and constructed in such a manner that it is a support to the walls that carry it, and unless it fulfils these requirements it cannot be considered a satisfactory, much less a perfect, roof. In the designing of a roof there are many things to be considered—the span or width between the walls, the height of the ridge, the weight of the covering (whether lead, tiles, or slates), and the relative strengths of the various timbers. If it is a high-pitched roof it is generally trussed on the king-post principle, or if low-pitched, on the queen-post principle, or sometimes by a combination of both. Though the problem of designing does not devolve upon the clerk of works or the general foreman, it is essentia l.hat they should understand the principles of construction and proper framing.

The simplest form of roof suitable to our climate is what is known as the lean-to roof, that is, a roof that slopes only one way. This was probably the earliest form of roof constructed in this country. Then would follow the ridged roof, or the roof which slopes two ways, with the end walls, called gables, carried up in brickwork or masonry. After this would follow the hipped roofs, sloping three or four ways. It would soon be discovered in the roof sloping both ways that the feet of the rafters had a tendency to spread and force out the walls. The next step was to tie the feet of the rafters together, and thus arose the tie-beam. The sagging of the tie-beams over large spans would next attract attention, and the remedy was found by suspending it from the ridge. Here then was the truss, the king-post truss. The queen-post truss is but the extension of the king-post truss. The latter is probably the earliest, as it is the simplest, form of roof-truss. The king-post holds up the middle of the tie-beam, and the struts support the middle of the rafter: they should be at right angles to the back of the rafter and should be tenoned and shouldered on the king-post. Nowadays, in roof framing, the tie-beam is frequently dispensed with, being replaced by a timber at a higher level than the feet of the rafters, sometimes as high as half the distance to the ridge; this is called a collar beam, and when it is fixed at a high level it is framed to the feet of the rafters by braces. Any piece of timber in a truss on which the stress or strain is in the extension of its fibres is, and may be called, a tie (sometimes brace). When the strain is in compression of its fibres it is a strut. Thus a king- or queen-post is a tie and not a strut.

The cost of trussing every pair of rafters would soon lead to longitudinal framing, and so came the purlin. The purlin is usually laid on the back of the principal rafter, sometimes at right angles and supported simply by a splay block spiked on the rafter, and sometimes fixed vertically and notched down over the rafter. When the principals are far apart, the purlin is sometimes strutted from the tie-beam, or from the sides of the principal rafter in open roofs; and these are called wind braces by some. They are of very little use when fixed to the side of the rafter, but some persons admire them in open roofs. If a roof is placed on inner and outer wall plates, these should always be framed together by cross-pieces halved and dovetailed, and not morticed and tenoned as I once saw done. Roofing is, in my opinion, the perfection of the carpenter's art; and the open roofs of our churches are, in many cases, even more beautiful than stone groining. To those of you who do not agree with me, I recommend a visit to Westminster Hall.

Thus we have seen the truss or principal rafters carry the purlins and ridge, the common rafters being fixed on the purlins, ridge, and wall plate. There is a German method of dispensing with the common rafters: this consists in fixing purlins at intervals from plate to ridge and then boarding them over to carry the slates or battens. I should think a roof like this would be less effective against wind pressure than one built in our usual way, though it would probably be less expensive to construct.

When a roof is described as being framed in rough fir or oak it is meant that the timber is used as it comes from the saw; when it is to be planed it is described as wrought: the framing is the same in both cases. When the soffit of a common rafter comes below the back of the purlin it should be caulked into the sides of the latter, but nothing must be taken off the back of the purlin. In some cases it is advisable to double caulk, in order to save the sectional area of the purlin as much as possible. I find there is a tendency to forget the caulking in rough framing: this, however, is important, and must be insisted on; especially when the purlin is at right angles to the rafter. In joggling in braces, &c., the shoulder should always be at right angles to the thrust, and if the joggle is long it should be twice shouldered for the same reason given above; in morticing never cut away more than is necessary. In fixing the bolts in a truss the bolt should in almost every case be fixed at right angles to the bi-section of the inside angle of the two timbers to be bolted together.

An excellent roof which I saw fixed on a building is constructed on the king-post principle with the addition of a hammer beam; the need for this beam being obvious in this particular case. The main principals are constructed with rafters, collars, braces, ashlars and hammer beams, with iron tie-rod and king-bolt. The feet of the rafters are, with the ends of the hammer beams, framed into a cast-iron shoe, through which the tie-rod passes; the rafters are framed together in a cast-iron head, and the king-bolt passes through and suspends the tie-rod. There is a seat or collar cast on each side of this head to carry the ridge, which is bolted through it on each side. From the hammer-beam there is a curved strut framed into the wall-post and beam resting on a stone corbel. The intermediate principals have no tie-rod or king-bolt (these are replaced by a king-post), and the collar is braced to the rafters; the iron head and shoe remain. The collar is strengthened by straps to king-post and rafters. In this truss there is a short tie-bolt passing through the hammer-beam and holding in the longitudinal beam. This latter runs the whole length of the building and the hammer-beams of all rafters, principal and common, are framed into it.

The purlins are housed and tenoned into the sides of the principal rafters. This is necessary, because backs of all rafters lie in one plane. The common rafters are all framed in trusses and caulked into purlins and notched over ridge and plate. The framing pieces of the plates are so arranged that every alternate rafter shoes on top, the others being bird's-mouthed to the plate. The reason for this is obvious after my previous remarks about purlins. The common rafter truss consists of rafters, collar braces, ashlars, and hammer beams, and alternate long cross-braces, with a short collar between. In framing the plates the principal hammer beams are notched down over the inner plate, while the outer plate passes by almost clear of the cast-iron shoe. The hammer beams to common rafters lie on the top of the plates. The roof is also counter-rafted diagonally, the slate battens being nailed to these rafters.

* Paper read before the College of Masons at the Royal Architectural Museum, Westminster, on October 23rd, 1900.

Engineering Notes.

Municipal Tramways in Kent.—The authorities of the districts from Plumstead to Dartford have agreed to ask for powers for an electric tramway. The proposed line will run from the existing metropolitan system at Plumstead through East Wickham, Welling, Bexley Heath, Crayford, and Dartford. Both the Dartford and Bexley urban authorities have the electric supply in their own hands.

New Pier at Bexhill-on-Sea.—The Urban District Council, having definitely decided to apply during the ensuing session of Parliament for powers to construct a promenade pier, have instructed Messrs. Mayoh and Haley, civil engineers, of Amberley House, Norfolk Street, London, W.C., who have already submitted their report and are now engaged on the necessary plans for the Board of Trade,

Electricity on German Farms.—At Coburg and neighbouring parts of Germany considerable attention is being paid to electrical appliances that can be used on the farm. Near Ochsenfurt, in Bavaria, a company has been organised for the establishment of an electrical system for use on their farms and in villages. The power is to be generated by steam and water, and the current to be distributed from a central station to the places at which it is wanted. Sub-stations are to be established at given points, with the necessary apparatus for connecting with the farm or other machinery, and also for lighting purposes in the houses, offices, roads, and village streets.

The Gas-meter at the Rotherhithe Baths.—At last Wednesday's meeting of the Rotherhithe Vestry the Baths and Washhouses Committee submitted a report in reference to the gas-meter at the baths, which, it is stated, for 18 years has registered only one-tenth of the quantity of gas consumed, owing to the dial indicating hundreds for thousands of cubic feet. Recently the South Metropolitan Gas Company sent in a bill for £2,947 for the arrears. Mr. Macmorran, Q.C., who had been consulted, could not advise the Vestry to pay the claim, except in obedience to a *mandamus* or order of a competent Court. The committee recommended that the clerk be instructed to inform the company that the Vestry had no power to levy a restrospective rate to meet the claim, and, therefore, they could not admit any liability in the matter. The recommendation was unanimously adopted.

The Institution of Electrical Engineers held its inaugural meeting of the new session on Thursday last, Professor Perry, the president, in the chair. Asking the question whether electrical engineering was to remain a profession or was to become a trade, the Professor urged the importance of electrical engineers being well acquainted with theory and the simple mathematics by means of which theory was made available. If they neglected these subjects they would probably find themselves left behind, for electrical engineering was in its youth and was growing rapidly. We in England, he maintained, knew too little theory, and much of the evil we suffered from was due to the average young men being pitchforked into works, where they got no instruction, as soon as they left school. Mathematics ought to be the natural language of the electrical engineer whereas at present it was a foreign tongue.

Leadless Glazed Ware.—Messrs. Mortlock, of Oxford Street, W., have arranged to show a large number of specimens of ware coated with leadless glaze, sent from the Royal Worcester Works.

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COMPLETE LIST OF CONTRACTS OPEN.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
	BUILDING.		
Nov. 16	Durham—Alterations and Additions	Rural District Council	G. Gregson, Eastwood, Western Hill, Durham.
" 17	Belfast—Additions	Bishop of Down and Connor	S. C. Hunter, 2 Wellington Place, Belfast.
" 17	Bradford—Alterations	School Board	W. Bailey, 9 Market Street, Bradford.
" 17	Whitchurch, Tavistock—Villa and Outbuildings		T. A. Clark, New Town Chambers, Plymouth.
" 19	Spennymoor—Isolation Hospital	Urban District Council	G. W. Rogers, Surveyor, Silver Street, Spennymoor.
" 20	Eastwood—Cottages		E. J. Hammond, Architect, New Brompton, Kent.
" 19	Wolverhampton—Car Depôt	Tramways Committee	J. W. Bradley, Town Hall, Wolverhampton.
" 20	Dundalk—Alterations		Town Clerk, Town Hall, Dundalk.
" 20	Wakefield—Shed	Lancashire and Yorkshire Railway Co.	Engineer, Hunt's Bank, Manchester.
" 20	Neath, Wales—School	Upper Neath School Board	J. Cook-Rees, St. Thomas' Chambers, Church Place, Neath.
" 20	Plymouth—School	School Board	H. J. Snell, 11 The Crescent, Plymouth.
" 21	Bridlington—Groynes	Corporation	Borough Surveyor, Town Hall, Bridlington.
" 21	Woolwich—Cottage Homes	Guardians	Church, Quick and Whincop, William Street, Woolwich.
" 22	Darlington—Engine House and Boiler House	Corporation	Borough Surveyor, Town Hall, Darlington.
" 23	New Malden, Surrey—House		T. & J. Davison, Bartley Lodge, New Malden.
" 23	Spilsby—Bridge	Rural District Council	T. A. Busbridge, District Highway Surveyor, Spilsby.
" 27	Kingston-upon-Hull—School	School Board	B. S. Jacobs, Lincoln's Inn Buildings, Bowlalley Lane, Hull.
" 28	Sheerness—Laundry	Guardians of Sheppey Union	W. L. Grant, Architect, Sittingbourne.
" 28	Easington—Board Room, Offices, &c.	Union	Farthing & Dunn, 21 Pilgrim Street, Newcastle-on-Tyne.
" 29	Watford—Technical School	Urban District Council	W. H. Syme, 4 High Street, Watford.
" 30	Ponteland—Cottage Homes	Newcastle-on-Tyne Guardians	Oliver, Leeson & Wood, Mosley Street, Newcastle-on-Tyne.
" 30	Port of Recife—Works	Federal Government	Commercial Department, Foreign Office, S.W.
" 30	Salford—Car Depot and Workshops	Tramways Committee	Engineer, Town Hall, Salford.
Dec. 4	Birkenhead—Stations	London and North-Western and Great-Western Railway Companies	Joint Engineer, Woodside Station, Birkenhead.
" 4	Walthamstow—Schools	School Board	G. E. T. Lawrence, 22 Buckingham Street, London, W.C.
" 4	London, W.—Board Room Offices	Paddington Guardians	F. J. Smith, Parliament Mansions, Victoria Street, S.W.
" 6	Southend-on-Sea—Technical Schools	Corporation	Town Clerk, Southend-on-Sea.
	ENGINEERING.		
Nov. 17	Harwich—Electrical Plant	Urban District Council	Bennett and Ward-Thomas, 11 Victoria Buildings, Manchester.
" 19	Cowes, I.W.—Pier	Shoreditch Vestry	R. E. Cooper, 8 The Sanctuary, London, S.W.
" 20	London, E.C.—Electrical Plant	Waterworks Committee	C. N. Russell, Electric Light Station, Coronet Street, Hoxton, N.
" 20	Manchester—Turbine	Corporation	Secretary, Water Works Offices Town Hall, Manchester.
" 21	Newcastle-upon-Tyne—Arc Lamps and Accessories	Electrical Committee	C. Hopkinson, 29 Princess Street, Manchester.
" 22	Bristol—Crane	Corporation	H. F. Proctor, City Electrical Engineer, Bristol.
" 22	Glasgow—Steam Fire Engine	Guardians	W. Paterson, 33 Ingram Street, Glasgow.
" 22	Greenwich—Electric Lighting	Corporation	T. Dinwiddy, Architect, Greenwich.
" 22	Darlington—Pumping Engine	Gas and Electric Committee	Borough Surveyor, Town Hall, Darlington.
" 23	Belfast—Plant	Highways and Drainage Committee	V. A. H. McCowen, City Electrical Engineer, Belfast.
" 23	Eastbourne—Destructor	Tramways Committee	R. M. Gloyne, Town Hall, Eastbourne.
" 24	Stockport—Overhead Equipment	Tramways Committee	J. H. Carter, Electrical Engineer, Stockport.
" 24	Stockport—Tramways	Urban District Council	J. Atkinson, Central Buildings, Stockport.
" 24	Kettering—Steam Roller	Town Council	Engineer, Market Place, Kettering.
" 26	Aberdeen—Steel Coal Breaker	Corporation	Engineer, Cotton Street, Aberdeen.
" 27	Dublin—Drainage Works	Corporation	G. Chatterton, 6 The Sanctuary, Westminster, S.W.
" 28	Cardiff—Electrical Equipment	Corporation	A. Ellis, Old Post Office Buildings, Cardiff.
Dec. 10	Preston—Bridge	Lancs. County Council	County Bridgemaster, Preston.
" 13	Withington, Lancs.—Boilers	Urban District Council	A. H. Mountain, Town Hall, Withington, near Manchester.
Jan. 2	Christiania—Transmission of Electric Power	Stavanger Corporation	E. Berentsen, British Vice Consul, Stavanger.
April 10	Rosario—Harbour Works	Argentine Government	Commercial Department, Foreign Office, S.W.
	IRON AND STEEL.		
Nov. 16	Llandudno—Rails		E. P. Stephenson, Council Office, Llandudno.
" 18	Canea—Ironwork	Cretan Government	Commercial Department, Foreign Office, S.W.
" 19	Bristol—Ironmongery	Sanitary Committee	Clerk, 63 Queen Square, Bristol.
" 19	Rugby—Water Mains	Urban District Council	D. G. Macdonald, Surveyor, Rugby.
" 22	Navy Contracts—Casks		Pattern Room, 72 Great Queen Street, Lincoln's Inn, W.C.
" 24	Stockport—Rails	Tramways Committee	J. Atkinson, Central Buildings, Stockport.
" 27	Leamington—Railing	Corporation	W. de Normanville, Town Hall, Leamington Spa.
" 27	Walthamstow—Fencing	School Board	Clerk, Board Office, High Street, Walthamstow.
Dec. 3	Wolverhampton—Iron and Steel	Tramways Committee	J. W. Bradley, Town Hall, Wolverhampton.
" 10	London, S.W.—Rails		Agent-General for Victoria, 15 Victoria Street, S.W.
	PAINTING AND PLUMBING.		
Nov. 16	Witham, Essex—Cleaning and Painting	Metropolitan Asylums Board	Metropolitan Asylums Board Office, Embankment, E.C.
	ROADS AND CARTAGE.		
Nov. 17	Bridlington—Road Repair	Corporation	Borough Surveyor, Bridlington.
" 17	Earlestown, Lancashire—Street Making	Urban District Council	A. Bowes, Town Hall, Earlestown.
" 17	Newhaven—Flints	Urban District Council	E. Knightley, Clerk, Newhaven.
" 19	Burnham-on-Crouch—Making Up	Urban District Council	Council, High Street, Burnham-on-Crouch.
" 19	Urmston, Lancs.—Street Works	Urban District Council	J. Heath, Council Offices, Urmston, Lancs.
" 26	Windsor—Kerbing	Rural District Council	Mr. Menzies, Englefield Green, Surrey.
" 29	New Brompton, Kent—Roadmaking	Gillingham Urban District Council	Clerk, Council Offices, Gardiner Street, New Brompton.
	SANITARY.		
Nov. 17	Chorley, Lancashire—Disinfecting Liquid	Corporation	J. Mills, Town Hall, Chorley.
" 17	Earlestown, Lancashire—Sewer	Urban District Council	A. Bowes, Town Hall, Earlestown.
" 19	Bromley—Sewering	Urban District Council	Surveyor, Council Offices, Bromley, Kent.
" 24	Tottington, Lancashire—Sewers	Urban District Council	L. Kenyon, 33 Chapel Street, Tottington.
" 27	Dublin—Drainage Works	Corporation	G. Chatterton, 6 Sanctuary, Westminster, S.W.
" 27	Audenshaw, Lancs.—Removal of Nightsoil	Urban District Council	Clerk, Council Offices, 2 Guide Lane, Audenshaw.
Dec. 1	Dunstable—Sewerage Works	Corporation	W. H. Radford, Albion Chambers, King Street, Nottingham.
" 6	Walton-on-the-Naze, Essex—Sewerage Works	Urban District Council	Beesley, Son, and Nichols, 11 Victoria Street, Westminster, S.W.
" 11	Dorking—Drainage Works, &c.	Rural District Council	W. Rapley, junr. Clovelly, Tower Hill, Dorking.
" 13	Withington, Lancs.—Sewage Outfall Works	Urban District Council	Clerk, Town Hall, Withington, Lancs.
	TIMBER.		
Nov. 16	London, S.W.—Timber	Crown Agent for the Colonies	Crown Agent for the Colonies, Downing Street, S.W.
" 20	Aldershot—Fencing	Urban District Council	Surveyor, 126 Victoria Road, Aldershot.
" 22	Swansea—Wharf	Harbour Trustees	A. O. Schenk, Harbour Offices, Swansea.

COMPETITIONS OPEN.

DATE OF DELIVERY.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	BY WHOM ADVERTISED.
Nov. 22	Salford—Schools	£50, £30, £20	Borough Engineer, Town Hall, Salford.
Dec. 1	Bridlington—Parade Extension	£36 5s., £15 15s.	A. E. Matthewman, Town Hall, Bridlington.
" 14	Swansea—Harbour Offices	£100, £50	T. Strick, Harbour Offices, Swansea.
" 31	Malling, Kent—Steam and Hot Water Scheme	£25	J. F. Allison, West Malling, Kent.
" 31	South Shields—Municipal Buildings	£200, £100, £50	J. M. Hayton, Town Clerk, Court Buildings, South Shields.
March 25	Basford—Sewerage Scheme		C. J. Spencer, Clerk, Public Offices, Basford.

COMING EVENTS.

Wednesday, November 14.

NORTHERN ARCHITECTURAL ASSOCIATION, NEWCASTLE-ON-TYNE.—Opening Meeting of the Winter Session. Address by the president, Mr. William Glover, F.R.I.B.A., 7.30 p.m.

INSTITUTE OF SANITARY ENGINEERS.—Meeting of General Purposes and Finance Committee, at 3.30 p.m.; of Election Committee, at 5 p.m.; and of Council, at 7 p.m.

SANITARY INSTITUTE.—Lectures and Demonstrations for Sanitary Officers: Part II. Mr. W. Hunting F.R.C.V.S., on "Signs of Health and Disease in Animals Destined for Food, when Alive and after Slaughter: Tuberculin and other Tests," 8 p.m.

Thursday, November 15.

SANITARY INSTITUTE.—Lectures and Demonstrations for Sanitary Officers: Part I. Professor Henry Robinson, M.I.C.E., on "Scavenging, Disposal of House Refuse," 8 p.m.

Friday, November 16.

ARCHITECTURAL ASSOCIATION DISCUSSION SECTION.—Mr. H. Munro Cautley on "Suffolk Cottages," 7 p.m.

DUNDEE INSTITUTE OF ARCHITECTURE, &C.—Visit to Leuchars Church and Earlshall, Fife, at 12.55 p.m.

SANITARY INSTITUTE.—Lectures and Demonstrations for Sanitary Officers: Part I. Mr. W. Hunting, F.R.C.V.S., on "The Names and Situations of the Organs of the Animals," 8 p.m.

INSTITUTION OF MECHANICAL ENGINEERS.—Mr. J. D. Twinberrow on "Capacity of Railway Wagons as Affecting Cost of Transport," 8 p.m.

Saturday, November 17.

SANITARY INSTITUTE.—Lectures and Demonstrations for Sanitary Officers: Part II. Inspection and Demonstrations at Harrison and Barber's Knacker Yard, Wintrop Street, Whitechapel, E., at 3 p.m.

DUNDEE INSTITUTE OF ARCHITECTURE, &C.—Visit to Leuchars Church and Earlshall, Fife, 12.55 p.m.

Monday, November 19.

SANITARY INSTITUTE.—Lectures and Demonstrations for Sanitary Officers: Part II. Mr. W. Hunting, F.R.C.V.S., on "Practical Methods of Stalling and Slaughtering Animals," 8 p.m.

SURVEYORS' INSTITUTION.—Junior Meeting at 7 p.m.

Tuesday, November 20.

ARCHITECTURAL ASSOCIATION OF IRELAND.—Mr. T. E. Hudman on "Georgian Architecture in Dublin," 7.45 p.m.

SOCIETY OF DESIGNERS.—Mr. Philip H. Newman, R.B.A., on "Design in the Future," 8 p.m.

GLASGOW ARCHITECTURAL ASSOCIATION.—Mr. Alexander McGibbon, A.R.I.B.A., on "The Preparation of Drawings."

Wednesday, November 21.

RUSKIN SOCIETY OF BIRMINGHAM.—Mr. J. L. Paton, M.A., on "The Stoicism of Wordsworth," 8 p.m.

SOCIETY OF ARTS.—Opening Address by Sir John Evans, K.C.B., F.R.S., Chairman of Council, 8 p.m.

NORTHERN ARCHITECTURAL ASSOCIATION.—Students' Evening.

GEOLOGICAL SOCIETY OF LONDON.—Meeting at 8 p.m.

CURRENT PRICES.

		£ s. d.	£ s. d.
FORAGE.			
Hay, best	per load	4 0 0	4 7 6
Sainfoin mixture	do.	3 10 0	4 10 0
Clover, best	do.	4 5 0	5 0 0
Beans	per qr.	1 9 6	—
Straw	per load	1 8 0	1 18 0
OILS AND PAINTS.			
Castor Oil, French	per cwt.	1 10 0	1 11 6
Colza Oil, English	do.	1 12 0	—
Copperas	per ton	2 0 0	—
Lard Oil	per cwt.	1 19 0	—
Lead, white, ground, carbonate	do.	1 4 10	—
Do. red	do.	1 0 4½	—
Linseed Oil, barrels	do.	1 12 9	—
Petroleum, American	per gal.	0 0 6	—
Do. Russian	do.	0 0 5¾	—
Pitch	per barrel	0 8 6	—
Shellac, orange	per cwt.	3 2 6	—
Soda crystals	per ton	3 2 6	3 5 0
Tallow, Home Melt	per cwt.	1 5 6	1 6 3
Tar, Stockholm	per barrel	1 8 6	—
Turpentine	per cwt.	1 11 6	1 11 9
METALS.			
Copper, sheet, strong	per ton	86 0 0	—
Iron, Staffs., bar	do.	8 10 0	10 10 0
Do Galvanised Corrugated sheet	do.	12 0 0	13 0 0
Lead, pig, Spanish	do.	17 12 6	—
Do. do. English common brands	do.	17 17 6	—
Do. sheet, English, 3lb. per sq. ft. and upwards	do.	21 0 0	22 0 0
Do. pipe	do.	23 0 0	—
Nails, cut clasp, 3in. to 6in.	do.	12 0 0	13 0 0
Do. floor brads	do.	11 15 0	12 15 0
Steel, Staffs., Girders and Angles	do.	8 0 0	8 5 0
Do. Mild Bars	do.	8 5 0	8 15 0
Tin, Foreign	do.	126 0 0	126 10 0
Do. English ingots	do.	132 0 0	—
Zinc, sheets, Silesian	do.	22 10 0	—
Do. do. Vieille Montaigne	do.	23 2 6	—
Do. Spelter	do.	19 0 0	19 5 0
TIMBER. HARD WOODS			
Ash, Quebec	per load	3 17 6	4 10 0
Birch, Quebec	do.	3 12 6	3 17 6
Box, Turkey	per ton	7 0 0	15 0 0
Cedar, 1in., Cuba	per ft. sup.	0 0 3	0 0 3½
Do. Honduras	do.	0 0 3 3/16	—
Do. Tobasco	do.	0 0 3½	—
Elm, Quebec	per load	0 12 6	5 10 0
Mahogany, Average Price for Cargo, Honduras	per ft. sup.	0 0 4 1/16	—
Do. African	do.	0 0 3 9/16	—
Do. St. Domingo	do.	0 0 6 7/16	—
Do. Tobasco	do.	0 0 4¼	—
Do. Cuba	do.	0 0 5 9/16	—
Oak, Dantzic and Memel	per load	3 15 0	5 7 6
Do. Quebec	do.	4 12 6	5 0 0
Teak, Rangoon, planks	do.	8 5 0	13 10 0
Wainscot, Riga (Baulk)	do.	3 15 0	5 15 0
Do. Odessa Crown	do.	3 15 0	5 15 0
Walnut, American	per cub. ft.	0 3 0	0 4 0
SOFT WOODS.			
Fir, Dantzic and Memel	per load	3 0 0	4 0 0
Pine, Quebec Yellow	do.	4 7 6	6 0 0
Do. Pitch	do.	2 14 0	3 6 0
Laths, log, Dantzic	per fath.	4 10 0	5 10 0
Do. Petersburg	per bundle	0 0 9	0 0 10½
Deals, Archangel 2nd & 1st	per P. Std.	12 15 0	18 0 0
Do. do. 4th & 3rd	do.	12 10 0	13 15 0
Do. do. unsorted	do.	11 0 0	12 10 0
Do. Riga	do.	6 15 0	8 10 0
Do. Petersburg 1st Yellow	do.	10 5 0	15 15 0
Do. do. 2nd „	do.	8 15 0	9 5 0
Do. do. Unsorted „	do.	5 5 0	13 0 0
Do. do. White	do.	8 5 0	11 15 0
Do. Swedish	do.	10 10 0	21 15 0
Do. White Sea	do.	11 0 0	18 0 0
Do. Quebec Pine, 1st	do.	19 5 0	—
Do. do. 2nd	do.	18 15 0	—
Do. do. 3rd &c.	do.	9 0 0	9 15 0
Do. Canadian Spruce, 1st	do.	10 10 0	11 15 0
Do. do. 3rd & 2nd	do.	8 15 0	9 0 0
Do. New Brunswick	do.	7 5 0	8 0 0
Battens, all kinds	do.	7 15 0	10 5 0
Flooring Boards, 1in. prepared, 1st	per square	0 12 0	—
Do. 2nd	do.	0 7 6	—
Do. 3rd &c.	do.	0 6 3	0 11 6

TENDERS.

BROMSGROVE.—For the erection of an engine-house, &c., Washingstocks, Catshill, for the East Worcestershire Waterworks Company. Mr. E. B. Marten, engineer, Church Street Chambers, Stourbridge:—

George Law	£1,979 10 3	Guest & Son	£1,331 0 3
Whitehouse & Son	1,546 8 0	Dorse & Co.	1,285 8 5
Thos. Vale	1,523 10 6	Joseph Tilt, Bromsgrove*	1,236 0 0
A. H. Guest	1,483 10 1	C. A. Horton	1,204 0 0
J. & A. Brazier	1,364 10 0		
W. H. Gibbs	1,335 10 0		

* Accepted.

CHESTER-LE-STREET.—For the construction of outfall and other sewers, Usworth and Washington, for the Rural District Council. Mr. J. H. Mole, surveyor, Chester-le-Street. Quantities by surveyor:—

J. Thompson	£2,995 15 10	Hudson & Son	£2,306 0 0
W. Craig	2,482 17 9	T. Robinson, Washington, R.S.O.*	2,229 11 9
J. Carrick	2,888 0 0		
M. A. Armstrong	2,868 14 3		

* Accepted.

CROYDON.—For the erection of two shops. Messrs. F. & W. Stocker, architects, 90 and 91 Queen Street, Cheapside, E.C.:—

Gathercole Bros.	£1,961 0	W. Pearce	£1,600 0
The Lyle Co.	1,891 2	W. Walker	1,598 0
Richardson Bros.	1,795 0	J. W. Jones	1,590 0
S. Harwood	1,792 5	H. C. Wills	1,480 0
F. W. Green	1,760 0	Freeman & Son	1,375 0
Cadman & Son	1,647 0	Sutton & Styles	1,370 0
Worsfold & Sons	1,630 0	Veale & Carter, Brixton Hill*	1,350
J. Watt	1,610 0		

* Accepted.

GUILDFORD.—For the execution of sewerage works (2,803 lineal yards) for the Rural District Council. Mr. J. Anstee, C.E., Commercial Road, Guildford:—

H. Roberts	£4,672 11 6	Wilkinson Bros.	£3,250 0 0
F. W. Trimm	4,181 0 0	Clift Ford	3,164 0 0
George Bell	3,639 0 0	A. & A. Streeter, Godalming*	3,126 0 0
J. Jackson	3,634 0 0		

* Accepted.

LONDON.—For extension of stores, workshops, and offices, Electricity Department, Hoxton Square and Coronet Street, Shoreditch, for the Vestry of the Borough of Shoreditch. Mr. J. Rush Dixon, engineer, Town Hall, Old Street. Quantities by Mr. J. R. Hunt, Bridge House, 181 Queen Victoria Street, E.C.:—

		Allowance for old material.	
Gibbs & Co.	£12,242	£242	£12,000
Wallace & Co.	11,912	27	11,885
Renshaw & Co.	11,903	50	11,853
J. L. Holloway	11,600	—	11,600
Clift Ford	10,670	—	10,670
Chessum & Son	10,650	10	10,640
Wall & Co.	10,245	25	10,220
Welbking & Son*	9,980	—	9,980

* Accepted.

MARGATE.—For making up the following roads under the Private Street Works Act, 1892: (1) Road in rear of southerly side of Milton Road; (2) Milton Square; (3) Ventnor Lane; (4) Grotto Gardens; (5) Grange Road (part of); (6) Footpath at northerly end of Addiscombe Road, for the Town Council. Mr. Albert Latham, Borough Engineer, Municipal Buildings, Margate:—

Tuff & Miskin	£1,046 10 0
Paramor & Sons, Margate*	955 0 0

* Accepted.

SALISBURY.—For the erection of a public house, York Road, Fisherton, for Messrs. J. Folliott & Son. Messrs. J. Harding & Son, architects, Salisbury. Quantities by Mr. Ingalton Sanders, Southampton:—

Grace & Son	£1,880	G. Harris, Fisherton, Salisbury*	£1,211
Wort & Way	1,327		
Vincent & Folland	1,285		

* Accepted.

SHARDLOW, Derbyshire.—For the execution of sewerage works, Normanby-by-Derby, for the Rural District Council. Mr. T. A. Fuller, F.S.I., surveyor, The College, All Saints' Derby:—

S. Saunders	£19,485 0 0	J. Tomlinson	£10,584 0 0
W. Jowett	13,186 16 0	S. Richmond	9,998 11 4
George Bell	13,175 0 0	G. F. Tomlinson, Derby*	9,573 0 0
Bower Bros.	11,450 0 0		

* Accepted.

WILLESDEN.—For the erection of superstructure of the new infirmary, Acton Lane, for the Guardians of the Poor of Willesden Parish. Mr. A. Saxon Snell, architect. Quantities by Messrs. Northcroft, Son & Neighbour:—

McCormick & Sons	£94,790	Spencer, Santo & Co.	£88,300
W. Gibson	93,500	Chessum & Sons	87,500
Patman & Fotheringham	90,200	Cowley & Drake	86,400
Holloway Bros.	89,603	Godson & Sons, Kilburn Lane, W.*	83,918
Lawrance & Sons	88,700		

* Accepted.

WOLVERHAMPTON.—For the erection of new special school for the Wolverhampton School Board. Mr. J. H. Fleming, architect to the Board:—

Tildaslay	£2,520	Herbert	£2,231
Skett	2,410	L. Jonas	2,191
Cave	2,372	Willcock & Co.	2,170
Bilson	2,289	Speake & Son, Wolverhampton*	2,135
Gough	2,285		

* Accepted.

AWARDED 3 MEDALS
DUCKETT'S
AWARDED AT THE
AWARDED 3 MEDALS
SANY INSTE SOUTHAMPTON EXHIBN 1899
MEDAL FOR THE "CLENCHER" WASH-DOWN PEDESTAL CLOSET.
MEDAL FOR ISOLATED LATRINES.
CATALOGUE FREE
MEDAL FOR THE "RAPID" SLOP-WATER CLOSET
J. DUCKETT & SON LD
SANITARY WARE WORKS
BURNLEY, LANCRE

New Companies.

Vulcan Incandescent Light Syndicate, Limited.

This company was registered on October 26th with a capital of £10,000 in £1 shares to manufacture and deal in incandescent-light mantles, burners, glassware, lamps, accessories, &c. Registered office: 34 Faulkner Street, Manchester.

Electrical Trades Supply, Limited.

This company was registered on October 30th with a capital of £5,000 in £1 shares to carry on at Birmingham or elsewhere the business of electric, gas, water, and mechanical appliance manufacturers, motor-car, cycle, vehicle, dynamo, motor, telephone, bell, electrolier, accumulator, lamp, and fittings manufacturers, &c.

Yorkshire Electric Power Syndicate, Limited.

This company was registered on October 25th with a capital of £10,000 in £10 shares to carry on in the West Riding of Yorkshire, south of the River Wharfe, or elsewhere, the business of an electric power supply company in all its branches. The first directors (to number not less than three nor more than twelve) are to be appointed by the subscribers. Registered office: 7 St. Helen's Place, E.C.

Oaklands Cottage Company, Limited.

This company was registered on October 29th with a capital of £1,000 in £10 shares to acquire or erect and maintain dwelling-houses for the labouring classes or otherwise, and to carry on the business of builders, contractors for public and other works, freehold, leasehold, and copyhold property owners, financiers, &c. Registered office: Ivy Cottage, Hill Street, Aberaman, Aberdare, Glamorganshire.

Graig Forest Colliery Company, Limited.

This company was registered on October 29th with a capital of £6,000 in £5 shares to acquire mines and property, to search for, get, raise, make merchantable, sell, and deal in coal, cannel, ironstone, shale, fireclay brick earth, and other materials, metals, and substances. The first directors (to number not less than three nor more than seven) are J. Dovell, W. A. B. White, and J. F. Beresford.

Unlimited Fuel Company, Limited.

This company was registered on October 23rd with a capital of £1,200 in £1 shares to acquire certain patents relating to the manufacture of fuel, to adopt an agreement with Paul D'Humy and George A. Watson, and to carry on the business of dealers in coal, iron, ironstone, brick-earth, and other minerals and metals, &c. The first directors (to number not less than two nor more than five) are G. A. Watson and P. D'Humy.

Talbot Continuous Steel Process, Limited.

This company was registered on October 19th with a capital of £300,000 in £1 shares to adopt an agreement with H. Le N. Foster to acquire certain exclusive or non-exclusive rights to deal in or with any secret or other inventions in relation to the manufacture and treatment of steel, iron, &c., or in relation to any mechanical appliances used in or in connection with the same. The first directors (of whom there shall be not less than three nor more than twelve) are to be elected by the signatories, S. C. Masters, A. C. Stock F. W. Newell, F. J. Burrows, P. Binks, W. J. A. Drake and R. Spalding.

Ware Brickfields, Limited.

This company was registered on October 30th with a capital of £20,000 in £5 shares to acquire any buildings and property in Hertfordshire, or elsewhere, and to carry on the business of brick, tile, and pipe manufacturers, dealers in brick, earth, stone, chalk, sand, lime, gravel, timber, hardware, and building materials, &c. The first directors (to number not less than three nor more than five) are J. Smart, W. H. Norris, and W. C. H. Burne.

Brabazon House, Limited.

This company was registered on October 31st with a capital of £12,000 in £50 shares to acquire the benefit and obligations of an agreement between Lady Kelvin, Amy Tate and Evelyn Hopkinson, and the Ecclesiastical Commissioners, for a building lease of a site in Moreton Street, Westminster, and to erect, equip, and maintain boarding-houses, lodging-houses, chambers, &c. The first directors (to number not less than three nor more than seven) are Mrs. E. Hopkinson, Miss J. L. Lindsay, Colonel H. Locock, C.B., and W. H. Upjohn, Q.C.

CONTRACTS OPEN.

DARLINGTON CORPORATION WATERWORKS.

The Corporation of Darlington are prepared to receive TENDERS for the CONSTRUCTION of an additional ENGINE-HOUSE and BOILER-HOUSE and other Works at their Tees Cottage Pumping Station.

Drawings may be inspected, and specifications and forms of Tender, with schedules of quantities, may be obtained on payment of Two Guineas (returnable if a bonâ-fide Tender be made) at the Borough Surveyor's Office, Town Hall, Darlington, and at the Office of Messrs. T. & C. HAWKSLEY, Civil Engineers, 30 Great George Street, Westminster.

Tenders, endorsed "Tender for Engine-house, &c." and addressed to the Chairman of the Waterworks Committee, to be delivered at my Office, Houndgate, Darlington, on or before THURSDAY, the 22nd NOVEMBER, 1900.

The Corporation do not bind themselves to accept the lowest or any Tender.

By order,
HY. G. STEAVENSON,
Town Clerk.

Darlington, October, 1900.

TO BUILDERS AND CONTRACTORS.

The Guardians of the Poor of the Parish of Paddington invite TENDERS for the ERECTION of BOARD ROOM and OFFICES in Harrow Road, W., pursuant to plans and specification to be seen at the offices of the Architect, Mr. F. J. SMITH, F.R.I.B.A., Parliament Mansions, Victoria Street, S.W., between the hours of TEN and FIVE, where all necessary information can be obtained, as also form of Tender, upon which alone proposals will be received.

Bills of quantities may also be obtained at the offices of the said Architect, on payment of a deposit of £10 10s. which will be returned on the receipt of a bonâ-fide Tender for the work.

Sealed Tenders must be delivered at the offices of the said Guardians at the Workhouse, Harrow Road, W., before FIVE o'clock on TUESDAY, the 4th prox.

The Guardians do not pledge themselves to accept the lowest or any Tender.

By order,
HENRY F. AVELING,
Clerk to the Board of Guardians.

No. 289 Harrow Road, W.
November 1900.

BOROUGH of SOUTHEND-ON-SEA.
NEW TECHNICAL SCHOOLS.

The Corporation invite TENDERS for the ERECTION of NEW TECHNICAL SCHOOLS in London Road.

Applications for bills of quantities must be made to the undersigned on or before SATURDAY, the 17th NOVEMBER, accompanied by a deposit of £5, which will be returned on receipt of a bonâ-fide Tender.

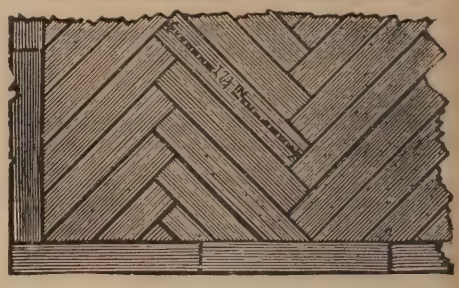
Sealed Tenders, marked "Tender for Technical Schools," are to be delivered at the office of the undersigned on or before the 6th day of DECEMBER.

The Corporation will not be bound to accept the lowest or any Tender.

By order,
WILLIAM H. SNOW,
Town Clerk.

Southend-on-Sea.
November 1900.

FLOORING BLOCKS.



Per 100 Blocks out of sizes.	YELLOW		PITCH PINE
	At Wharf.	ex Ship within one month.	At Wharf.
17½×3×3	13 8	12 9	20 0
17½×3×2	8 11	8 2	14 6
17½×3×1½	6 10	6 3	10 9



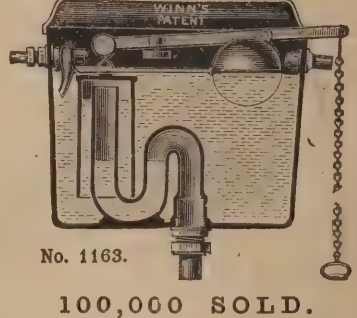
PRIME DRY OAK & PITCH PINE FLOORING,
With Special Joint to conceal Nails—
1½×4½ Oak, 56/9 Pitch Pine, 29/- per square
1 ×4½ „ 45/6 „ 25/6 „
These prices include desiccation.

VIGERS BROTHERS,
TIMBER MERCHANTS.
Head Office—67 KING WILLIAM STREET, E.C.
Mills—LOTS ROAD, CHELSEA.
Telephone No. 601 Avenue.



WOOD-BLOCK PAVING
(MR. WHITE'S SYSTEM).
For Churches, Schools, Offices, &c.
Estimates and full particulars on application to
THOS. GREGORY & CO.
WOOD PAVING AND STEAM JOINERY WORKS,
Clapham Junction, S.W.

WINN'S PATENT
"ACME"
SYPHON CISTERN.



No. 1163.

100,000 SOLD.
PRICE LIST—As drawn, 18s.; Galvanised, 26s.
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London Offices: 41 HOLBORN VIADUCT, E.C.

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FENCING, HURDLES,



MANUFACTURERS,
BAYLISS, JONES & BAYLISS.
WOLVERHAMPTON,
And 139 & 141, Cannon St., London, E.C.
All at Low Prices.

ROOFING SLATES:
Velinheli, Penrhyn, and Westmoreland.
SLATE SLAB GOODS:
Both Plain and Enamelled.
ALFRED CARTER & CO., LIVERPOOL.

THE BUILDERS' JOURNAL & ARCHITECTURAL RECORD

November 21, 1900. No. CCII.

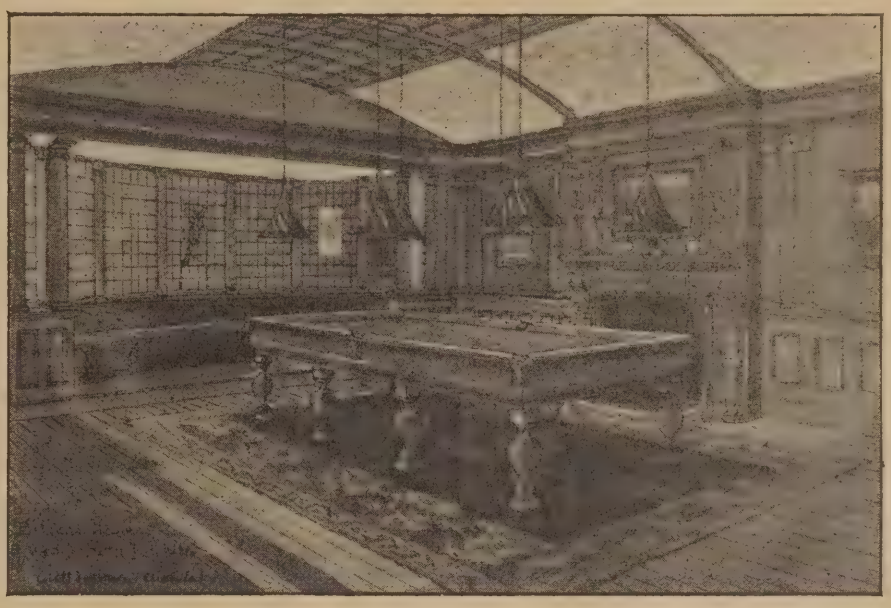
Effingham House, Arundel Street, Strand, W.C.

An Architectural Causerie.

Billiard Room Design. The billiard room shown on this page is proposed to be built for Mr. Montague Goodall, at 8 Wedderburn Road, London, N.W., by extending a room on the first floor over the kitchen and scullery on the ground floor. The floor of the room is to be of oak in narrow widths, the panelling and pilasters, &c., on the wall in oak also, and the ceiling panels in fibrous plaster. A portion of the ceiling light will be constructed to slide in order to give ventilation through a skylight above. The lighting will be by means of electric light in beaten copper shades. Mr. A. H. Belcher is the architect. Our illustration is from a water-colour drawing exhibited at this year's Academy.

The Killing of the Proselyte. The General Public had been harshly criticised, it had been told that it possessed no artistic taste, was devoid of any sense of fitness, made itself an abject slave to novelty, and confounded bigness with majesty, profuseness with beauty. For years and years members of the profession, old and young alike, had told one another that the General Public was incorrigible, though they continued to discuss ways and means for its education. And at last the heart of the General Public was reached, it saw the depth of its ignorance, the bigotry of its ideas; it therefore became penitent, and in a humble spirit called on the Architect in order that it might learn the true principles of his art. The Architect was a sober and businesslike man, and, taking the general public by the hand, he said: "O! Public, know that the most beautiful buildings the world has ever seen, or will see, were those erected by the mighty men of Greece and Rome, whose temples vied with the sun in splendour, whose proportions entranced the eye and charmed the senses. They possessed harmony, simplicity and unity; what more could be desired? These, therefore, are our models, which we see by the reflected light of a Renaissance." The General Public already possessed a hazy idea of what the Greeks said and did, though it had never read Homer, and was not quite clear as to how Hannibal occupied his time. But it followed the Architect, and presently they came to a large stone building with a number of semi-circular-headed windows. While it was realising the splendour of the building, another Architect came along and whispered certain things in its ear. Then it gazed at the building again, and really it did seem strange that windows should break through the pediments in that manner, and the ornaments on the cornice were not unlike pepper pots after all; in truth there was very little variety in it. "You never see those things in my building," said this second Architect. "The Gothic masterworkmen were perfect. It is they who should be our models. See how their resource shows itself on every stone, how the spires shoot up to the heavens on this side, how the lovely groins of the vaults join one with another. Note that no two capitals are alike; look at the springing arch, the flying buttress, the nestling column; see what variety. And all is truthful, all sincere. Here each mason has let fancy run free as the birds of the air, and the stone has become fashioned after the image of his soul. No slave was he, like the Greek mason, made to cut his stone in abject regularity, giving up his whole self to the devices of another." The General Public was obedient and believed what it was told. It had so long imbued the ideas and thoughts of others that to think for itself, to form an original opinion, was now a difficult matter. But while it was in this state another Architect came and stood by. He said: "Both of those men who have been trying to teach you the principles of architecture are wrong. They are not architects, but archæologists and antiquarians. You must see first that it is a fine ideal to create an architecture of our own, one which men may look back upon with admiration, an architecture expressive of its purpose, and the distinctive outcome of the needs of our time." The General Public thought this a fair basis to work from, so the Architect continued: 'This ideal cannot be reached by following in the steps of the copyists. We shall not reach it by slavishly imitating forms which belonged intrinsically to the pre-Christian era or to the Middle Ages. Everything has changed since then, and we must change our architecture in order that it may be more in conformity with our new requirements. The Parthenon, the Colosseum, the Gothic cathedrals—these are all very beautiful buildings, but there is no merit in duplicating them. It requires little skill to do that. So if we are to form a style of our own we must face the problems of to-day fairly and truthfully; we must use iron as iron—not as wood or stone—we must not cover our buildings with ornament which properly belongs to a fourteenth-century church; in short everything must be the outcome of to-day." The General Public and this Architect had been walking slowly along and they arrived opposite a strange building, with curious chimneys, railings like gas piping, and girders showing boldly. "But" said the General Public "the building is not finished, is it? I don't like to see the girders showing like that, and what plain doors." "Why" replied the Architect, "that is functional expression.' "Anyhow, I don't like it." "Quite right," chimed in the other two Architects, "this is all rubbish; because a thing is modern, that is no reason that it is beautiful." "What am I to do" implored the General Public "when you, who profess to know what is right, cannot agree? I believe that none of you have the courage of your convictions. You say brave things, but you do not carry them out." Then it was that the three Architects united and killed the General Public for its stupidity and arrogance.

R. R. P.



BILLIARD ROOM, 8 WEDDERBURN ROAD, LONDON, N.W. A. H. BELCHER, ARCHITECT.

Fictitious Titles. There are certain individuals in the architectural profession who, not having any practice to speak of, devote considerable time and trouble to designing sundry imaginary "jobs," to which they give such fanciful titles as, "House near T——," or "Proposed Villa at B——," generally naming some country town or village. We have an eloquent example of this in the "cul-de-sac" set aside for architecture at the Royal Academy, which is a favourite show-room for the gentlemen in question. These designs, mostly of country houses, are of the class one might describe as "tricky," designed to catch the eye, generally very prettily drawn and coloured. The plans seem to be of quite a secondary consideration, as if the architect had first sketched a pleasing elevation and then made the plan fit as best it might. One often detects in such plans awkward corners, &c., which are generally labelled as cupboards, and in some cases there is really bad planning, such as would be impossible to deal with in practice; but as the design is not going to be carried out, details like these are slurred over. Then again the elevations are often similarly at fault, and one sees parts in them which, if not impracticable to execute, show at all events bad construction, and these are slurred over in a similar manner, usually by incorrect representation, or by merely indicating, instead of drawing in boldly. The reason for all this is that the exhibitor desires to advertise, to bring his name before the public, or that portion of the public which takes an interest in architectural matters. If it were not so the designers would simply put "Design for Country House," or some other title which would show that it was merely a design done for practice. But this, one presumes, would not be imposing enough—it is much better to pretend that the house is really going to be built; and if the designer is successful in getting several of these "shams" published he appears, to the uninitiated, to have quite a large practice. At the same time one recognises that some of these designs are certainly clever, and show what the author could do had he the chance. In such cases the planning, elevations, and general get-up are good and straightforward; still, they have the misleading title. But in the majority of designs under these false titles the imagination runs riot, and generally there can be traced an unhealthy desire to be

original at the expense of good planning and construction. This practice, which tends to make people believe that the buildings are actually going to be erected when in reality they exist only on paper, is on the increase and should certainly be discouraged.

G. A. J.

The Future of South London.

VIEWS of London not older than the last century show us the south bank of the Thames barely fringed with houses; the ancient suburbs of Southwark and Lambeth just growing into towns; factories practically unknown; with a glimpse of trees even and open country just beyond. Of all its modern extensions the growth of London to the south is the most remarkable. In many respects southern London is a separate town, with industries and characteristics of its own, larger than all London at the beginning of the century, and stretching from the river to Norwood in one direction and from Charlton to Putney in the other. South London has grown outwards whilst the outlying villages have grown inwards to meet it; the result is a city larger than any European capital except Paris. In character it is suburban; the vast quarters which have grown up with such rapidity "over the water" seem to possess no metropolitan dignity, no sense of forming part of a great capital, a fact which has been commented upon by Sir Walter Besant. It contrasts strongly in this respect with Paris; there both banks are of equal dignity, the government offices are scattered on either side, and whilst the fashionable drive and promenade are on the north side the old residential Faubourg and the palaces of the Legislature are on the south; the division, however, is made by a river whose average width is barely half that of ours, and spanned by innumerable bridges. Some idea of laying out streets upon a definite plan was evidently entertained as the century grew, for the main roads of transpontine London are very wide and converge upon certain points; all those from the bridges, for instance, unite at a circus exactly equidistant from Westminster and Blackfriars, the great bend of the Thames lending itself well to this arrangement. The few fine buildings that the south side of London possesses, St. Thomas's Hospital, Bethlehem Hospital, and Lambeth Palace, are well placed; the fine church of St. Saviour's, Southwark, is, however, completely stifled by enormous buildings. St. Thomas's Hospital is notable not only for being built in separate blocks with open colonnades between—architecturally a most effective arrangement—but further for rising above the first part of the south shore which has been embanked. That this will some day be completed appears to be certain, and what a revolution, if the work be done with taste, will it effect in the appearance of the town.

At present, in spite of wide roads laid out upon a sensible system for main lines of traffic, South London, within a mile and a-half of the Thames, has an air of neglect, as if it were no true part of the great city; it is unimportant, multitudinous and commonplace. Yet it is changing and for the better. The clearance and remodelling effected when St. Thomas's Hospital was built have made a fairly good approach to Westminster Bridge, and the extension of the South-Western terminus may lead to further changes in the approach to the magnificent Waterloo Bridge. The ceaseless demands upon the ground on the north side will before long cause many large buildings for institutions, societies, hospitals, offices and schools to be built in South London, and this in its turn will lead to further clearances and rebuilding. Before many years it seems probable that the two halves of the great city will be more alike, and its southern part somewhat less commonplace and semi-suburban that at present.

J. C. P.

On Reflection.

Another Unsatisfactory Competition.

ARCHITECTURAL competitions have become a by-word. Mr. E. S. Prior says: "That there is a practical failure in the method of architectural competition has been acknowledged for thirty years. It clearly proposes a false standard to its competitors, that of pleasing by representation, not by work." Mr. James Brown Lord, the well-known American architect, says: "I detest competitions. I believe that in all art works they are utterly wrong—in my opinion they are the degradation of every art profession they enter into." Mr. William Emerson, the President of the Royal Institute of British architects, says: "I cannot help expressing the opinion, based on years of experience, that whether looked at from the point of view of the client who desires to obtain a good building, or of the architect who wishes to do himself justice, or of the general public interested in fine architecture—architectural competitions are a failure." And it would be easy to go on quoting similar censures from scores of leading architects. It is sufficiently lamentable that the competition is wrong in principle, but when it is unfairly administered it becomes doubly injurious. The Belfast Assembly Hall Competition is a case in point. The assessor (Sir Thomas Drew) made his award about six months ago, but, as will be seen on reference to the letter on another page from Mr. Rupert Savage (who gained the first premium), the committee have set aside all the designs sent in and have appointed a Belfast firm of architects to carry out the work. This is most unsatisfactory and unfair to the competitors. It would certainly have been better to have taken this step first. Architectural competitions waste enough time and energy as it is, but when they become useless and the author of the winning design is not given the work to carry out, it is not surprising that great dissatisfaction is felt. It is, of course, impossible to expect a committee to pledge themselves to carry out the first premiated or any other design, but we think that this should be a moral obligation on them if not a virtual one.

Sir Frederick Bramwell's Scheme.

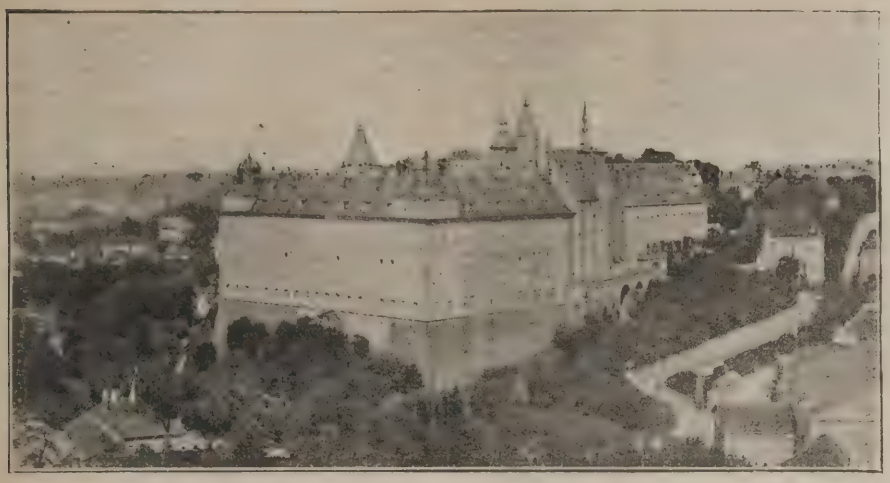
THE latest proposal in connection with the new street to be formed from Holborn to the Strand comes from that wonderful old gentleman, Sir Frederick Bramwell. Full particulars of the scheme will be found on another page, but it may briefly be stated to consist in constructing a footway over the ground-floor shops and forming another row of shops on the first floor. The storeys above would overhang the footway for about half its width, and would be supported by columns or girders, while bridges would span the side streets; here and there a bridge would also stretch over the main street in order to make intercommunication between the upper footways on either side. The proposal is based on a faulty argument, and is not one which would produce a successful architectural result. Sir Frederick takes as his model the "Rows" at Chester, and says that as these are so picturesque, it is reasonable to suppose that an equally satisfactory effect would be produced if the same principle were carried out in the buildings that will face London's new street. But this is not so, because the necessities of London and Chester are totally different. In the "Rows" there are no shops with large areas of plate glass, but small door and window openings which leave enough walling to satisfy the eye that the lower part of the building is strong enough to support the upper storeys. All this would be changed were the same idea carried out in London. Instead of a substantial looking base we should have yards of plate glass, supporting more plate glass, which in turn upheld the upper parts of the building. The ground and first floors would be of a glass and iron architecture, and though it may be quite proper to use any material for building, provided it serves its purposes, past experience of this kind of construction does not foster the desire for a more pronounced development. In every city in the country to-day the great majority of the shops are architecturally displeasing. But the shopman insists on this great expanse of glass and the architect is equally zealous in hiding away the girders which form the real strength of the structure. There is, of course, no danger of the buildings collapsing, but as they are built at present they appear to the eye to be unstable. Under these conditions, and in view of the fact that there is nothing to warrant the supposition that the architects for the new street would improve their methods, we cannot agree with Sir Frederick Bramwell that the scheme would lend itself to picturesque architecture. Moreover, who would bear the cost of erecting such expensive buildings? The London County Council would not approve the much more moderate scheme of the Royal Institute of British Architects for erecting covered ways over the pavements, and we do not for a moment suppose that this later scheme will meet with their approbation.

Flats.

MR. LEONARD SNELL disclosed to the members of the Auctioneers' Institute last week his dream of flats, residential flats, where one could enjoy all the comforts of a home for a very nominal sum. His ideal is a combination of the flat and the hotel—a building in which dining and reception rooms are provided for the common use of the tenants, who have their private rooms upstairs. Doubtless the idea is capable of extensive application and for a certain class it is specially adaptable. The manner in which rents are increasing is certainly enough to make one search anxiously for a way out of the difficulty, but we are inclined to believe with a contemporary that the average man is rather more disposed to being whisked by twopenny tubes or penny balloons to rose-covered cottages in the suburbs than herding in a hotel-flat amid the din and hurry of a great city; Mr. Snell, however, is of opinion that the cottage (or villa) idea is idyllic; a few months travelling on the South-Eastern and Chatham Railway is calculated to knock romance on the head. By crowding us all into great flats he would reduce the area of London it is true. It is no doubt farcical to suppose a building to pay when the ground rent amounts to one-third of the gross rental. As for applying the idea to housing: this has already been done in a modified way by various corporations, but the result is not very satisfactory.

Guildford Town Hall.

THE Corporation of Guildford have resolved to pull down the Town Hall in the High Street, Guildford. Although not boasting any great antiquity, having been erected in the year 1814, it is a dignified and appropriate building, and its demolition would be a distinct loss to the town, which, notwithstanding the serious inroads which have been made upon it by speculators, still retains much of its ancient charm and picturesqueness. The Society for the Protection of Ancient Buildings has memorialised the Corporation against the proposed removal of the Town Hall, and in doing so the Society is only acting up to the spirit of the manifesto published at its inauguration in favour of the preservation of all buildings of every age or style if possessing any artistic or archæological value.



ALTENBURG CASTLE FROM THE SOUTH-WEST.

ALTENBURG.

BY F. H. CHEETHAM.

ON the night of July 7th, 1455, the Princes Ernest and Albert were stolen by Kunz von Kauffungen from the Castle of Altenburg. In all probability the Prinzenraub was not so very serious an affair. There is no evidence to show that Kunz intended any bodily harm to the boys. His intention most likely was merely to hold them as hostages till his own grievances should receive attention from the Elector, their father. But fate was cruel, and Kunz paid for his rashness with his life. Probably the whole incident would be quickly forgotten, for there seems to be no trustworthy record of the event preserved at Altenburg Castle, and, indeed, you are told there that it was not till long years after that people began to write about it and treat it as of historical importance. There is now a whole literature on the subject in Germany, and of the many visitors to Altenburg to-day it may fairly be computed that two-thirds of them are drawn there to see the town and country of the Prinzenraub.

I am not going to tell the story over again, although I believe it is very little known in England. It can be read, however, in one of Carlyle's essays. This essay he contributed to the "Westminster Review" in 1855 at the time of the four hundredth anniversary of the stealing. The chief interest of the incident to most English people lies in the fact that our own Royal Family is directly descended from one of the princes stolen by Kunz von Kauffungen. Each of the boys became the head of a long line of princes, to one of which—the Ernestine line—belonged the late Prince Consort. The Prince of Wales is the thirteenth in direct descent from Prince Ernest, the victim of the Prinzenraub.

So we go to Altenburg for the sake of the Stolen Princes. But we find more to interest us there than is contained in this old story of the Middle Ages.

Altenburg is a town of very considerable interest, both architectural and historical. It is now the capital of the Duchy of Saxe-Altenburg, and is the residence of the Duke. It lies about twenty-five miles directly south of Leipzig. Travelling from Leipzig towards Bavaria, the railway cuts through a portion of the Duchy of Saxe-Altenburg, and at Altenburg itself there is an important station. But from the train you can see very little of the town, and nothing at all of the castle, which is its glory. An electric tram will take you from the station to under the very walls of the Schloss, but that is almost the only reminder of the nineteenth century at Altenburg. I have not forgotten the inevitable War Monument and the statue to Emperor William I. But these are now necessary adjuncts to a German town, and are hardly more noticeable than the street lamps and the letter boxes. There is a refined, quiet, dignified air about Altenburg that we find in small German capitals; an absence of manufacture and smoke; a blending of the Middle Ages with the "elegance" of the eighteenth century.

He would be a bold man who would attempt to give even an outline of the history of Altenburg in a few paragraphs. The native population form a distinct race, and wear a picturesque costume of their own. They are of Wendish origin, and are supposed to be the descendants of a Sclavonic tribe which emigrated from the shores of the Adriatic more than a thousand years ago. The history of German States in the Middle Ages is too confusing for most of us who have not abundance of leisure to investigate. We take Dukes, Electors, and Emperors as we find them. Coming down to later times, Altenburg was, in 1603, raised to the dignity of an independent principality. On the extinction of the reigning house in 1672 it was joined to Saxe-Gotha, and so it continued down to 1826. On this latter date, on a renewed division of lands, Altenburg became again the capital of an independent State—the Duchy of Saxe-Altenburg. The present Duke Ernest is the grandson of the founder of the new line.

The Castle dominates everything in Altenburg. It is magnificently situated on a rock, about 300ft. high, in the middle of the town. It is exceedingly irregular on plan, and is a confused jumble of architecture. The castle of the twelfth and thirteenth centuries seems to have consisted of three separate parts, used for distinct purposes, and divided from one another by walls and moats. One of these buildings was the residence of the representative of the Emperor, and was called the Smaller Castle. The Emperor is said to have often held his Court here, so that the buildings must have been of a fair size.

The Castle to-day is really a composite building, which is the outcome of these three former buildings being gradually absorbed one into the other. The courtyards are now connected, and form a very irregular space, round which the various buildings are grouped. There have been so many fires, and so much consequent rebuilding, that the confusion of architecture is at first sight rather bewildering, though not unpleasing. There has been no copying of old styles, so that each part bears the mark of its age. It is all honest building, even if not always beautiful.

The Castle suffered very much in the Thirty Years' War, being repeatedly plundered. A good deal of building went on in the eighteenth century. In 1706–8 what is now the ducal residence, the great square building facing west, was built in place of a former building erected in 1518 by Frederick the Wise. In 1718 the Prinzenpalais (since burnt down) and the present approach to the Castle were built. In 1813, the year of the battle of Leipzig, the Duke then residing at Gotha, the Castle was used as a hospital. After the refounding of the duchy in 1826 the ancient ducal seat was worthily restored.

But the days of fires were not yet over, and in 1864 the great Salle, or Throne Room, and the wing adjoining were destroyed. A second fire destroyed the Prinzenpalais, and both of these were rebuilt between 1865 and 1870.

The foundations of the Schlosskirche are said to date from the twelfth century, and between this date and 1870 the architectural history of Altenburg Castle is comprised.

The approach to the Castle is by the sloping roadway already referred to as having been constructed in 1718. It leads us to the principal entrance, through a classic gateway flanked by obelisks of red porphyry, with statues of Hercules and Minerva. On our left is a raised platform, above which rises the Schlosskirche. Here we are face to face at once with that contrast of Gothic and Renaissance which makes Altenburg Castle so picturesque a jumble. The church itself is a rather florid Gothic of the fifteenth century, as seen from the outside, whilst on each side of it are the long straight walls of the early eighteenth century, with their monotonous square windows and conspicuous absence of decoration. Inside the courtyard the same contrast is everywhere seen—behind us the Gothic church, opposite to us the round tower known as the Mantelthurm, a relic of the thirteenth century, to our left the remains of a line of galleries in the style of the Italian Renaissance. Beyond these is the eighteenth-century ducal residence, whilst prominent from whatever point of view we regard the Castle rises the Hausmannsthurm, a round tower over 100ft. high, the product to-day of the fourteenth, fifteenth, and seventeenth centuries.



ALTENBURG CASTLE FROM THE NORTH.

The buildings of 1706–8 were pushed so far over the face of the rock on the west side that very high foundation walls were necessitated. This it is what gives the Castle so plain and stern an appearance seen from this side. The cellar storey, which is vaulted, lies about 90ft. or 100ft. above the street. The interior of the ducal residence, which can be seen when the Duke is away, is not in any way remarkable. There is a solid simplicity and splendour about it which never runs into excess or bad taste.

The new Great Hall, or Throne Room, was built from the designs of Stüler in 1865–9. It is 92ft. long, 46ft. wide and 33ft. high. It is a handsome apartment, with much more restraint in the decoration and colour than we expect to find in royal or ducal palaces, especially in Germany. Modern Germany is responsible for so much that is architecturally bad that we are apt at times to think that she can produce no thing good—which is not the case. Unfortunately, the bad work is that which, somehow or other, gets illustrated.

The Kirchensaal was built in 1609, and, as its name indicates, forms a kind of entrance apartment to the church from the palace. It is 60ft. long and 30ft. wide, and has two Ionic pillars in the centre to support the ceiling, which is not very lofty. This room contains portraits of the Wettin princes of former and modern times. From the Kirchensaal you enter the west gallery of the church (Schlosskirche). The church is used by the town, the people sitting below, while the Duke and Court occupy the galleries. The ducal pew is in the west-end gallery, and is entered from the palace. The foundations of the church, as we have already noticed, date from the twelfth century. The greater part of the structure of the present building was erected during the fifteenth century. It was renovated in 1549, and again in 1645–8. During the latter years the galleries were added, the pulpit having been put in fifty years before. The galleries and fittings generally are of a florid Renaissance character. The effect on entering from the Kirchensaal is rather distressing. The freshness of gilding and paint has all gone, but it is an open question whether that is a loss or a gain. Birds, masks, coats of arms, death's-heads, and a general exuberance of ornament give a bizarre feeling to the place little conducive to the spirit of worship. Despite its Gothic setting, the seventeenth century cries out loudly all around you. The ducal pew facing the altar reminds you of an opera box, and is quite as comfortable. But we must not look to Lutheranism for the beauty of holiness.

There is an excellent model of the Castle—by that I mean the whole range of buildings—in the museum located in what were formerly the pages' quarters. As you are shown through the museum and armoury first, you can "take in" the plan and disposition of the building from this model before you are conducted over it. In the museum is an interesting collection of relics of the Prinzenraub. The guide-books tell you from which window the princes were stolen, but the custodian will inform you that as a matter of fact nobody knows from which part of the Castle the theft took place. What is certain is that the window of the guide-books did not exist in 1455. But it is quite possible that the room where the boys slept was in this part of the castle, in a building which has since disappeared.



SCHLOSSKIRCHE, ALTENBURG: LOOKING EAST



SCHLOSSKIRCHE, ALTENBURG: LOOKING WEST.

An examination of the visitors' book kept at the Castle shows you that very few English people go to Altenburg. Apart, however, from its historic interest, there is much to attract visitors to the town. The Rathaus, in the market-place, is a picturesque building with an octagonal tower, built in 1564. The Bartholomarkirche and the Brüderkirche both possess some architectural interest, and Luther is credited with having preached in both. The Brüderkirche, we were told, is shortly to be pulled down. The modern buildings are of a quieter Renaissance type than modern Germany sometimes offers. English visitors to Leipzig are so numerous that it is a wonder, and a pity, that more of them do not find their way to Altenburg. The historic interest of the Prinzenraub is enough to attract the tourist, but it is to be feared that few English people are familiar with the story that draws so many Germans yearly to pass through the gateway of Altenburg Castle.

CHURCH BELLS.*

BY HENRY ROSE.

BELLS in one form or another have long been associated with religious observances, not only in this country but throughout Christendom. I say in one form or another because, as we shall see, they were not always as we know them now, either in shape or material.

If we turn to the Bible we find them mentioned twice in the Book of Exodus as forming part of the vestments to be provided for Aaron as High Priest—"a golden bell and a pomegranate upon the hem of the robe round about"; and it is clear that mere needlework cannot be implied, as the verse goes on to say, "his sound shall be heard when he goeth into the Holy place and when he cometh out," and they are again mentioned as having been provided. There is another mention of bells in a rather obscure prophetic passage in the last chapter of Zechariah: "In that day shall there be upon the bells of the horses Holiness unto the Lord." There is no indication of a bell in any form on any of the mural paintings or mummy cases of Egypt, so we may fairly conclude that they were unknown, bearing in mind the careful manner in which the various employments of those times are depicted, and the diagrammatic precision with which accessories of all kinds are introduced.

The Assyrians or Babylonians, on the other hand, made great use of bells on the harness and trappings of their horses, as can be distinctly seen on the bas-reliefs of Assur-barnipal in his hunting chariot, now in the British Museum; about twenty of these bells were discovered by Sir Henry Austen Layard during his excavations at Nimroud near the site of ancient Nineveh. They are of bronze, consisting of ten parts of copper to one of tin; the largest are of about 3in. diameter; they taper but slightly; most of them are fitted with iron clappers, many of these being in the form of a ring.

Metal bells were well known to the Greeks, who were in the habit of beating brazen bells at the decease of a friend to scare away the Furies; and to the Romans, who had different names for them according to the uses to which they were put, such as the Tintinnabulum, which announced the time when the public baths were open.

As to the origin of the use of a bell, we find in a work on the history of the world compiled by Eutychius, who was Patriarch of Alexandria in 870 A.D., that the first bell was an instrument of wood which Noah caused to be struck three times to call the workmen to their work upon the Ark. This is also alluded to in the same connection in a twelfth-century Persian work on theology, and is quoted by Fletcher in his "Notes" on Nineveh.

Large bells are hung low down in Buddhist temples in Burmah on which women strike as they pass. Two brass bells on elaborate stands were taken from the Imperial Palace in Pekin quite recently, and are now, I believe, on their way to the Victoria and Albert Museum. Bells are not used in Mahomedan mosques, the call to prayer being made from the minarets by the muezzin, most probably from a desire to depart as much as possible from Christian usage, though according to the Koran bells hang on the trees of Paradise and are set in motion by winds from the Throne of God as often as the Blessed wish for music.

A curious custom, which is still observed at Toledo, would seem to suggest that wooden clappers were in early times used instead of bells, since in connection with the Mus-Arabic ritual as practised in one of the chapels of the cathedral, a wheel provided with wooden clappers (which fall upon one another when the wheel is revolved) is used at certain times during the service. This ritual dates from the time of the conquest by the Moors, when many Christians remained in Toledo and were permitted by their conquerors to maintain their religious observances, though probably in a modified form.

The use of wooden clappers in the place of bells would appear to be traced from India (where they were in use at a very remote period) to Arabia and so to Spain, where many instances of the survival of Arabic customs still exist (such as the absence of seats in churches, matting on the floor in choirs, and the mantilla worn over the head by women). Wooden clappers on a large scale are also very general in the towers of their cathedrals and large churches, and are used as substitutes for bells during holy week, both for striking the hours and for calling to worship. I have heard them so used at Cordova and the effect was very remarkable, if only from the great contrast between the noise so produced and the music of a peal of bells. A wooden clapper is also still in use in France, certainly at Valognes in Normandy, where, during the progress of the service frequent signals are given to the choir by two rapid strokes with two small boards.

The oldest bells of which we have any record were not of any size, and they consisted of wrought-iron plates riveted together generally square on plan; one at Cologne is said to be of sixth-century work. There is a twelfth century hand-bell which used to be carried before the Viaticum in procession that has frequently been reproduced in cast brass; it is

* Paper read before the Discussion Section of the Architectural Association on November 2nd, 1900.

pierced and decorated with the emblems of the four Evangelists. Illuminations in thirteenth-century psalters show small bells hanging from a frame and beaten by hand. Perhaps the oldest known cast bell of any size is one at Siena, which is cask-shaped, three feet high, and gives a very sharp sound; it dates from 1159.

The first notice of church bells in this country occurs in the writings of the Venerable Bede, who mentions them as being in use in the seventh century.

The year 940 is given as the earliest date at which bells were cast in this country, but the actual date is disputed. They were ordered to be rung before the Divine Officers in the Basilicas by Papal decree in 604, from which date they gradually became general throughout Christendom.

Casting.

The process of casting a bell of say 30in. diameter and an approximate weight of 6cwt. may next be briefly described. The nature of the bell metal to be used has to be determined, and this, in accordance with the general use since the sixteenth century, will probably consist of 4 parts of copper to 1 of tin. The proportions of the bell will also be dictated by the use in vogue since the same date, the thickness of the edge to be $\frac{1}{15}$ of the diameter and the height $\frac{12}{15}$ of the same, the inner and outer curves being set out in section full size. A *crook* or double compass of wood is cut to the shape of the curves and fitted to a pivot on a stake firmly fixed in the bottom of the casting pit. A *stuffing* of brickwork with provision for a fire inside is constructed around the stake, and on it is padded the *core* of fine soft clay and hair worked to the inner leg of the crook, and after this has been well greased the false bell is fashioned with more clay to the template furnished by the outer leg. Any inscription or ornaments are moulded in wax and stuck on, smeared with grease, and lightly covered with the finest clay, the whole surface being then greased and thickened out with a solid *cope* or *mantle* over the outside of the clay bell. The fire is next lighted and the whole baked hard in a kiln or oven, the grease and wax being allowed to escape. The cope is then carefully lifted and the false clay bell broken up and removed, after which the cope is replaced and molten metal poured in and left to cool for some hours. Of late most bells of more than 18in. diameter have been "loam cast," that is, without a model, the cope being formed inside a metal cope case, and inscriptions, &c., stamped with dies in the cope. The pattern for the crown of the bell with the canons is generally baked separately and added before the actual casting takes place.

If everything is satisfactory the bell should have one note, the consonant, and when this is distinct and clear the bell is true and in tune. In order to test this the bell is slung, and when tapped on top should give forth a sound one octave above the consonant; at one quarter from the top the fifth of the octave, at 2½ quarters lower down the third of the octave, and on the rim the keynote or consonant of the bell. It goes without saying that to deliver the verdict with authority and in order to give it due weight requires the trained ear of an expert possessing considerable knowledge of the science of music."

The tone is after all the most important factor since, to quote Sir Edmund Becket, "A set of cast-iron pots might be in as perfect tune among themselves as the finest peal of bells in the world, and the tune or note of a bell can be altered a little by cutting, whereas the tone or quality of the sound is incurable if it is bad."

The precise thickness of metal as well as the exact proportion between the copper and tin are both matters of much technical interest and are points on which founders differ and have much to say, but, as mentioned above, four to one is the average mostly in favour, though about two hundred years ago both here and on the Continent it would appear to have been as three to one. Rules are also in force for the clapper, which is of iron, and should weigh about $\frac{1}{75}$th of the bell. Continental bells differ in shape from ours in being longer and more approaching to that of an inverted flower-pot, but I do not think there is any room to doubt that ours are better in every way.

Sentiment might seem to indicate that silver should enter into the composition of the founder's metal. How often one hears the silvery tones of old bells alluded to with admiration. What a silvery tone may mean I do not quite know, but it is very doubtful if it is due to any admixture of silver with the bell metal, since no trace of it has been discovered in old bells that have been melted down, and Sir Edmund Beckett—now Lord Grimthorpe—proved many years ago by experiment that no advantage is gained by its use. On the other hand the monkish chronicles of Charlemagne (887) make mention of a founder who fraudulently appropriated 100lbs. of silver intended for a church bell, which, when hung in the tower, was practically mute; the founder was sent for and proceeded to ring it, but the dumb-bell exercise proved fatal to him, for it fell and crushed him to death. The hidden silver was discovered and given to the poor. Some Franciscan missions in California have bells, probably cast in Spain in the sixteenth century, which are said to be half of silver and half of copper. In Hungary guests are frequently invited, as elsewhere, to attend the casting of bells and often throw silver coins into the molten metal. Cast-steel bells are made by a Sheffield firm, but they are not equal in tone to those of bell metal, and of late tubes have been used; but this is a paper on bells, so we can omit any further allusion to tubes. For small bells and house-bells zinc and lead are sometimes employed. Glass has been tried for bells of 14in. diameter, but the material, though undoubtedly elastic and sonorous, would not stand the heavy blows required for a large bell; indeed, a glass bell equal in power to one of bell metal would have to be at least as large again, or of about eight times the weight, so that glass as a material is out of the question.

Of bell-founders in this country there are several firms of very high reputation. Many of the London City churches had their bells cast by Rudhall, of Gloucester; Messrs. Mears and Stainbank, of Whitechapel, are the successors of a business started by one Robert Mot in 1570, and carried on by Lester and Peck, who in 1750 cast a peal of bells for a church in Philadelphia; Messrs. Taylor, of Loughborough, who in 1881 cast the great bell for St. Paul's Cathedral (weighing about 17 tons), and the peal of ten bells for the Imperial Institute, are well known; Messrs. Gillet and Bland, of Croydon, who supplied the carillon for the Manchester Town Hall; Messrs. Warner and Sons, of Spitalfields, who cast Big Ben (16 tons), and the four quarter bells (8 tons) for the Houses of Parliament in 1856, and many other firms established up and down the country. Messrs. Warner have just cast a set of five bells for the Colchester Town Hall, the biggest weighing 25 cwt; this operation they were kind enough to invite me to witness.

The parts of a bell are as follows:—The "canons," by which it is fastened to the stock, the "crown" or top of the bell, the "waist," and the "lip" which forms the lower margin. The "sound bow" or thickest part is between the waist and the lip; it is here that the clapper strikes; if 1in. too high the full tone is not given, and 1in. too low may crack the bell. The clapper hangs from the "bow staple," and has a prolongation below the striking surface termed the "flight."



ALTENBURG CASTLE: THE MANTELTHURM.

Inscriptions.

These are nearly always to be found on bells, and many of them are of great interest apart from the date of the casting which they often give. Perhaps the oldest authentic bells in this country are those at Attleborough, Norfolk, dated 1281; at Claughton, Lancs., dated 1296; and the treble bell at Cold Ashby, Northamptonshire, dated 1316. A few examples may be of interest. At Passenham, Northamptonshire, there are five bells, three of which have inscriptions as follows:—

"Sancta Maria ora pro nobis" in old English letters and no date; "Richard Chandler made me 1711"; and "A trusty friend ys harde to finde 1585"

At Bolton-by-Bowland, Yorks:—"+ Sce Paule ora pro aiabus Henrice Pudsey et Margarete Consorte sue +"; no date is given, but a Pudsey of the time of Henry the Sixth (1422-61) is buried there, on whose tomb is incised his figure, that of his three wives and twenty-five children. At Rowston, Hereford:—



ALTENBURG: THE RATHHAUS AND MARKET PLACE.

"Christus-est-via-veritas-et-vita." Elsewhere we find:—

"To call the folk to church in time we chime.
When joy and mirth are on the wing we ring.
When we mourn the departed soul we toll."

also

"Funera plango, Ful'gura frango, Sabbata pango
Excito lentos, discipo ventos, Paco cruentos.'

or,

"Death's tale I tell, the winds dispel, ill feelings quell.
The slothful shake, the stormclouds break, the Sabbath wake."

At Chaddesden, Derbyshire, three bells:—"God save his Church 1652"; "All you that hear my doleful sound, repent before you come to the ground 1742"; and in old English letters "Celorum Xte placeat tibi rex sonus iste."

The longest inscription is on a bell at Glasgow Cathedral dated 1790, setting forth its founding in Holland 1594, its damage at the hands of unskilled workmen, its re-casting in London, and "Reader thou shalt also know a resurrection—may it be unto eternal life."

It is out of the question to include in any detail a dissertation upon belfries, bell-towers or bell-cots, but a few general remarks seem demanded in so far as they bear upon our subject, as church bells certainly have a direct bearing upon them in more senses than one. Broadly speaking, an English church tower with its great spread of buttresses may be taken as being better adapted for the support of a peal of bells with its enormous weight of swinging metal than the stilted proportions of an Italian campanile, which is so small on plan in relation to its height. Detached belfries, both of stone and wood, are common in Northern Europe, and in Brittany they sometimes consist of a large wooden frame standing in the churchyard without any roof or covering whatever.

Bell-cots are rare in Northern Europe (including Great Britain), but they are fairly common in Central France and Italy, and generally contain the sanctus or angelus bell, which is rung at 6 a.m., at noon, and at 6 p.m. The mid-day angelus was instituted by Louis the Eleventh, (1461-83), and the custom still survives in certain parishes in England. The small bell in towers generally known by bell-ringers as the "ting-tang" is probably the old sanctus bell, either re-hung or re-cast and re-hung. It is called the "Wackerell" in churchwardens' accounts, as at St. Andrew's, Canterbury, in 1510. A small bell was removed from the tower of Steeple Aston, Oxon, at the end of the seventeenth century for use as a school bell. In 1865 a new one was given. It would be interesting to know what has become of the old one, as it was no doubt originally a sanctus bell. There is also a small bell at Tottenham Church captured at Quebec and presented to the church in 1801, and a small bell from a church near Ruthin, N. Wales, dated 1723, was exhibited at the Church Congress at Rhyl in 1891. Tradition says that until early in the nineteenth century it was always placed on the altar step during service by the churchwardens.

Sometimes, as at Nuremburg, small bells for use at the altar are attached to a wheel made to revolve by an endless rope working over another wheel fixed near the floor level.

Methods of Hanging Bells.

The hanging of a peal of bells is an important matter for the consideration of an architect. That bells badly hung can cause the fall of a tower was proved at Vienna in 1831, when a bell of 57cwt. which had been hung in 1854, but not used until 1833, came down, bringing the tower with it. The tower was too small for the bells, or the bells were too large for the tower.

Too much care can hardly be exercised in hanging bells in their carriage or "cage," or in fixing the cage itself, which should be of stout oak well pinned and bolted, and stiffened with diagonal bracing in order to meet the strain of the swinging bells. It is well to bring the weight down as low as possible and to arrange the joists and wall pieces so as to minimise the strain on the tower, which must eventually take the whole weight either on an offset or on corbels, unless, as sometimes happens in old examples, the diagonal framing is brought right down to the ground. The holes in the centres of the floors must of course be large enough to admit the largest bell of the peal, and a stout beam must be provided above the bells to take the tackle by means of which the bells are hauled into position. It is very essential to provide a floor between that of the belfry proper and the ringing chamber—which latter should not be less than 16ft. in height—or the ringers will be deafened. The bells should not be crowded; plenty of room should be secured for access to them without danger when they are swinging. Care should also be taken to secure the joists being so placed that the ropes can descend clear of the bells direct from the wheels. Wedges should never be allowed to be driven in between the ends of framing and the walls; if the cage is found to be racking it should be strapped and bolted afresh, or, if swinging the bells is considered dangerous, the safest plan will be to ring them from the clappers alone.

It has been stated that some of the bells should swing at right angles to the others and so neutralise the effect of the swinging, but this is obviously an error, since the mechanical result of such a proceeding can only produce the resultant of the two forces. A better plan is to see that they swing opposite ways as much as possible, that is to say, if they are hung north and south, whilst one big bell is going north the other should be going south.

The bell-wheel used for all bells of more than 18in. diameter is comparatively modern, dating probably from the end of the sixteenth century, previous to which the half-wheel was used, an example of which is still in use at Dunchideock, Devon. I have recently seen one of still simpler construction in the low tower of Carteret Church in Normandy, where a single bell hangs below a low plain stone spire. A still earlier method was a long lever attached to the stock—the larger the bell the longer the lever—as now in use at Xanten in Rhenish Prussia, where, when the bells are only to be rung softly, the clapper is pulled back near the lip of the bell so that a very slight pull on the lever causes the bell to sound.

At Evreux are two west towers, the southern of which has a wooden slate-hung spire resting on the top of the tower walls. The lantern or lower portion of the spire is framed together with diagonal bracing and a central post; wooden wedges and clips are let in to the post for supporting the ties. Above this framing comes the cage proper carrying three bells each of about 3ft. diameter; the louvres are below the bells, thus directing the sound down upon the town below, and are provided with a raised ledge on their inner edges, which seems a wise precaution, since it is the wooden construction which requires protection, not the bells. In Spain and Italy bells are generally hung open to the air and no doubt are heard at a greater distance in consequence; indeed, in Spain, they are often absolutely uncovered, hanging in wrought-iron frames on the tops of the towers. The two big bells 6ft. in diameter at Evreux hang in the north tower, and are each rung by four men who step off the framing on to planks projecting from the stocks at right angles; handles are provided on the framing to hold on by. At Chartres a platform is fixed between the four bells in such a manner that four men can ring them by stepping on the levers, each man being able to assist his neighbour.

Ringers.

A great change for the better has been effected in the manners and customs of bell-ringers. Scenes of drunkenness which would have been disgraceful anywhere, and were additionally so inside a sacred edifice, were quite common at the end of last century and at the begining of the present one. The change was not effected without friction, it being much resented that the parson should exercise any control whatever over the belfry or the ringers. Only on his first arrival was it a recognised custom that the new rector should enter the church alone and ring one of the bells; many persons counted the number of strokes and believed they represented the number of years he would hold the living. At St. Peter's Mancroft, Norwich, is a jug known as a ringer's jug; it holds thirty-five pints! At St. Edmund's, Salisbury, is an entry in the accounts dated 1646: "Ringing the Race day that the Earl of Pembroke his horse wonne the cup. 5 sh."

These two facts, together with ringers' rules found here and there, show what bell-ringing had descended to. The following rhyme is painted on a framed board still hanging in the ringing loft at Ilminster:—

ARTICLES FOR RINGING.

There is no music played or sung like to five bells if are well rung,
Then ring them well as er you can silence is best for every man,
Be sure in Ringing make no mur Pull of your Hats also your spur,
And if a bell you overthrow then pay you must before you go
Now sixpence is ye usuall pay come throw it out and don't say nay
For if you don't and be not willing swear but an oath you loos a SHILLING 1740.

Societies of bell-ringers have been instrumental in keeping up the better traditions of the art in large towns, and frequently ring a series of changes known by different names, of which a "treble bob major" may serve as an

example. The oldest society in London is said to be the Compaine of the Scholars of Cheapside, which was founded in 1603.

Chimes.

Some confusion is felt at times as to the difference between chiming and ringing, or as to the definition of a peal. A chime should be a set embracing the eight notes of the common scale. The smallest number that may be termed a chime of bells is five, the usual number being nine, which enables a flat seventh to be added to the scale. To chime implies that the clappers only are swinging or the bells struck with hammers, the bells remaining stationary, or swung only so far as to cause the clapper to strike, as on the Continent.

For a peal we should require three or more bells in harmonic succession, which may be rung together—firing the balls—or successively, but it is not possible to play a tune upon them. A set of the first, third, fifth, and eighth will constitute a peal. To ring a peal implies that the bells are swung up.

Change ringing is altering the sequence in which the bells are rung or chimed. The formula for the number of changes possible is obtained by working up from two bells, which obviously gives two changes; for three bells we multiply the 2 by 3 = 6 changes; for four bells we multiply the 6 by 4, giving us 24 changes; for five 24 × 5 = 120, and so on, eight bells allowing 40,320 changes. It has been calculated that it would take ninety-two years to run through all the changes upon twelve bells at two strokes per second.

Tolling is, of course, the ringing of a single stroke at funerals or deaths; the toll is always rung on the heaviest or tenor bell. The word is by some derived from "tollere," to raise; but it is probably merely a case of onomatopœia. This single stroke on the big bell is generally called the passing bell, and is rung at intervals of one minute. The custom is alluded to by the Venerable Bede; and it is not improbable that at one time the number of strokes and their grouping may have indicated the age and sex of the dying, as also his or her status in life. According to an old saying: "When the bell begins to toll, Lord have mercy on the soul," and as the 67th canon of the English Church has it:—

"Whenever any is passing out of this life a bell shall be tolled, and the minister shall not then slack to do his last duty."

At Harningham, Wilts, a muffled wedding peal is rung at the burial of a girl. To muffle a bell a leather muffler is laced round the clapper, two mufflers being used if the bell is to be raised.

Of voices in bells there are many stories told, and many allusions made to them in poetry, but as an old phrase runs: "As the fool thinks so the bell clinks," which means that one can make them say pretty much what one likes. "Ding dong" is perhaps the commonest interpretation of two bells, and will be recollected as forming the prelude to the adventures of a cat in a well, related in verse. To Tennyson three bells clinked a pleasant sound, if devoid of meaning: "The mellow lin-lan-lone of evening bells."

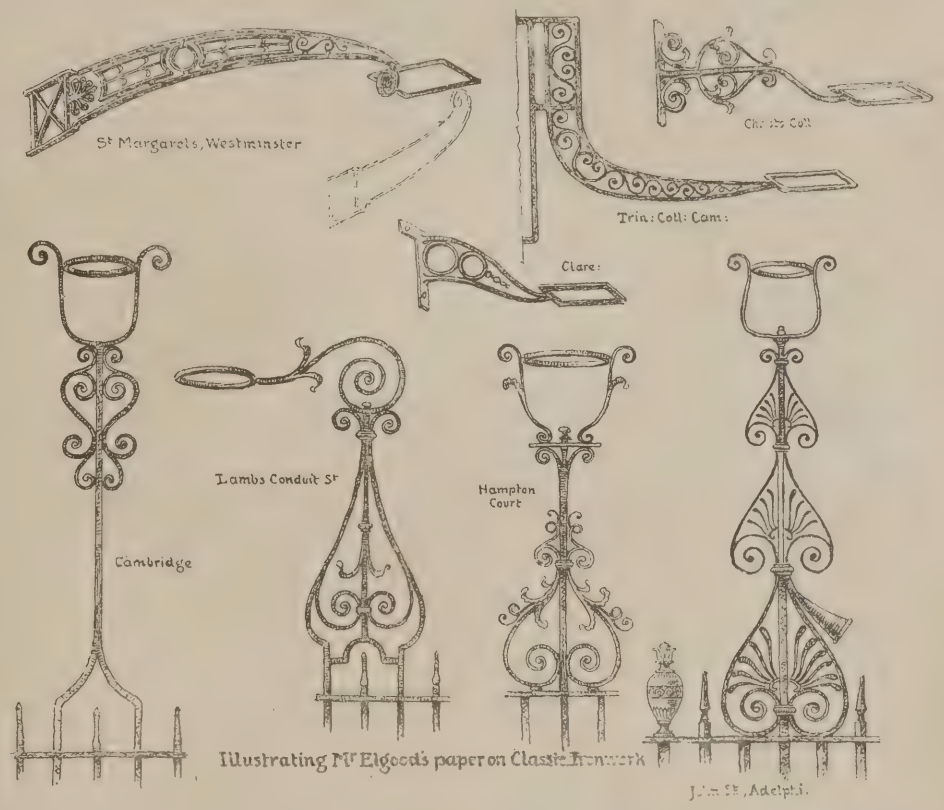
The rhyme which gives a conversation between the City steeples is also quite familiar. The four quarter chimes at Westminster have had the following words attributed to them: "Lord, thro' this hour be Thou our Guide, and by Thy power no foot shall slide."

In the parish of Wensleydale, Yorks, the largest in England, there is a chapel at Holbeck where occasional services are held. There are no bells in the tower, but the clerk goes up and rings a hand-bell, shouting, "He's a-coming, he's a-coming," when he sees the parson about two miles off. Before 1873, when the hand-bell was procured, he merely cried "bol-lol, bol-lol," or the voice of a bell which did not exist.

Carillons are sets of small bells of any number ranging over two or more chromatic scales upon which it is possible to play tunes. The most celebrated are hanging in the towers of churches and town halls in Belgium and Holland. They were first made at Alost, in Flanders, in 1487. There is a very fine set of thirty-three or more bells in the Cathedral tower at Antwerp; they are struck inside by their clappers, which are of wood and produce a very mellow sound. There are many more or less mechanical modes of ringing bells. At Amsterdam a key-board is used requiring a force of about 2 lbs. Pedals and spiked drums which raise levers are also not uncommon. Chimes with us are often rung by one man, the ropes being disposed in an upright frame and connected with levers striking the bells, capable of being put out of gear when the bells are swung.

Secular Use of Church Bells.

Church bells are frequently used for secular purposes and to give notice of parish meetings, or on occasions of national or local rejoicing, and here we may note that by common law any place of worship of any denomination may make use of bells. There is no distinction in favour of the Established Church in this respect, but it has been held that they may not be used in such a way as to become a nuisance and may be proceeded against accordingly, as was done in 1851, when an action was brought against a Roman Catholic [community at



Illustrating Mr Elgood's paper on Classic Ironwork

Croydon. In Derby they used to ring the church bell when fish arrived by coach. St. Alkamund's five bells were supposed to say, "Fresh fish come to town." St. Michael's three bells, being somewhat sceptical, "they stinken"; and All Saints' ten bells, as suggesting a remedy, added, "Then put a little bit more salt on them." In France state regulations were passed in 1885 controlling church bells, owing to a conflict between the Bishop of Agen and the Prefect of Lot et Garonne. The following clauses were imposed upon the Church at that time:—Art. 2. During an epidemic the mayor may, by authority of the Prefect, suspend tolling for funeral services. Art. 3. The vicar may not cause bells to be rung before 4 a.m. or after 9 p.m. from Easter to October 31st, nor before 5 a.m. nor after 8 p.m. from November 1st to Easter, Christmas night alone excepted. Art. 4. In each commune the mayor shall have the right to cause the church bells to be rung (1) for official passage of the President of the Republic; (2) the eve and day of the national or local fêtes; (3) to summon the inhabitants together or stop some occurrence which may need their united efforts, as fire, flood, invasion, riot, or all other cases of public welfare. Art. 5. Ringing ordered by the mayor to be done by the church bell-ringers, who will be paid by the civil authorities. Art. 6. No ringing, civil or religious, may exceed ten minutes for ordinary, or thirty for solemn ceremonies. Art. 7. Chiming during storms is forbidden.

All these regulations are still in force. The clauses I have quoted were ineffectually opposed by the clerical party. Clause 7 was looked upon as a blow at a popular belief that ringing the church bells could keep off or dispel a storm as we have already seen in old inscriptions. It may very possibly have at times produced currents or waves of air sufficient to disperse clouds which experience would have shown were ready to burst into thunder and lightning, and had often done so around the lofty spires. In the Middle Ages this power was no doubt attributed to the bells in virtue of their having been consecrated; indeed new bells were sometimes baptised on the Continent, and old ones, if not recast, were ceremoniously buried.

Our clerical party was fortunately more successful in a case of much more importance when, in 1652, it was proposed in Parliament "That the bells of such cathedrals as Parliament shall think fit to pull down shall be applied to public use for making ordnance for shipping." The resolution was lost by two votes, 23 to 21; one would wish to see the names of those two members rescued from oblivion.

General Remarks.

To take rubbings of bells, common lining paper cut into strips 2in. wide is best, using scraps of waste upper leather for the actual rubbing. For devices, squeezes in putty answer best, from which casts in plaster of Paris can be taken. Diameter at lip will give the approximate weight: 24in., 3cwt.; 30in., 5cwt.; 40in., 12cwt.; 50in., 18½cwt.

There is no advantage in hanging bells high on an elevated site. Tall bell towers are more suitable to a level country. Bells sound best across water, as there is nothing to impede the regular pulsation of the sound waves. Russian tallow is the best lubricant for the bell bearings or gudgeons. A water tank above the belfry is a wise precaution against fire. The cost of a ring of eight bells, the tenor being 4ft., weight 18cwt., would be (according to Messrs. Warner) about £800, including cage and hanging. The bell chamber for such a peal should measure not less than 15ft. by 15ft.

Of other bells time might permit of a mere catalogue, but that would not be very interesting, so I will go to Nature for one example—the bell-bird of South America, whose beautiful clear note has been heard at the surprising

distance of three miles. It has been well said that Orpheus will drop his lute to listen to this bird, which is also found in Australia and is about the size of a thrush and snow-white. For the effect produced on the human mind by bells of different metals and the associations that accompany them I cannot do better than refer you to Edgar Allan Poe.

Chinese bells are cylindrical in shape and their tone is discordant. The great bell of Pekin is 13ft. in diameter. The biggest bell in the world is at Moscow; it stands on a pedestal outside the cathedral, its diameter is 22ft., and its weight is calculated at 193 tons. The largest bell hung to ring in a peal is at Exeter and weighs more than three tons. Big Ben weighs 16½ tons with the clapper. Peter, of Exeter, is said to be the gift of Bishop Courtenay (1478–86), but in 1351 is an entry of 6s. for mending the Peter bell, and in 1453, 20s. for "una bauderick pro maxima campana in Campanili Boreali," in which year Courtenay was appointed Archdeacon of Exeter; so *his* gift of a rope—perhaps—has become that of a bell, and if that is so it would appear that if you give an archdeacon rope enough he will hang—a bell. In 1611 the bell was crazed and re-cast in 1676.

And last of all, the Curfew, "which tolls the knell of parting day." It was instituted by William the Conqueror, and is sometimes considered as being tyrannical; but it is a question if it was not a wise precaution when we consider that towns then consisted almost entirely of wooden houses.

Correspondence.

London Sanitary Administration.

To the Editor of THE BUILDERS' JOURNAL.

LONDON, S.W.

SIR,—A short time ago the seal of the London County Council was affixed to a set of proposed drainage by-laws to be made for the first time under the Metropolis Local Management Act of 1855. These proposals have to be confirmed by the Local Government Board before they become operative. Many of those who have made sanitation a study, and who have for several years devoted themselves to the improvement of the sanitary condition of urban populations, share my opinion that these proposed by-laws are in some respects adverse to the public interest, and that they needlessly interfere with individual liberty. The proposals also err in not being definite—a most serious defect, which must lead to difficulty where all are well disposed, and would be absolutely dangerous where the elastic law has to be administered by inspectors to a very great extent away from the public eye.

A part of the scheme is to rescind a definite by-law made under the Public Health (London) Act, 1891 (approved by the L.G.B.), and to substitute for it an indefinite one under the Act of 1855. Under the Act of 1891 it is a statutory duty of the County Council to make a by-law dealing with the subject-matter of that which it is proposed to rescind, and the question arises as to whether a by-law made under the Act of 1855 would be in compliance with the Act of 1891.

I have received a letter from the Secretary of the Local Government Board, dated November 9th, in which he says:—"I am directed by the Local Government Board to advert to your letter of the 6th instant, relative to the laws proposed to be made by the London County Council under section 202 of the Metropolis Management Act, 1855, with respect to the drainage of buildings, and to state that the Board desire that any representations on this subject may be sent to them within seven days from this date."

The County Council are advised that it will be the duty of the new Borough Councils to enforce the observance of the by-laws when confirmed by the Local Government Board, and, therefore, our central metropolitan authority having allowed nearly half a century to pass without making any drainage by-laws under the powers given by Parliament in 1855, it seems only reasonable that the new Borough Councils should have an opportunity of expressing an opinion on them before the proposals are given the force of law. A letter is now in course of signature asking the Local Government Board not to approve of the drainage by-laws as proposed by the County Council.—Yours truly,

MARK H. JUDGE, A.R.I.B.A., F.S.I.

Belfast Assembly Hall Competition.

To the Editor of THE BUILDERS' JOURNAL.

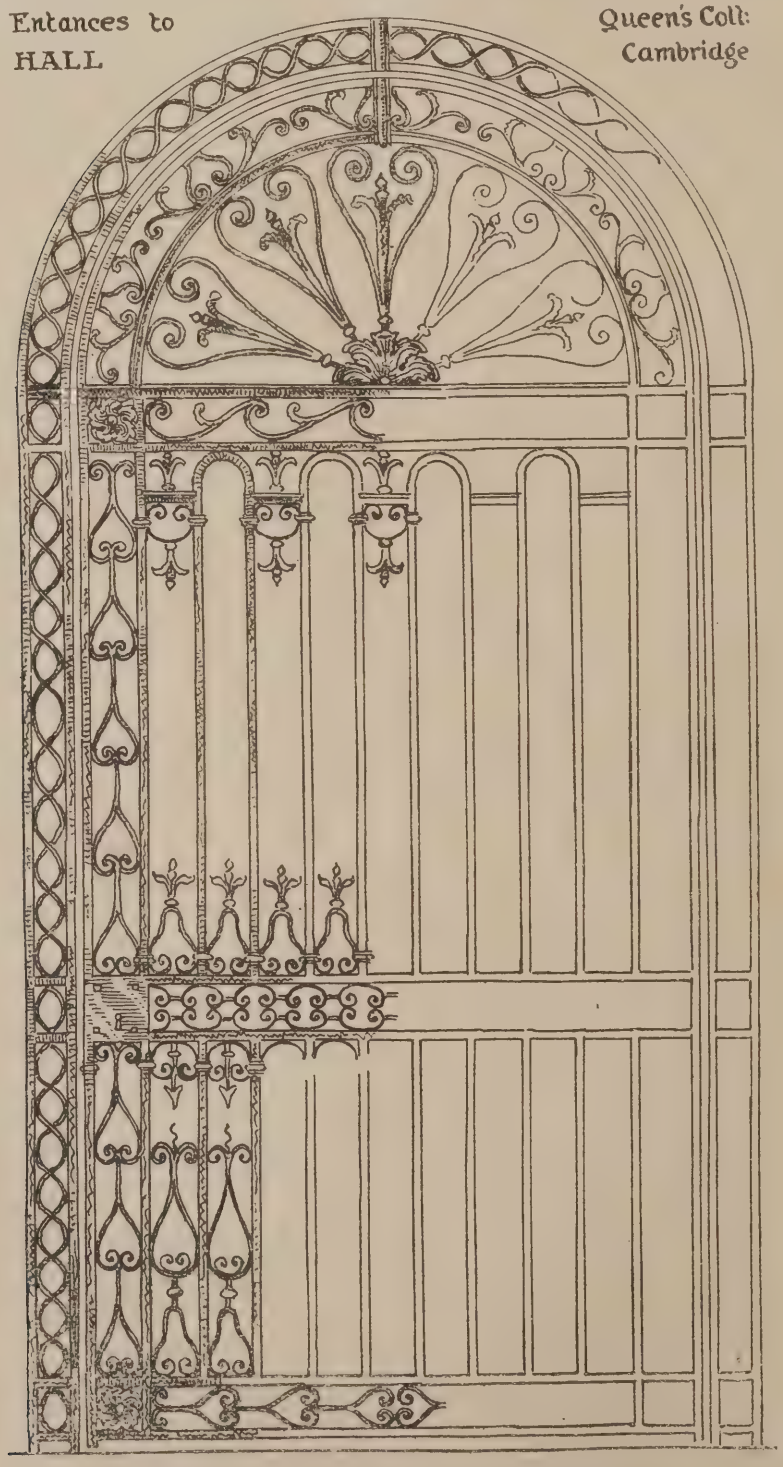
LONDON, E.C.

SIR,—About a year ago the Presbyterian Church of Ireland advertised for designs for their new Assembly Hall and central offices. The designs were sent in on March 12th, and the assessor, Sir Thomas Drew, R.H.A., awarded the first premium (£100) to my design, the second premium (£50) to Messrs. W. Hanstock & Son, of Leeds, and the third premium (£25) to Messrs. W. C. Laidlaw, of Edinburgh. I am now informed that the Committee decline to accept any of the designs submitted in the competition and have appointed Messrs. Young and Mackenzie, of Belfast, to carry out the work. I understand that Messrs. Young and Mackenzie advised and assisted the Committee in the preparation of this competition, and as these gentlemen evidently possess the entire confidence and support of the Presbyterian body I think it is much to be regretted that they were not entrusted with the work at the commencement, thus obviating the waste of a great deal of time and energy on the part of the unfortunate competitors.

I am unable to illustrate my design, as the Committee retain my drawings and decline to lend them to me for the purpose of publication.

Yours truly,

RUPERT SAVAGE.



Illustrating Mr Elgood's Paper on Classic Ironwork.

CLASSIC IRONWORK.

A SUMMARY of Mr. Thomas S. Elgood's paper on Classic Ironwork, delivered before the Birmingham Architectural Association, was published on page 305 of our issue for last week.

New Patents.

These patents are open to opposition until December 24th.

1899. — **Centrifugal Fans.** — 24,873. S. C. DAVIDSON, Sirocco Engineering Works, Belfast. The fan has a number of blades arranged obliquely to the axis of rotation, so as to enclose within them a conical intake chamber.

Hack-caps.—25,089. A. H. BEASLEY, A. H. BEASLEY, jr., and V. W. BEASLEY; all of Rockingham Iron Works, Uxbridge. The hack-cap, for protecting newly-moulded bricks and tiles, is made of a piece of plain or corrugated iron or steel, curved slightly, and furnished with a tie-rod, which also serves as a bearer or support.

1900.—Firegrates.—15,059. E. J. PURNELL, 66 Hatton Garden, London, W.C. In order to provide a better supply of air to the fire, a box with holes and projecting nozzles is laid on the fire-bars in the centre of the grate.

Asphalt Paving.—16,167. A. METZ, 21 Rue de Rocroy, Paris. The foundation of the paving consists of cement. Above this is a thin layer of asphalt and bitumen, and on top is a thick layer of asphalt and bitumen mixed with rough gravel, a finishing being made with pulverised stone. The feature of the invention is that within the thick layer of asphalt there is a bracing of iron bars or of expanded metal.

The following specifications were published on Saturday last, and are open to opposition until December 31st. A summary of the more important of them will be given next week. The names in italics within parentheses are those of communicators of inventions.

1899.—21,324, SKINNER, show cases. 21,493, BRAZIER, ball-cock or automatic valve for cisterns. 21,823, KNIGHT, machine or apparatus for laying bricks on buildings. 22,209, CARTMAN, pipe joints. 24,119, SVENSSON, door for stoves and fireplaces. 24,338, HILL, automatic saw-sharpening and re-toothing machine. 24,721, PFANZELTER, process for producing decoration in relief or intaglio on wood, leather, or other materials. 24,788, KITCHING, flushing apparatus for water closets. 24,887, DIGBY, electric arc lamps. 25,338, BENNETT AND BRENNAN, machines for sanding brick moulds. 25,350, SCHOLTZ, electric incandescent lamps. 25,512, WILLCOX (*Soc. J. et A. Pavin de Lafarge*), apparatus for slaking lime. 25,540, T. C. FAWCETT, LIMITED, AND FAWCETT, machinery for making bricks.

1900.—61, FRANCQ, tramway rails. 367, CRANKSHAW, CRANKSHAW AND CRANKSHAW, means for adjusting electric light and other shades. 487, KING, band-saw mechanism. 838, LAKE (*Shearman*), incandescent electric lamps. 1,141, ELLIOTT, means for fixing plaster, cement, or asphalt on wooden and other surfaces. 8,061, POCHÉ, lightning conductors and arresters for overhead electric conductors. 10,664, ORE, means for drawing down and letting up window blinds. 13,169, WARD, manufacture of broken-stone paving material. 14,569, HADDAN (Firm *Berlin-Anhaltische Maschinenbau Actiengesellschaft*), process for washing gas. 14,891, GROUVELLE AND ARQUEMBOURG, valves or cocks. 15,393, BRADLEY, gas producers. 15,650, MCDONNER, sawsets. 15,884, JAKEMAN, window-sash fastener. 16,132, EDRICK, drains. 16,847, SCHWÉERS, vices. 17,035, EDWARDS, arrangement for securing tiles to stoves, kitcheners, &c. 17,057, PLATTS AND COWEN, ventilators or air extractors.

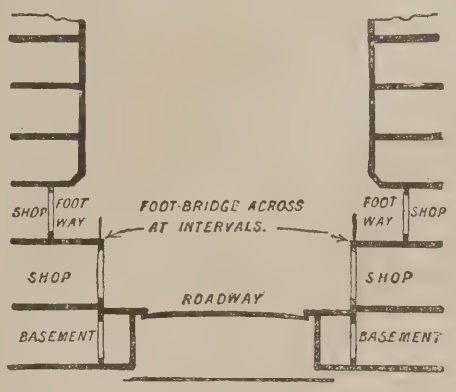
A New Gymnasium and Reading Room at Hitchin, for the Blue Cross Temperance Brigade, situated at the back of the New Town Hall, was opened recently. The building is 78ft. long, 34ft. wide, height to eaves 14ft, and height to top of lantern 29ft. When not required, the gymnasium room can be separated by sliding doors. It is lighted with incandescent gaslight, and heated by hot-water apparatus. The building has cost, together with furnishing, about £1,800. Messrs. Barker and Son were the architects and builders.

HOLBORN-STRAND STREET.

SIR FREDERICK BRAMWELL'S SUGGESTIONS.

WRITING to the "Times" newspaper, Sir Frederick Bramwell says: "For many years I have expressed my opinion privately that, in any metropolitan improvement involving a considerable length of main thoroughfare, the old construction of the streets of Chester, known as the 'Rows,' might well be followed. No doubt most of your readers of middle age have, at some time or another, gone beyond the railway station at Chester, and have penetrated into that city; and they will know perfectly well of the construction to which I refer. But, for the information of those who have not seen this mode of dealing with the streets of a city, I will endeavour to give a verbal description, although I have little hope, judging by experience, of making myself intelligible.

"Imagine an ordinary line of street, with shops as usual at the ground floor; imagine, next, that the front wall of the houses at the level of the first floor has been taken away along the whole length of the street, leaving the upper part of the houses to be supported by columns, and that the party-walls between the houses have been suppressed for a width of, say, some 10ft. to 15ft. If this description has been followed it will be evident that there has thus been left, on the tops of the ground-floor shops, and at the first-floor level, a continuous under-cover footway, 10ft. or 15ft. wide. The front of this elevated foot-



way is protected by a parapet, and at its back are the fronts of the shops on the first-floor level. I propose that this construction, with one variation, should be repeated for the new street from north to south of London about to be constructed. The advantages are these:—(1) The ordinary street gives one shop to be let on the ground floor, and probably a basement. The proposed street would give, in addition, a shop at the first-floor level. (2) In the ordinary street the foot passengers have no protection from the weather. In the proposed street they could walk in the dry, and free from mud. (3) In the ordinary street, where the foot passengers have to cross side-streets, they must do so subject to encountering the traffic, and also where they wish to cross from side to side of the main street they must do so encountering the traffic. By the proposed method of construction there would be foot-bridges at the first-floor level, by which all side streets would be crossed, and at intervals there would be foot-bridges across the main street; also, at intervals, there would be stairs, giving access from the ground level to the first-floor level, so that persons on the ground-level foot pavement would be able to cross from side to side without having to encounter the traffic. (4) I do not pretend to be a person of taste, but I do know that such a construction as I advocate would lend itself to most picturesque and varied architecture, and would also give admirable light and air.

"The variation from the construction of the 'Rows' at Chester to which I have alluded would be the following:—I would not carry up the front wall of the floors above the first floor in the same plane as the wall of the ground floor, but would set it back, probably equal to about half the width of the footway, thereby giving more light to the first-floor shops, while still affording ample cover in wet weather. May I be allowed to give a few illustrative dimensions? Ground-floor level, 60ft. (or 80ft.) roadway, 10ft. footpath, making 80ft. (or 100ft.) between the ground-floor shops. First-floor foothpaths 15ft. wide, making 110ft. (or 130ft.) width between the first-floor shops. Front walls of the second and upper floors set back, say, 7ft., giving 94ft. (or 114ft.) between walls of the upper storeys. The first-floor shops would, I believe, command a very high rental. When sitting as arbitrator in claims for compensation, I have had it indisputably proved before me that shops bounding a paved footway thoroughfare did a far better business than those which abut upon a street."

THE L.C.C. IMPROVEMENTS COMMITTEE AND THE SCHEME.

Another long sitting of the Improvements Committee of the London County Council took place last Wednesday to consider the designs for the new Strand frontages. Again no decision was arrived at, but it is now a foregone conclusion that no single design will be adopted, but that particular features will be used from two or three of the best designs.

Members were discussing among themselves the scheme of Sir Frederick Bramwell.

A suggestion of a kindred nature was put before the Council by the Royal Institute of British Architects when that body was advising the Council generally on the Strand-Holborn scheme. The Institute advised the Council to construct covered ways over the pavements supported by pillars from the edge of the roadway, after the style seen in many Parisian streets. The object was not to secure a second row of shops above, but simply to introduce new architectural features to London streets. The Council would not entertain the suggestion.

Engineering Notes.

The Death is Announced of Professor G. F. Armstrong, Regius Professor of Engineering at Edinburgh University.

Proposed New Electric Line to Putney.—The London News Agency states that there is a possibility that at no very distant date an electric underground railway will be constructed between Victoria and Putney. A Bill embodying the scheme will shortly be placed before Parliament.

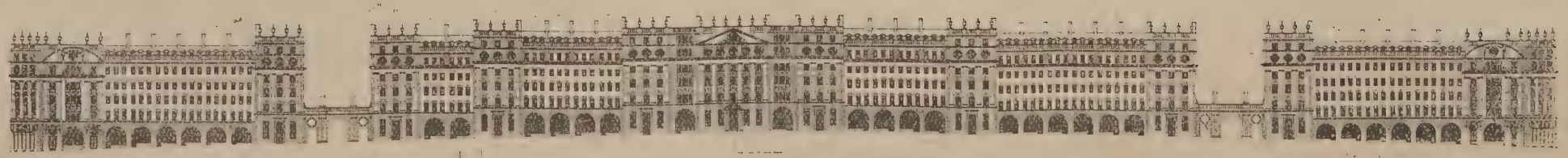
London Water.—Mr. E. Boulnois, M.P., presiding at last week's meeting of the West Middlesex Water Company, referred to various extensions and improvements, and said that the arrangements between the different companies were now so complete that there was no fear there would ever again at any time be a scarcity of water. He described the action of the Progressive party in promoting another Water Bill as a most wanton proceeding, and had no doubt that the House of Commons would reject any Bill not based on the recommendations of the Water Commission.

The Widening of London Bridge.—On Thursday last the Court of Common Council deussed the recommendation of the Bridge House Estates Committee to widen London Bridge, at an estimated cost not [exceeding £100,000. The Committee recommended that the footways of the bridge should be widened from 9ft. to 14ft., and that it should be lighted by electricity from the centre. It was further suggested that the balustrade should be an open one, in order that a great deal of the dust which accumulated daily upon the structure might find a means of escape into the river below. A new system of drainage is included in the scheme. The Court ordered that the report of the Committee should be printed and its consideration adjourned, and that the necessary notice should be given for Parliamentary purposes.

New Bank Buildings at Douglas, I.M., are being erected for the Isle of Man Banking Company.



ELEVATION TO STRAND.



ELEVATION OF SOUTH SIDE OF CURVED STREET.

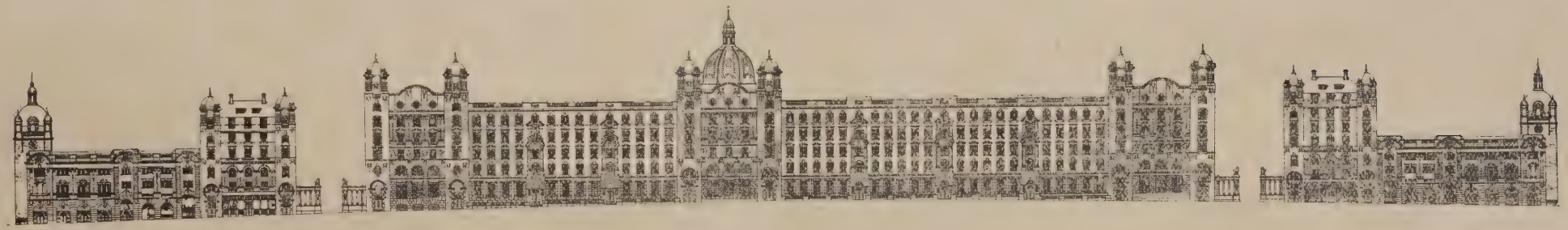
THE HOLBORN TO STRAND THOROUGHFARE. Design No. 21.

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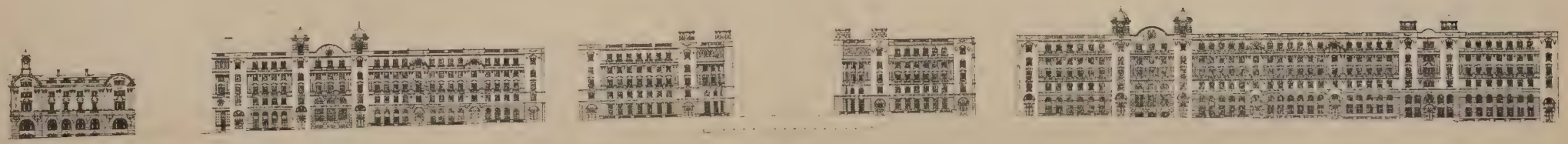
Supplement to
THE BUILDERS' JOURNAL AND ARCHITECTURAL RECORD,
Wednesday, November 21st, 1900.



ELEVATION TO STRAND.



ELEVATION OF SOUTH SIDE OF CURVED STREET.



ELEVATION OF NORTH SIDE OF CURVED STREET.

THE HOLBORN TO STRAND THOROUGHFARE. Design No. 17.



ELEVATION TO STRAND.



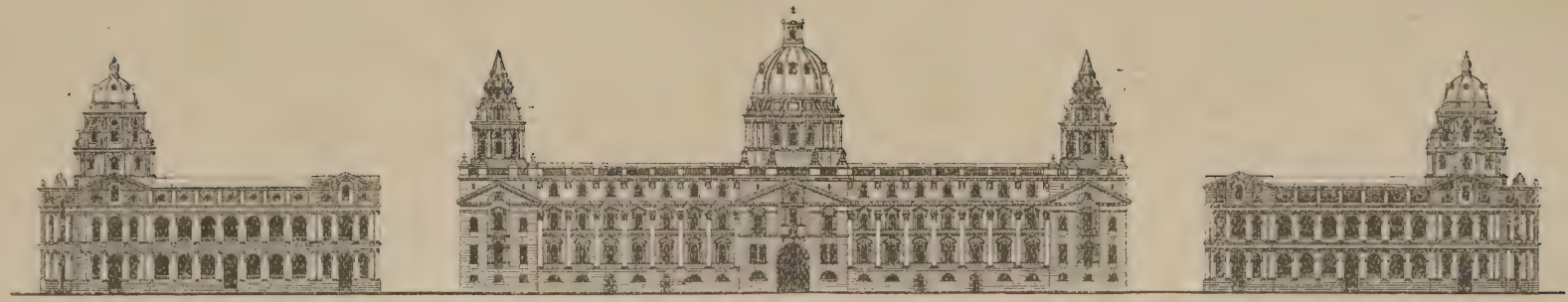
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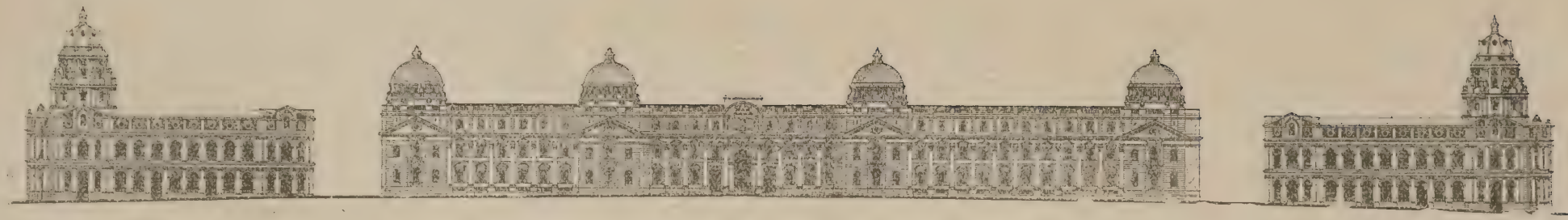
ELEVATION OF NORTH SIDE OF CURVED STREET.

THE HOLBORN TO STRAND THOROUGHFARE. Design No. 19.

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ELEVATION TO STRAND.



ELEVATION OF SOUTH SIDE OF CURVED STREET.

THE HOLBORN TO STRAND THOROUGHFARE. Design No. 20.

NORTHERN ARCHITECTURAL ASSOCIATION.

PRESIDENTIAL ADDRESS.

THE opening meeting of the winter session of the Northern Architectural Association was held in Newcastle on Wednesday evening last, the President (Mr. William Glover, F.R.I.B.A.) occupying the chair.

Mr. Glover, at the outset of his inaugural address, gave an interesting review of the past history of the Association. They now had 53 members, 70 associates, and 59 students, making a total of 182, and it was gratifying to note that there were only three of the allied societies older than theirs, namely, Bristol, the Royal Institute of Ireland, and Liverpool; only one with more members and associates—Manchester—which had four in excess of theirs, and was the only society that had a larger number of Fellows and Associates of the R.I.B.A. He had little to report as to the progress of buildings in Newcastle, owing to the unfortunate strike that had prevailed for some time. It was a thousand pities that labour disputes could not be settled by arbitration instead of the disastrous methods now adopted.

With regard to

Housing

he said that the general principle adopted had been to erect buildings many storeys high and divided into compartments. Of course, in large cities, where the ground was very costly, this was practically the only course open, but during the last 25 years workmen's trains, trams, and steamboats had brought the suburbs of our cities in closer contact with our manufacturing centres. In his opinion, the speculative builder had been the most important agent in providing suitable houses for their poor. During the period named, within three miles radius of Newcastle, 2,492 acres had been laid out for building purposes, on about two-thirds of which the following houses had been erected:—109 detached villas, 209 semi-detached villas, 1,960 superior self-contained, 1,184 superior flats, 3,547 workmen's self-contained, 12,783 workmen's flats; and at the present time 557 workmen's flats are in course of erection.

Although his chief object was to bring before his audience the housing of the poor only, yet he thought it would be interesting to give some particulars of the middle-class residences that had been erected. He thought it was important to carefully watch the separation of the different classes of flats, so that smaller flats were not mixed up with superior ones. He would divide them into classes as follows:—(1) A flat of 20ft. by 55ft without gardens in front; (2) a 21ft. by 60ft. with a bay window on the ground floor and 5ft. garden; (3) a 22ft. by 65ft. with, say, an 8ft. garden in front, bay windows on the ground and first floors, each class to be erected on different portions of the estate to meet the requirements of different types of workmen. In his opinion it was most important that all flats should have not less than three rooms, so that the sexes could be separated.

He had had experience in estate development, and had had to do with the speculative builder. A very large proportion of the builders he had met had been anxious to build sound property: the difficulty had been for those who had honestly carried out their work to get a price to compensate them for the superior quality. In former times a good deal of shoddy work was done which brought the speculative builder into bad repute, but, in a great measure owing to the careful supervision of their city engineer and his staff, a different state of things now prevailed. It was now usual for architects to embody in their contracts for sale of land a specification wherein the size and height of rooms were carefully noted, and the sanitary arrangements carefully thought out. All living and sleeping rooms to have 14-in. walls, and proper yard areas to be provided.

He believed it would be better to leave the housing of our workmen in the hands of the speculative builder than for corporations to erect gigantic structures which had not the healthy surroundings or the domestic comfort of suburban houses. Every effort should be made to educate our industrial classes to seek for and secure a comfortable home, and to make the same their leading luxury, and inculcate within them a spirit of self-reliance, which was, or should be, the backbone of the English character. He would encourage the speculative builder by giving him an advantage over others. For example, if a single site were sold at 6s. per yard, if the builder would take six sites he would let him have them at 5s 6d., which, on an area of 150yds., would give him a profit or discount of £3 15s. per site. This would not entail much loss on the owner, inasmuch as the builder would urge on the completion of the six houses in the specified time.

It was also important that the system of advances should be as liberal as possible, and at a reasonable cost for solicitors' and architects' charges. Building and co-operative societies had done good service in helping their members to secure houses by reducing cost, in making liberal advances, and giving facilities for paying off. If corporations owning large areas of land, and private individuals who are putting land into the market for building purposes, would assist by selling it at a price that would induce speculators to take it up, he felt that the supply could be kept quite ahead of the demand.

To Reduce the Cost of the Workman's House,

the question of avenues instead of front streets should be seriously considered, as instead of paying 12s. per foot frontage for road making, it would only involve about 2s. 6d. to 3s. If front streets were adopted, he would strongly urge the abolition of back streets, which cost from 8s. to 10s. per foot, besides the continual cost of wear, tear and scavenging. He did not suggest that the area of the houses should be increased, or that the land given up as half back street should be built upon, but that the space should be devoted to garden purposes. There was an extraordinary by-law in connection with the Benwell and Fenham Urban District Council which insisted upon a 24ft. back street, with a 36ft. front street, whereas the by-laws of Newcastle insisted upon a 40ft. front street and 20ft. back street, which was much better.

The allotment system was, in his opinion, a step in the right direction. If an allotment could be secured in close proximity to the house of an artisan, it would add materially to his comforts and conveniences. This might be accomplished, if the price of land was reduced, by making the site 120ft. instead of 60ft. in depth, which on a 21ft. site would give him about 150yds. of garden ground or open space. He took the case of Corporation land at Walker. During the last twenty years there had been sold on lease about 15 acres, on which 394 houses had been erected, or about twenty-six houses per acre. At the present time there were about 62 acres laid out for building purposes, and this, on the basis of the twenty-six sites per acre, would give 1,600 sites; and if built in flats would give 3,200 separate dwellings. Taking the average family to number five, it would give accommodation for 16,000 persons. Now, though it is a well-known fact that Newcastle speculators found that freehold property had a very much more ready sale than leasehold, there being no depreciation of lease or annual payment to frighten the purchasers, he thought that, assuming this land could not be enfranchised, something might be done in the way of selling on a perpetual annual ground rent, say based on £1,000 per acre, 5 per cent. of which would equal £50 per acre per annum, or, taking 26 sites per acre, at an annual ground rent of £2 per site, would give a return of £52 per acre per annum, thus overcoming the difficulty of depreciation of lease. A ground rent of 10s. per quarter would not be a very serious charge.

During the last fifteen years the cost of a workman's dwelling had been considerably increased owing to the shorter hours of labour and increased wages, and, what was more serious, the same amount of work was not produced in the given time. Several contractors had informed him that the bricklayer at one time laid from 800 to 1,000 bricks per day, and, to quote a remark made by one of the largest contractors, "they would not perspire to do it"; now they seldom exceeded 400, and when they considered there were in the workmen's flat between 32,000 and 40,000 bricks, masonry for windows, heads and sills about double what they were fifteen years ago, it was obvious there was a great increase in the cost of such building; in fact, it and other trades affected the cost from 25 to 30 per cent. at least. A flat which could be erected for £240 fifteen years ago now cost about £320.

Increased Cost of Building.

A leading speculative builder had furnished him with the following particulars showing the difference in the nett cost, for labour only, in the several trades named for a superior "flat," of which the total nett cost was in 1890 £372 and in 1900 £505:—

Bricklayer (labour only)	in 1890, £24;	in 1900, £42
Joiner	„ in 1890, £48;	in 1900, £65
Mason	„ in 1890, £20;	in 1900, £28
Plasterer	„ in 1890, £14;	in 1900, £25

The rent of the workman's house, continued Mr. Glover, had been increased by free education and the School Board rate.

The workman was not quite alive to his own interests in making it more difficult to secure cheap and healthy homes. He was exceedingly glad to know that the proposed Town Hall and Art Gallery was being seriously considered, and hoped that ere long they would have buildings to serve these purposes worthy of the Metropolis of the North.

As to the future home of their association he offered £500 if the members would raise £500, or £1,000 if they would raise £1,000, before the close of this century, or he was willing to leave the offer open until the end of his presidential year, *i.e.*, March, 1901. By this means they would soon be able to erect a building worthy of their association.

In 1851 he heard Lord Brougham's address to the students of the London University. In the course of his address he remarked: "There is a movement in London to reduce the hours of labour. If it can be done do it. If you can increase wages do it. They are the movers and not the holders of capital, but you must teach them this lesson, that they must try to reduce the cost of home products at the same time, and when by the reduction of their hours or increase of wages you bring in foreign competition, the movement must be stopped. Political economy should be to-night in all your schools. I do not know one in which it is to-night." Lord Brougham's remarks would be appropriate to-day; this question should be seriously considered by our Education Board: technical education, political economy, and striving to produce should be some of the main lessons inculcated.

At the conclusion of his address, the President gave the following interesting statement, supplied by Mr. Laws, City Engineer, Newcastle, and Mr. Bower, Borough Surveyor, Gateshead:—Within the boundaries of the city of Newcastle there have been built during the last twenty years 3,614 self-contained houses (including villas) and 6,910 flats, making the total number of houses erected 10,524. Within the borough boundaries of Gateshead during the last twenty-five years 720 acres have been laid out for building purposes, 158 superior self-contained houses (including villas), 875 workmen's self-contained and 2,650 flats have been erected, and 130 flats are now in course of erection. The following notes on Gateshead from Mr. L. H. Armour are also interesting:—From the information I have I estimate there are about 800 acres of land within the three miles radius of the Monument laid out for building purposes, but not yet built upon. Assume 20 flats per acre on this area, you have 16,000 houses and 32,000 tenements, at an average of five per house, giving accommodation to 160,000.

A Stained-Glass Window at Compton Greenfield Church, executed by Messrs. Burlison and Grylls, of London, was dedicated recently. The window has been erected just over the pulpit, and the subject is St. Timothy of Ephesus. The window is the first of a series of seven to be erected at some future time with figures illustrating the seven churches of Asia.

Bricks and Mortar.

APHORISM FOR THE WEEK.

He that hath a house to put his head in, has a good head-piece.—SHAKESPEARE (King Lear, III. 2).

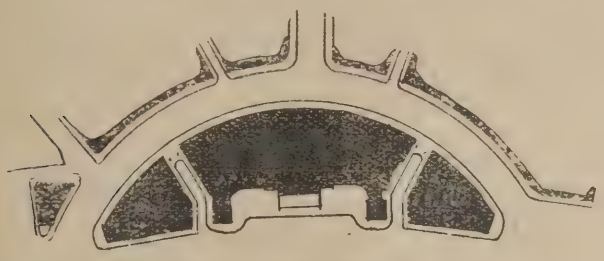
Our Plates. WE give this week elevations and plans of designs Nos. 17, 19, 20 and 21 in connection with the new street from Holborn to the Strand. A criticism of these designs appeared in our issue for October 31st last.

Dilapidations. DEAN TRISTRAM, of Durham, is of opinion that there is no need for the proposed new Dilapidation Bills; what is needed is some slight amendment of the existing law and some modification of its application. He says that the hardships under its present working arise largely from preventible causes. If the clergy universally availed themselves of its provisions and had a quinquennial survey, the cost would be comparatively trifling, and they or their executors would have nothing to pay at the avoidance of the benefice. But, forgetting that "a stitch in time saves nine," too many incumbents think "it will last my time," and thus leave a yearly increasing burden on their heirs. "Let the quinquennial survey be compulsory on all. There needs some check on the caprice of diocesan surveyors. The present check is illusory. The diocesan surveyors have formed what is practically a trade union, and hold together, having agreed on certain rules. I could adduce many cases in which no allowance is made for natural wear and tear, as the refacing of stones weathered by time in a perfectly sound wall. In one case where an ancient weathered garden wall contained a remarkable collection of rare ferns the surveyor insisted on its being stripped and pointed. In another an ornamental battlement, quite needless to the house, had the tracery of its mouldings decayed by time, and the outgoing incumbent was compelled to replace all the partially worn stones at a cost of £100, against the wishes of his successor."

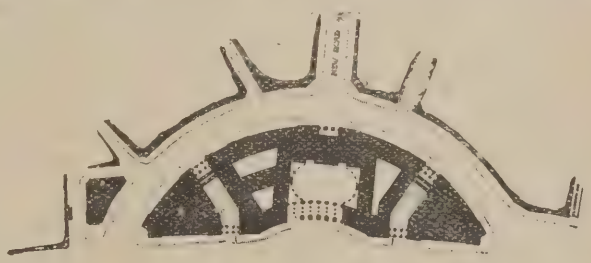
The Dean's Own Case. "AGAIN, the intervention of the officials of Q.A.B. with their red tape is useless and irritating, and often unjust. In my own case I had built a vicarage at my own cost, without encumbering the benefice. My architect, who happened to be the diocesan surveyor, advised me not to go to the expense of a survey for a few years, as there could be no dilapidations on the new house. Three years passed, then came another surveyor; I was unexpectedly promoted, and to my surprise was charged £156 for dilapidations. I took the surveyor's report to a builder, taking good care he should not know the amount of the estimate. He did the work for £119, and I got the surveyor's certificate. On applying to Q.A.B. for the balance, £37, they declined to refund it, saying that I must abide by the estimate, not the actual cost. They declined to state what they would do with the money. I consequently took counsel with my successor, and he built a wall, and I think a poultry-house, and so extracted the balance from the maw of Q.A.B. But I was defrauded all the same. Let the principle of the five years' survey remain; but in cases of dispute let the matter be referred to arbiters nominated by each of the parties interested, without the intervention of the officials of the Bounty Office, and the clergy would be satisfied."

A London of Flats. THE average flat, said Mr. Leonard T. Snell at last Wednesday's meeting of the Auctioneers' Institute, erected any time within the last few years, was in every way a considerable improvement on its predecessors. Both arrangement and design still left much to be desired; but, looking to the restricted areas upon which these buildings had to be erected—owing to the abnormal price of land—this standard was as high as could be expected. The rooms of modern flats were high, lofty, airy, and of good size; their sanitary fittings were of the best type; their drainage system was beyond suspicion; and their general finish and structure were superior to houses of rental value equal to the most expensive of flats. The flats system was, in fact, the only one possible or desirable in London and other great towns where land was dear and scarce, and where the population was so rapidly increasing. The lecturer went on to deal with the class of building which is a combination of flat and hotel. He could see an immense fortune for flats; and at the present time there were thousands of people ready to live in them. He was prepared to support the theory that a £200 a year flat was cheaper than a £100 a year house. With an ever-increasing housing problem they must have full utilisation of available areas. There must be a limit to the boundaries of a town, and the congested state of traffic was largely due to the immense area London occupied. "Twopenny tubes" were, after all, merely palliatives. What they really wanted was the concentration of the workers within a reasonable distance of their work, and that could only be done by means of buildings erected on the flats principle. If the whole population of London was resident in flats its area could be reduced, say, one-third, and hundreds of thousands of workers could then live near their work. The idea of a trim little villa or cottage in the country or suburbs was very pretty and idyllic, but the daily journey on a suburban line or a jolting omnibus soon knocked the romance on the head.

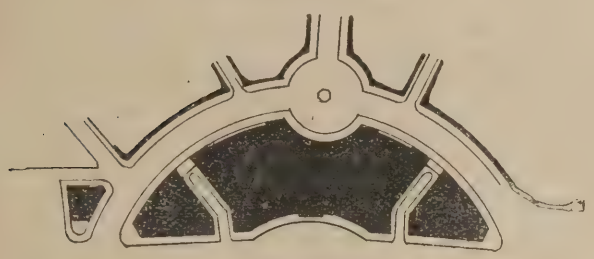
Art Education. FRENCH art received a high tribute of praise last week from Lord Reay when opening an exhibition in the Medical Examination Hall on the Victoria Embankment, of drawing, colour work, modelling, woodwork, wood carving, and metal work executed in day and evening continuation schools of the School Board for London. The primary object of the exhibition was to enable teachers to compare the results of various systems of teaching, with a view to the adoption of sound and true methods. M. Constant, the well-known French artist, was present. He had painted a portrait of the Queen, said Lord Reay, which would give to future generations as admirable a representation of her Majesty as could be desired. They were aware that the best education in art was given in France, and in this exhibition would be found abundant evidence of the influence of the French methods. He should like M. Constant to tell his countrymen that they had returned from the Great Exhibition on the banks of the Seine with a deep sense of the quality and refinement of French art. They warmly appreciated the prizes the Board obtained at the Exhibition, and were pleased to have received an invitation to a place in the International Educational Museum which it was proposed to establish in Paris. Such museums would tend to make them realise that in this great work of education nations could stimulate and assist one another in lifting the burden of ignorance which was the chief cause of misunderstandings between nations that had everything to gain by having harmonious relations. Lord Reay then gave a description of the exhibition, and said that the pieces sent in showed a marked improvement all round. Earl Beauchamp had, he added, asked for exhibits to be sent to New South Wales, and the Board were going to comply with the request. A report had been received from an architect connected with the German Government in which he highly praised their educational system, and had stated that they were making art education in London play the same part in their civilisation as music did in Germany. They would have great pleasure in exporting to Germany objects from this exhibition labelled "Made in London Schools."



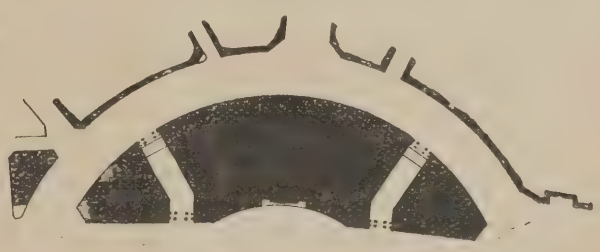
PLAN OF DESIGN NO. 17.



PLAN OF DESIGN NO. 19.



PLAN OF DESIGN NO. 20.



PLAN OF DESIGN NO. 21.

HOLBORN TO STRAND THOROUGHFARE.

Leamington Parish Church has been enlarged and improved. The church is only about 60 years old, and it is said that it was designed by the then vicar. The extension, which includes the addition of two bays to the nave and a new baptistery, was designed by the late Sir Arthur Blomfield, and has been carried out under the supervision of his son. A western tower also forms a feature in the design, but its erection is postponed until the necessary funds are obtained. The school children have provided a new font for the baptistery. The improvement will cost eventually nearly £20,000.

SETTING-OUT WORK AND BUILDING BY-LAWS.*

BY J. BARTLETT, M.S.A.

THE subject of this paper is so large that I feel I cannot in the time allotted deal fully with the whole of its branches, and I therefore propose to deal with the first part more fully than the last, and, as to the numerous by-laws, to indicate the several parts and sections of the various Acts relating to building with which it is necessary you should be fully acquainted. These sections and parts you can easily refer to in print, and thus obtain a fuller knowledge of this subject.

Interpretation of Drawings to Scale.

It is an old rule that the fittest survive, and so it is with the scales adopted for plans. Plans to scale are broadly divided into two classes:—(1) Surveys dealing with land, roads, drainage, and railways; (2) Working plans and details dealing with building and engineering.

As regards the first division (surveys), the principal scales used are such as will work in unison with those adopted by the Ordnance Survey, the small scale plan of which is to a scale of 208·33ft. to the inch, or 25·344in. to a mile; the large scale being 88ft. to the inch, or 5ft. to a mile. As a large portion of a survey is made by means of a Gunter's chain, which contains 100 links and equals 66ft., and eighty such chains equal a mile lineal (5,280ft.), we find that the scales adopted for surveys differ considerably from those used for building plans, and thus we have for survey plans scales which are divisible by chains; such as two chains, or 132ft. to one inch; one chain, or 66ft. to one inch; and one-third chain, or 22ft. to one inch.

There can be no hard and fast rule against the adoption of any scale for any particular purpose, but as a survey plan has often to be compared with the Ordnance record it is advisable to prepare it in such a scale as will expedite the reference.

Owing to the small scale to which surveys are drawn, it has been found necessary to use certain recognised signs to denote the presence of various details.

(A large scale drawing showing the various signs used was fully explained to the audience, and several survey maps of London dating from 1540 were compared with those of the present day.)

In the preparation of plans for railways, sewers, or roadmaking, it is a rule that the sections shall be drawn to two scales, the longitudinal scale agreeing with that to which the plan is drawn, while the vertical one is usually drawn to a scale of 10ft. to 1in. The section is figured up from a datum line which is usually made to agree with the datum on the Ordnance (given alike in decimals).

The enlarged vertical scale gives an erroneous impression as to the fall of the sewer and road, &c., but it makes clear the points on the section at which the inclinations differ, while if the section were shown to the one scale horizontally and vertically these points would be quite unrecognisable.

(A large scale section was worked out for a proposed road and sewer in order to explain its construction.)

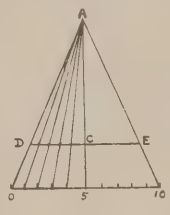
Passing to the general building plans with which you will no doubt have more to do than with survey plans, we find that for general building purposes the scales mostly used are in contract plans, sections, and elevations either a scale of 8ft. to 1in. or 4ft. to 1in., while for details we have as a general detail $\frac{3}{4}$in. to a foot and 1in. to a foot. These scales have been found to best meet the several requirements, and are most generally used in practice. With the $\frac{1}{2}$in. scale, which is mostly in use, it is not possible to show the internal finishing of the building to the extent of the $\frac{1}{4}$in. scale, but we have for these purposes the specification and the enlarged details to supply the information required. Every set of plans should have a sufficiency of sections.

The War Office adopt as general scales for building plans the scales of $\frac{1}{8}$in. and $\frac{1}{16}$in. to a foot. These scales are very small and do not allow so much detail to be shown as the $\frac{1}{8}$in. and $\frac{1}{4}$in. scales adopted by the profession outside their influence.

With the great strides lately taken by photography and lithography you may find it necessary to produce a scale by which to read plans prepared by these processes. In the case of photography, with a knowledge of perspective drawing it will be possible for you to find the centre of vision and produce some object in the picture to the edge of the picture plane and thus obtain a definite measurement. Or the presence of brickwork will enable you, by counting the courses, to obtain the heights and lengths.

In the case of plans reduced by lithography the scale may be arrived at by reducing in the same way as you can produce a $\frac{1}{16}$in. scale from a $\frac{1}{8}$in. The most accurate method is as follows:—

Set up to any scale larger than the plan to be dealt with a length of, say, 10ft., shown on the accompanying illustration as 0 to 10. At right angles to this from its centre produce a line to any point A; join A to 0 and 10. Take from the litho plan for which the scale has to be prepared the length of any portion which should scale 10ft. Divide it into two equal parts, and from the line A 5 at C erect the parts at right angles to A 5, so that the distance D E is equal to the 10ft. on plan. Produce from the points 1 to 10 respectively lines to the point A, cutting the line D E, which is now equally divided and can be increased to prepare the scale required.



Next, your scale, if of feet, should have a section of 10 at the left-hand side divided up to assist in measuring uneven lengths, or when the scale is a building one and is dealing with feet and inches it should have a similar length, namely 1ft. with the division of inches.

A word or two as to the colouring of plans. Drawings should show by their grades of colour the several parts that are in section, plan, or elevation. The tints should graduate alike as regards density of colour, work in section being darkest; plan or horizontal section a tone lighter; elevation very light. It is misleading on small-scale plans (as $\frac{1}{8}$in. and $\frac{1}{4}$in.) to make distinction of colours in woodwork for one wood as against another. Drawings of old work should be shown in black to the walls, but the floors should not be coloured.

Calculation of Areas and Cubic Space.

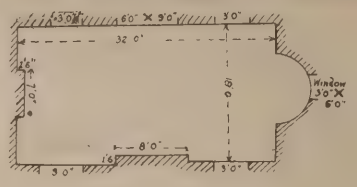
We will now take a simple example and work out:—(1) area of floor; (2) area of straight walls without windows; (3) area of circular walls; (4) cube of room.

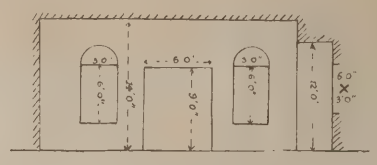
Area of floor:—

Ft. in.		
32·0		
18·0		
	576·0 main floor.	
½ / (10 0)		
	39·3 bay.	
	615·3	615·3
		22·6
8 0		
1·6	12·0 deduct.	592·9 ft. super.
7·0		
1·6	10 6	
	22·6	

On wal's:—

Ft. in.		
106·0		
14 0		32·0
	1,484·0 walls.	32·0
10·0		18 0
12·0		18·0
	120·0 deduct bay.	1 6
6 0		1 6
9 0		1·6
	54 0 deduct door.	1 6
4 / 3·0		
6 0		106 0
	72·0 part W.	
4 / ½ / (30)		
	1,484 0	
14·2	260·2	
260·	Feet 1,223·10 on wal's	





Circular walls:—Circumference of 10ft. circle = 31 416; ½ = 15·708.

15·70	
12 0	ft. in.
	= 188·6 wall = 188·493
3·0	
6·0	
	18·0 deduct.
	170·6 super

Cubical contents:—

Area of main floor = 57·0	
less 22·6	
	553·6
1·0	
553 6	
14·0	
	7,749·0 cube of main room
1 0	
39 3	
12·0	
	471 0 cube of bay.
	8,220·0 feet cube.

	Cubic feet of space per head.
London Board School	.. 130
Board School (Educational Dept.)	.. 80
Common Lodging-Houses ..	300 to 400
Army Permanent Barracks ..	.. 600
Prisons with Separate Cells ..	.. 800
Army Hospital Wards (per bed)	.. 1,000
Stables, open-roofed (per horse)	.. 1,200
„ with men over „	.. 1,300
Army Infant Schools (per seat)	.. 96
Army Chapel Schools (per seat)	.. 200

In the setting-out of works it is essential that proper projection be left on the several walls for the footings. Where works are set out on vacant land it becomes necessary to have a good square.

Next be careful to level up to some recognised point as the ground-floor level, and fix it in some convenient point or points from which the level may be checked. It is advisable to have a second point, as when the building is kept waiting for stonework the work is often carried up, and so the levels are inaccurate.

A storey rod should be kept and on it should be marked, on one side, the main projections, sills, cornices, &c., while on the other should be the courses of brickwork. In laying the concrete for the trenches the level of the top should be indicated with pegs carefully levelled. The footings are often a source of trouble, owing to the bricks being rougher, and so putting levels out. The position of the top of the damp course should be marked on the storey rod, and no work should be allowed to proceed beyond that level until it has been thoroughly checked as to its levels. In large works a dumpy level on tripod is used, but in ordinary works the straight-edge and hand level are sufficient. A good foreman when upon the works will readily detect any work out of the perpendicular or laid to improper levels, as when the building is in carcase nothing is easier than to range the lines of brickwork with timbers, and the lines of one opening with another.

I will now pass on to the Acts of Parliament and by-laws, and point out to you the special sections to be studied.

Take first the

London Building Act of 1894.

Part 1, Introduction.—The forty-seven definitions of the various expressions used in this Act should be mastered, although it will be

* Paper read at the Carpenters' Hall, London, on November 1st, 1900.

found that the terms "building" and "structure" are not included in the definitions. Parts 2, 3 and 4, relating respectively to formation of streets, lines of building frontages, and naming and numbering of streets, may be passed over. Part 5, Section 40, dealing with light and ventilation of habitable basements, and Section 41, as to the space at rear of domestic buildings, should both be studied.

Section 43 gives permission to cover old sites under certain regulations as to the plans of the existing buildings being certified by the district surveyor, but this section is in turn varied by the regulations of the by-laws of the London County Council and district by-laws when water-closets exist on areas almost entirely covered. Sections 47 and 48 relate to the height of buildings. The principal part is Part 6. Here, from Section 53 to 81 inclusive, the whole deals with the construction of buildings.

It may be well to mention here that the proposed building regulations code now under consideration by the Municipal Assembly of New York sets forth with regard to foundations that when no actual test is demanded the sustaining powers of various soils are to be taken as follows:—Soft clay, one ton per square foot; ordinary clay and sand, wet and springing, two tons; loam, clay, and fine sand, firm and dry, three tons; very firm coarse sand, stiff gravel, and hard clay, four tons. In cases where testing is required, it is stipulated that the Commissioner of Buildings shall be represented, and that a record of the results shall be duly lodged in the departmental offices. Intensity of pressure under footings is to be regulated in accordance with modern practice relative to live loads, and the footings must be designed so as to distribute the load equally and to prevent the establishment of pressure exceeding the safe bearing capacity of the soil, as previously set forth. Factors of safety, unit stresses for wooden and metallic columns, and wind pressures are all dealt with in a manner according with recent engineering practice. Safe loads on brickwork are now fixed at eight tons in the case of Portland cement-mortar. The strength of concrete variously proportioned is duly stated, and there are sections bearing upon the properties of stone, brick, sand, lime, cement, &c., fireproofing, and encasement of girders and pillars.

But to return to the London Act. The first and second schedules should be carefully studied, as they deal with the actual materials, their quality, and the manner in which the work should be constructed, the second schedule setting forth very fully the various materials that will be accepted as fire-resisting materials under Section 74, Part 6, and others where parts of a building are required to be in fire-resisting materials.

Next we have the unrepealed parts of various Acts, and so we come to the Metropolis Management Act, 1855 (18 and 19 Vict.), which, in Sections 73, 74, 75, 76, and 77, deals with drainage, in Section 82 authorises the inspection of private drains by the inspectors of vestries and district boards, and in Section 85 gives authority for the vestry to do the work. Sections 101 and 102 deal with the construction of vaults under footways.

Next, the Public Health Act (London), 1891, Sections 93 and 97. Section 96 deals with underground rooms for occupation, the construction of such rooms to prevent damp, the paving of the areas from which lighted, the drainage of the area and soil under the room, the lighting and ventilation, &c.; while Section 97 is devoted to regulations as to the supervision of and closing of such rooms.

Next we have the by-laws of the County Council under Section 16 of the Metropolis Management and Building Acts (October 19th, 1891). Here, under Sections 2 and 3 respectively, we find requirements as to the foundations and sites of buildings, and description and quality of the substances that may be used for walls. Amongst other items we find the requirements that stone must be laid on its natural bed. Under the same by-laws we have special provisions dealing with the description and quality of the substances of which plastering is to be made, and a further important provision dealing with the method in which any excavation around the site and the building is to be filled up.

Another set of important by-laws of the London County Council is that dated June 22nd, 1893, dealing with the construction of water and earth closets. These by-laws deal very fully with the various details, such as pans, traps, weight of pipes, soil pipes, water supply, ventilation, &c., and in addition, under clauses 16 to 19, both inclusive, they deal with the construction of ashpits and receptacles for dung as attached to stables.

The by-laws of the several districts round London contain the various requirements as to building materials and sanitation to which I have directed your attention in the Metropolis Management Act, and the Public Health Act, and the by-laws of the London County Council, and by studying the several parts of the Acts which I have named this evening you will obtain a knowledge of the principal requirements of the several Acts of Parliament relating to buildings as affecting their construction and sanitation.

Enquiries Answered.

The services of a large staff of experts, including all those engaged on "Specification," are at the disposal of readers who require information on architectural, constructional, or legal matters. Questions should in all cases be addressed to the Edit . The querist's name and address must always be given, not necessarily for publication.

Ancient Lights.

KIDDERMINSTER.—PUZZLED writes: "A is altering his premises as shown on the accompanying sketch. B is the owner of the adjoining premises, and objects to A proceeding with the work on account of his ancient light. The proposed building will be well within an angle of 45 deg. Has B a right (he claims it) to the line of light as shown by the dotted line? If not, say what is his right. Do you know of a good book on this subject?"

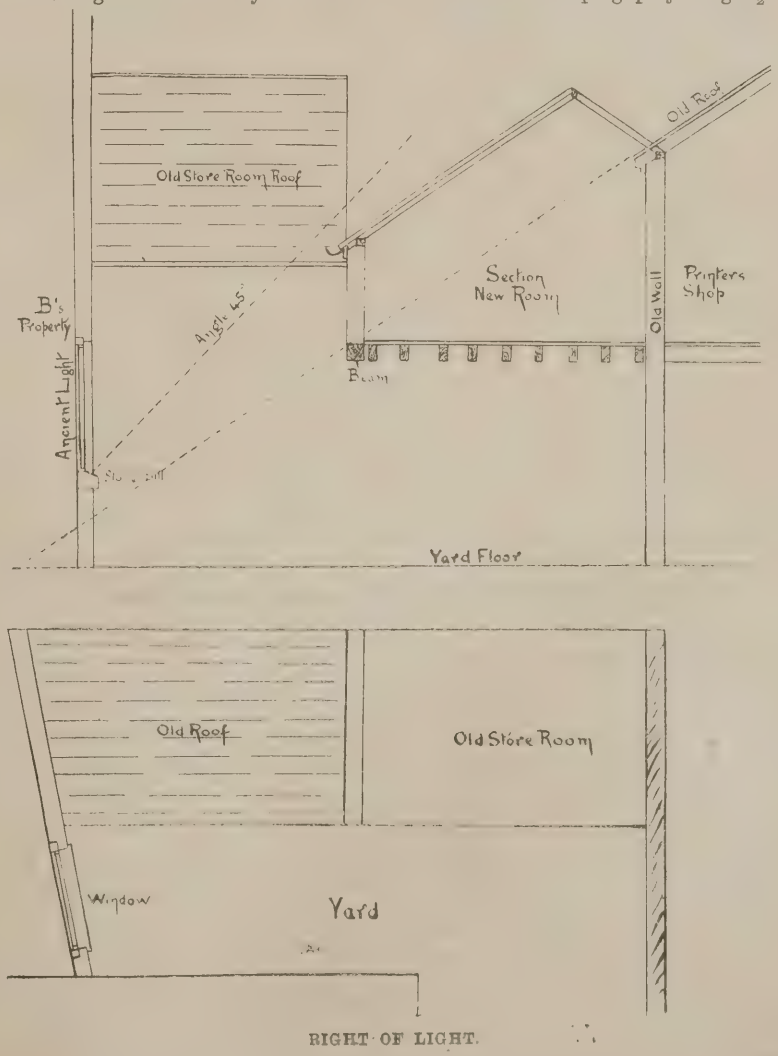
Draw a straight line from B's window sill to touch the highest salient point of the old roof opposite. Anything raised above this line would be an infringement of B's right of light. The angle of 45 deg. does not limit his right, though it might form the basis of a reasonable arrangement. A good book is Roscoe's "Digest of the Law of Light" (London: Reeves & Turner, Carey Street, W.C.).

G. H. B.

Garden Walls.

BECKENHAM.—ENQUIRER writes: "In 'Specification,' under 'Gardener,' it is stated that garden walls should go 3ft. below the surface of the ground. Kindly say if 20in., including 6in. of concrete, will be sufficient for a 9in. wall 6ft. or 7ft. high (from the surface of ground), with piers 14in. by 4½in. on the inside only. Will 9ft. in the clear be a sufficient distance apart for the piers so as to allow for training fruit trees? Is a damp course necessary? The wall will point north-west. Do you consider the above dimensions sufficient, or more than sufficient, for a perpendicular wall 700ft. long on clay soil? In building a house twelve miles from London, would it be cheaper and more satisfactory to buy timber from a local merchant or from the docks?"

Garden walls should be built deep enough to allow 3 ft. of soil against them. A depth of 20in., including concrete, is not enough. A wall 9ft. high is much more serviceable than one 6ft. or 7ft. high; only dwarf-trained trees could be grown on the latter. The piers should not be placed on the inside (growing side) of the wall. Piers 14in. by 14½in. 9ft. apart would be satisfactory. Querist states that the wall points north-west. Presumably that means a south-east aspect for the trees on the wall, which is good for the southern part of England. A wall in the north should preferably face south. A damp course is not necessary. The wall should have a coping projecting 2½in. or 3in



RIGHT OF LIGHT.

A simple means of providing an additional temporary coping, which is useful in the spring and can be removed in summer, is obtained by building in the wall, under the coping, pieces of 1¼in. galvanised-iron tubing 2ft. long and about 6ft. apart, in which iron can be placed projecting 1ft. beyond the wall, being kept in place by a pin through the outer pipe. On these supports light boards 9in. or 12in. wide can be placed in the spring and retained there as long as necessary. Netting can also be suspended if it is required to protect fruit against frost, birds or wasps. Horizontal wires may be strained on the wall about 9in. apart. If the timber referred to is for hothouses it is preferable to buy it from a builder, as it will probably be more seasoned. A. E. M.

Amounts Chargeable by an Architect.

BRADFORD.—FAIR PLAY writes: "In making out a bill against a client, has the architect a right to include in the total cost of the buildings any amounts in excess of the P.C. sums allowed in the contract, which the client has expended but settled privately? Also, when a client requests that certain (say painting) work need not be advertised, as he intends to give it to a firm with whom he bargains and pays privately, has not the architect a right to know what the cost has been, in order that he may include it in the total cost? There appears to be a legal understanding that the architect can only charge an amount certified, irrespective of time given in consultation and information supplied with regard to external finishings and decoration."

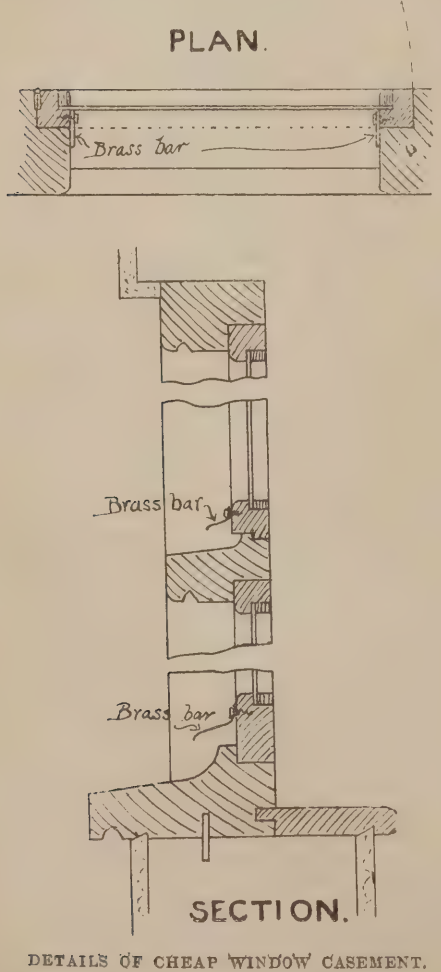
It does not appear that an architect could charge by percentage on the cost of such works, but he might charge for time spent in consultation upon them with his client.

G. H. B.

Cheap Wooden Casements.

F. R. writes: "I should be glad to have some details of a cheap wooden casement."

The accompanying sketch will no doubt meet querist's requirements. R. W. C.



DETAILS OF CHEAP WINDOW CASEMENT.

L.C.C. Scholarships.

LONDON, W.—ROBERTS writes: "I intend to prepare some drawings for the L.C.C. scholarships in building construction. What subjects would you advise me to draw? Who publishes, and what is the price of, Roger Smith's book on the orders? Do you think there is enough in Mitchell's book on advanced building construction for a student studying for honours, South Kensington?"

It would be well to make as many sheets of drawings as possible of constructional work on good paper (such as Whatman's), each properly inked in and coloured. Thus, one sheet might comprise details of a staircase, another of a dormer window, another of an iron roof, and another of some fireproof flooring. These might be copied from such a compilation as Mitchell's "Sheets" (obtainable from the Polytechnic, Regent Street, W.), but would be better if measured from actual examples, this fact being stated. Mitchell's "Advanced Building Construction," though an excellent book, should certainly be supplemented by several others while reading for S.K Honours, it being never wise to trust to a single book on any subject. Professor Roger Smith's "History of Architecture," if still in print, can be obtained from Mr. B. T. Batsford, 94 High Holborn, W.C. G. A. T. M.

The Title "Architect."

CRAWLEY.—A WOULD-BE ARCHITECT writes: "Having served my pupilage, passed first-class in building construction (advanced and elementary), and started a practice in a country village, is it permissible to put 'Architect' on my cards and office plate?"

Anyone may put "Architect" after his name, whether he is qualified or not. This is why there is such a clamouring for legal registration.

Colour Schemes.

GALLATOWN.—HARMONY writes: "I should be glad to know of a good illustrated book on colour, so that one could judge of various shades and their combinations, such as 'picking out' cornices to match wallpapers."

No book will help queriest unless he possesses a natural talent for arranging colour schemes. We would recommend to him the articles on 'Decoration and Furnishing" which appeared in our issues for September 5th and 19th last.

What is "Gesso"?

BARNSLEY.—PERSEVERANCE writes: "Will you kindly give information about 'Gesso' work; what it is, how it is done, and what are the materials required?"

An article on Gesso appeared in our issue for June 6th, 1900.

Registration of Architects.

SOUTH SHIELDS.—A. B. writes: "If the Architects' Registration Bill is passed, how will it affect young architects who have completed articles and have commenced a practice, or secured a partnership, though not members of the R.I.B.A?"

Under the Architects' Registration Bill nobody would be allowed to practice as an "architect" unless he had passed the examinations which would be instituted by the Bill. A roll would be formed of the names of all those persons calling themselves architects at the time of the passing of the measure; all would be included, bogus and real alike. We therefore presume that a young architect just commencing to practice would have just as much right to be included on the roll, when first drawn up, as the oldest member of the profession.

Skittle Alleys.

AYR.—J. K H. writes: "Can you give me any information regarding the details of construction of a skittle alley, including the length and width required for a double alley? Are there any books published which give such information?"

We know of no book on the subject. Particulars were given in our issues for February 21st and June 13th, 1900.

Books on Gothic Architecture.

LONDON, W.—A. J. writes: "Can you give me the names of some good books on Gothic architecture which would be of service to a student? Details and construction are required more than reading matter."

"Details of Gothic Architecture," measured and drawn by J. K. Colling, £2 2s. nett; "History of Gothic Art in England," by Edward S. Prior, M.A., £1 11s. 6d. nett; or "Gothic Architecture," by H. E. Corroyer, 5s. These can be obtained from Mr. B. T. Batsford, of 94 High Holborn, W.C.

Shop Fronts.

HINCKLEY.—MAC writes: "Is there any book published on shop fronts and windows?"

We know of no book on the subject; illustrated articles on "Shop Fronts" appeared in our issues for August 9th and 16th, 1899.

THE SEVENTEENTH-CENTURY ARCHITECTS.

AT last week's meeting of the Bristol Society of Architects, Mr. Joseph Wood, vice-president, in the chair, Mr. Harold Smith, A.R.I.B.A., lecturer on architecture at the Merchant Venturers' College, delivered an address on "The Architects of the Court and Capital of England in the Seventeenth Century." The speaker first dealt with the renaissance of the Elizabethan and Jacobean periods, showing how it eventually culminated under the patronage of the Court in the work of Inigo Jones. He then spoke of the effect of the civil war, and pointed out that most of the artists of the Restoration were foreigners. After a description of the capital as it was in the seventeenth century, the speaker concluded by describing the work of Sir Christopher Wren in restoring the city, building St. Paul's, and adding to Hampton Court and Greenwich Hospital. The paper was illustrated by numerous fine photographs, shown by means of the lantern, and also an interesting collection of prints relating to work of the period.

INCORPORATED INSTITUTE OF BRITISH DECORATORS.

IN connection with the proposed visit of the members of this institute to Italy early in the new year, a paper was read on Thursday last at the Painters' Hall, Little Trinity Lane, London, E.C., by Mr. Thomas Preston on "Italian and Decorative Art." The chair was taken by Mr. J. D. Crace (president). Mr. Preston, in the course of some opening remarks, gave an outline of the proposed trip. Speaking of the 200 years between 1380 and 1580, when the great Italian painters were at work revolutionising art, reminded him that Cimabue, Giotto, and others escaped gradually from the fixed symbols and dead traditions of early Christian art. Nature was seen more truly by them and represented in relief. At the command of the Church these men produced pictures on the walls of various churches in fresco—the prepared colour being laid on the wet plaster. Afterwards altar and panel pictures were done in distemper, while, in the later days, oil became the medium for easel and other pictures. Views of a number of the principal works of art in Rome, Florence, and other Italian cities were thrown on a screen, being accompanied in each case by descriptive remarks by the lecturer. A discussion followed.

A New Board School at Streatham at Sunnyhill Road has been opened.

Workmen's Dwellings for Brentwood.—The Brentwood Urban Council have decided to purchase for £2 per foot frontage a plot of land in Western Road as a building site) subject to the sanction of the Local Government Board), for workmen's dwellings. The site has a frontage of 450ft., and a depth sufficient to provide gardens. There is room on it for the erection of 33 houses. The total estimated cost of carrying out the scheme is £6,500

Professional Practice.

Barrow.—The new Emmanuel Congregational Church was opened recently. The church is built on a fine sight, situated at the corner of Ainslie Street and the Abbey Road. The total length of the building is 92 feet, and the width between the transepts 58 feet. The main entrance, approached from the Abbey Road, is placed in the centre of the building, having on one side a cloak-room, and on the other (off Ainslie Street) an additional entrance leading to the gallery, which is placed over the front vestibule. The church is planned to seat 550, and the seats, as also other woodwork of the church, are in pitchpine. The open roof, although not costly, is nevertheless ecclesiastical in appearance, and looks very effective. The walls inside up to a height of five feet are built with best red facing bricks with ornamented friezes, and above in plaster. The choir seats are placed right and left of the pulpit, and the recess behind will eventually be filled with an organ. The building is designed in the Gothic style of the perpendicular period. The materials are of limestone from the locality, and the tracery of windows and other dressings of the St. Bees red stone. The roofing is of green slates. The building is lighted throughout with the electric light, put in by Messrs. Thornton and Son, of Barrow. The contractors are: For stonework, Mr. W. Fairbairn; bricklaying, slating, and plastering, Mr. J. H. Neal; carpentry and joinery, Messrs. W. Gradwell & Co.; plumbing, glazing, and painting, Mr. Morris. The church was designed for a tower and spire, but this portion had to be abandoned. Mr. E. M. Young is the architect.

Belchford.—The church of SS. Peter and Paul at Belchford has been reopened after restoration. The church was rebuilt in 1871 in the characteristic poor style of that period. Some years ago it became almost unsafe, and the walls were strengthened to prevent their falling. The chancel was rebuilt in 1859-60, and in 1884-5 the church was re-seated, the plaster ceiling removed, a new floor supplied, and fresh windows inserted. However, such was the all-round bad structure of the building, that but few years had elapsed before signs of decay showed themselves in an alarming fashion. The architect for the scheme of restoration was Mr. H. M. Townsend, of Peterborough, and the major portion of the work has been executed by Messrs. Thompson, also of Peterborough, who carried out the work of restoring Peterborough Cathedral and the Chapter House, Lincoln. The tower, which was unsafe, has been pulled down, portions only of the walls being retained as were sufficient to form the sides of a plain porch at the main entrance to the church. This porch is, however, only of a temporary character, it being the intention, at no distant date, to rebuild the tower in a style suitable to the building as a whole. While some of the old stones of the tower—a collection of masonry work of different church periods—have been piled up at the far side of the churchyard, others have been used in the building of a new vestry, which opens into the church, and can also be used as an organ chamber. Five good-sized windows, decorated with tracery work, and giving good light, have been let into the walls of the church; and the whole of the outside of the remainder of the building has been repointed and put into a thorough state of repair. The chancel contract was given to Mr. J. W. Jackson, of Lincoln, and this and the walls of the body of the church have been decorated by Mr. Travis, of Owstown Ferry. The walls of the chancel are darkened with terra cotta and green colours, of the seventeenth-century period, and the roof has been treated with black and white arrowhead work. The choir stalls are stained green, and decorated in harmony with the wall of the chancel. At the end of each stall is affixed a shield bearing the arms of Saints Peter and Paul. The old altar has been placed in the south-east corner of the church to serve as a side altar, and a new high altar of oak, gilt with five painted panels on a gold ground, supplied by Mr. L. Grosse, of Belgium, stands in its place. The old round-headed arch of the chancel put up in 1780, when the church was rebuilt, has been replaced by a newer one. The interior walls of the body of the church have been renovated. For the present chairs will be provided as seating accommodation in the nave, though it is hoped that benches will be provided ere long. The whole of the church is heated on the American radiator system, supplied and fitted by Messrs. Ward and Co., Horncastle. The heat is generated from a boiler in a heating chamber underneath the vestry, which is entered from outside the church. The radiators are of the flue kind, formed on the Italian principle. In the nave there are four radiators, in the chancel there are two, and in the vestry one. Any one or all the radiators can be used at one time, and in addition the heat can be regulated to any degree. In the porch of the church is an old stoup that formerly belonged to the church, but eventually found its way into the yard of the house of the churchwarden, from whom it has been reclaimed. One discovery made during the restoration was the foundation of a wider church which formerly stood on the spot. There are evident signs, too, that when the old church was pulled down it was hastily put up again, for amongst the unused stones taken down during the restoration are bits of masonry of various church-building periods, which in the re-construction process in 1780, were put in the most unlikely places. The portion of the foundation and other portions of the old church have been covered over again. The work of restoration has been well carried out under the personal supervision of Mr. Hopkins, foreman to Messrs. Thompson, builders.

Burton-on-Trent.—New premises which have been erected in Byrkley Street by the Burton-on-Trent Co-operative Society, Limited, at a cost of between £8,000 and £9,000, were opened on the 15th inst. by the President, Mr. S. Redfern. The building is English Renaissance in style, and stands on a site previously occupied by shops and cottages, having a frontage of 79ft., with a depth of 70ft. Great difficulty has been experienced during the progress of the work by the necessity for keeping open three departments of the business, and an entrance for the traffic to the stores, bakehouse, &c., which are situated in the rear of the new premises, and only accessible across the site. The premises have a basement, 76ft. by 38ft. with a strong room, coal stores, and a heating chamber. On the ground floor are four lofty shops, with out-offices, &c., for the grocery and provision, drapery, boot and shoe, clothing and outfitting, and butchers' departments. In the centre is a large covered entrance for access to the society's other premises in the rear, and from which also rises the main staircase to the upper floors. On the first floor are a large show-room, a board room and managers' and general offices, with the necessary lavatory accommodation. On the second floor is a concert hall, 76ft. by 39ft., seating 500 persons, with platform and two retiring rooms. The ceiling is covered and panelled with moulded and enriched plaster ribs, and the front of the proscenium is executed in elaborate modelled fibrous plaster, the windows being of leaded lights specially designed in the studios of Messrs. Pearce, Limited, of Birmingham. Provision is made for ventilation by means of tubes and exhaust ventilators in the roof. The building is fireproof throughout, being built with steel stanchions and girders suitably cased and protected. The floors and staircases are of concrete, and, together with the stanchions and girders, were executed by Messrs. Lindsay and Co., Limited, of Westminster, in their patent system, the floors being finished with wood blocks by Messrs. Ward and Co., of Westminster. The heating is on the low-pressure hot water system by pipes and radiators, executed, with the ventilation, by Messrs. John King, Limited, of Liverpool. The lighting is by electricity, the installation being by Messrs. Gardner Brothers, of Burton-on-Trent, the current being supplied by the Corporation. A service of gas is also laid for emergencies. A very complete system of fire appliances has been fitted by Messrs. Merryweather and Sons, of London. Messrs. T. Lowe and Sons, of Burton-on-Trent, carried out the general contract, and the plans were prepared by Mr. R. Stevenson, architect, Imperial Chambers, Burton-on-Trent, under whose personal superintendence the whole of the work has been carried out.

Caerwent.—The ancient church of Caerwent having undergone important works of reparation, begun in 1893, was reopened recently. This is one of the earliest and most interesting of parish churches in Monmouthshire. Caerwent ("The Fortress on the Wye"), the ancient capital of South Wales, once a seaport, was taken by the Romans in the days of Claudius Cæsar, and became the first Roman station on the western side of the Severn. The church now consists of an unusually long chancel dating from the thirteenth century, a nave with its fifteenth-century north porch and parvise, and fine fifteenth-century tower. Perhaps the most interesting features of the church are the two blocked or filled-in arcades on the south side, beyond which were once aisles, or more probably side chapels, of which only the foundations and a fragment of walling still remain. The south nave wall with its arches had gradually fallen outwards to the extent of some 18in., causing the building to be in a very dangerous condition, which necessitated the taking down and rebuilding of this portion of the fabric. It appears that the mediæval builders, although making use of the Roman building material at hand, did not take the trouble to build from the Roman foundations, some 5ft. or 6ft. deep, and had it not been for three huge stone props, built up in all probability when the chapels were demolished or fell in, the nave would have collapsed centuries ago. This wall with its arches has now been rebuilt on a secure foundation. The roof has been restored, and the nave thoroughly repaired by Mr. W. Clarke, of Llandaff, under the direction of Mr. G. E. Halliday, F.R.I.B.A., to whom the work of restoration was entrusted in 1893.

Harrogate.—The new building for the Yorkshire Home for Chronic and Incurable Diseases is now being erected on a site near Harlow Moor, Harrogate. The object of the institution is to provide "a home for chronic sufferers whose disease is pronounced incurable, and whose means are insufficient to secure to them the attention their helpless condition requires." The present home is situated in Low Harrogate, has been in existence 18 years, accommodates about 30 patients, and costs not far short of £1,000 a year to keep up. The new home will have about 50 beds, and there will be opportunity of extending the premises to meet the cases of 150 persons when requirements and means allow. Its cost is put at £15,000. The new building will have a frontage of 157ft. to Cornwall Road, and 85ft. to a side road. The ground floor accommodation comprises large day rooms for patients of both sexes (35 females and 15 males), dining-room, board-room, waiting-room, bath-rooms, and wards of varying sizes, and a winter garden. More wards and bath-rooms are planned for the first floor, together with nurses' rooms and asphalt airing flats opening into the corridors by wide doors. The kitchen, scullery, store, operating-room, isolation ward, and maids' rooms will be on the second floor, while the basement will contain the laundry and boiler house. Terazzo flooring and ventilation by means of an electrical fan, are other features. The elevations are to be neat and unpretentious, but not too conventional. Mr. T. E. Marshall, of Harrogate, is the architect, and Messrs. W. Nicholson and Co., of Leeds, are the principal contractors.

Histon, near Cambridge.—A "manse" is being erected in connection with the Baptist Church which was opened a few months ago. The manse is on land adjoining the church buildings, leaving room between for the future schools. The dining-room, drawing-room, study, cloak-room, kitchen, &c., are placed on the ground floor. Four bedrooms, dressing- and bath-rooms are placed on the first floor. A verandah and balcony carried on rustic woodwork forms a feature on the front elevation. The contract amounts to £780. Messrs. George Baines, F.R.I.B.A., and Reginald Palmer Baines

of 5 Clements Inn, Strand, London, W.C., are the architects for the complete scheme of church, schools and manse.

Kintore.—The rebuilding of the Station Hotel at Kintore, which has been in progress for over a year, has now been completed. The new building is of three storeys, with drying lofts, and has a frontage to the turnpike road. On the ground floor are situated the dining-room, coffee-room, bar, and private sitting-room; on the first floor is the commercial-room, drawing-room, and various bedrooms; while the second floor is entirely occupied by bedrooms. All the rooms have been decorated in bright colours. On the opposite side of the road, a recreation ground and a garden are to be laid out. The architect is Mr. John Cameron, Aberdeen, and the principal contractors were:—Mason—Mr. John Smith, Lilybank, Kintore; carpenter — Mr. John Maitland, Kintore; painter—Mr. Forrest, Holburn Street, Aberdeen; plasterer—Mr. Sievewright, Inverurie; slater—Mr. Farquhar, Woodside.

London, S.W.—The foundation stone of the new church of St. Anne, Vauxhall, was laid recently. The church is to have a total length of 140ft., and consist of a wide nave, 33ft. by 90ft., flanked by narrow processional aisles and transepts. The chancel will be 36ft. by 23ft., with two side chapels, together with sacristies. There will also be a large confraternity chapel, 33ft. by 18ft., with parish-room over it, parallel with the nave, opening by an arcade to the processional aisle. The style adopted is that of the thirteenth century, and the exterior of the building will be entirely of red brick. There will be accommodation for 700 people. Mr. F. A. Walters, F.S.A., is the architect, and the contractors are Messrs. Goddard and Sons, of Farnham and Dorking.

Weston-super-Mare.—The new front of the Government School of Science and Art was opened recently. The style of architecture is the Renaissance. The front has moulded cornices, sills, strings, copings, pediments, &c.; pilasters enriched with Faience panels, moulded bases, and elaborately-carved caps. The frieze of the entablature is also enriched with Faience panels. The spandrels of the arch to porch are carved. Two large bay windows give relief to the front, and the porch on the ground floor, only, gives a break in the vertical lines, the top forming a balcony. The gables of the building are ornamented with moulded and worked finials with balls and curved copings. The parapets have moulded balusters. The ground floor is built with local limestone, with freestone dressings, to give massiveness to the supporting storey. All above this is built of freestone with niches for sculpture, backed with good solid brickwork. The roof is covered with slates fastened with Harvey's system of screws and washers. The gutters and flats are of stout lead. The ground floor is laid with wood block flooring on cement-concrete. The first floor has massive steel girders with smaller steel joists between, having a fireproof floor of cement concrete, on which is laid wood block flooring. The second or top floor is formed with strong wood joists and flooring board. On the ground floor is a large hall 57ft 6in. by 17ft., and 15ft. high, having two bay windows, and this hall is entered by a porch. On the south or left-hand side of the hall is the staircase (lighted by windows) to the art schools arcaded towards the hall. Opposite the entrance doors to the hall are two arches (old). These archways lead to the science lecture room, trades technical classrooms, committee room, lavatories, and offices. The large hall, it may be stated, can be used as a permanent art gallery, or for exhibitions from time to time. On the first floor is a carving-room 28ft. 6in. by 17ft., and 12ft. high, having three windows. Next to this is the life-room, for studies from the life, 15ft. 6in. by 17ft. The master's room is on the north side, 17ft. by 12ft. Each of these rooms is 12ft. high. A corridor communicates with these rooms, and also with the present two large art rooms (elementary and advanced); also with the lavatories and offices. There is also a back staircase to this floor and to the top floor. On the second or top floor is a cookery classroom, 30ft. by 17ft. The latest cooking ranges will be fitted up in this room for lectures. Next to this is a scullery, also lavatory and offices. At the north and south ends of this floor are the caretaker's apartments. All these rooms are entered from the upper corridor. The first portion of the building was commenced in the year 1892, consisting of elementary room and advanced room, science lecture room, chemical laboratory, and three trade technical rooms, committee room, with cloak rooms, lavatories, &c. This contract was carried out by Messrs. Theo. Palmer and Son, under Messrs. Price and Wooler, the architects, at a cost of about £1,600. The second portion, completing the building, was carried out by Mr. Henry W. Pollard, builder and contractor, of Bridgwater, under Mr. Hans F. Price, architect, of Waterloo Street, at a cost of about £2,000. The carving was executed by Mr. J. P. Steele, of Kingsdown, Bristol.

Builders' Notes.

A Generous Gift.—Mr. James Carmichael, builder, of Wandsworth, has handed over to the Bolingbroke Hospital, Wandsworth Common, S.W., the nett proceeds of £150 15s. 10d. derived from the sale of seats at the Hôtel Cecil on the occasion of the return of the C.I.V. on October 29th last.

"A Discreditable Bankruptcy" — George Tuffley, 81 Earl Howe Street, Leicester, builder, lately carrying on business at Keythorpe Street, applied for his discharge at the Leicester Bankruptcy Court last week before His Honour Judge Wightman Wood. The Official Receiver said the receiving order was made in January, 1900, the liabilities ranking for dividend being £11,032 10s. 4d., and the proofs admitted for dividend being £10,460 4s. 2d. £3,964 were trade debts, and £7 076 due to the mortgagees, whose security was inadequate. The assets, estimated at £662 9s. 4d., only amounted to £485 15s. 6d., and a first and final dividend of 6½d. in the £ had been paid. Bankrupt had been a speculative builder, who had begun with a capital of £100 of his own, and £850 borrowed from relatives which had not been paid back. The Official Receiver submitted that this was a case where the minimum suspension of two years would not be adequate, having regard to the fact that it was a recent bankruptcy. His Honour said this was a very discreditable bankruptcy. Debtor had not kept proper books, and thus had kept himself wilfully in the dark as to his proper position. He had gone on getting extensive credit from people who had no information as to his position. Then he came gaily up after two months and asked for his discharge. He should suspend the discharge for four years from the date of the receiving order.

Export Duty on Austrian Timber.—An agitation recently entered upon by a number of influential industrial associations in Austria, having for its purpose the levy of an export duty on raw timber is reported by Mr. Hossfield, the United States Consul at Trieste. Under the existing commercial treaty between Austria and Germany, the rapid development of the latter has led to a change in the form of its timber imports. Formerly they consisted mainly of sawed lumber, railroad ties, staves, parquetry. The industrial associations in question now claim that since 1891, when the treaty was concluded, the export of these wares has become stationary, while the crude timber has increased 7,759,000 tons per annum to 15,139,000. They demand that measures shall be taken to restrict exportation in the crude form, and in order to promote this result they demand an increase in freight rates on timber intended for export; taxation of foreign timber merchants doing business in Austria; the enactment of stricter forestry laws; discrimination in favour of home industries in the sale of timber from Government forests; and, finally, that provision shall be made in future tariffs for reducing the export of crude timber, or an export duty upon it. An attempt will be made to have these protests heeded when the renewal is proposed upon its expiration next year of the present commercial treaty with Germany. The Consul expresses the opinion that, in any event, Germany will have to look elsewhere for sources of supply to meet the increasing demand for timber in her industries.

Cement in South Africa. — United States Consul-General J. G Stowe writes from Cape Town, September 17th:—"No country is a better customer for cement than South Africa. All public buildings, warehouses, stores, and residences are built of brick, cemented on the outside. No wood, or frame, houses are seen. The expert Malays, the masons in this country, are adepts in producing very pleasing effects with cement in the outside finish of buildings. The bricks used in South Africa are two-sevenths larger than the American bricks, and are laid up principally with "mud," the inferior clay found here, instead of mortar (lime) or cement. Over the whole surface cement is laid. Bricks of different shapes form the window sills, copes, columns, pilasters, mouldings, &c., and over these is spread the cement, forming a very pleasing exterior, the natural stone being closely imitated. Many of the large buildings are spattered with the cement, presenting a rough exterior very striking, and even durable. Cement is also used in making drainpipes, sidewalks, stoops, tiles, chimney-pots or tops. Brick exteriors are never seen, as the bricks are inferior, the best qualities being made of clay and coal cinders. Of the cement imports for 1899, amounting to 126,672,875lbs., Belgium furnished 18,423,628lbs.; Germany, 7,448 395lbs.; other countries, 605lbs; and the United Kingdom the balance. During 1900, the imports of cement from Germany have been increasing rapidly, as it has been found that German cement is equally as good as English Portland, and can be bought at 24c. per barrel cheaper. Belgian cement is good, and sells 36c. cheaper than the English. Cement of the desired quality will never be manufactured here, as the ingredients do not exist."

London County Council.—At last week's meeting of the Council, the Water Committee recommended that a Bill be promoted next Session for the purchase by the Council of the undertakings of the eight metropolitan water companies, and that it be referred to the Parliamentary Committee to prepare and present to the Council the necessary Bill for carrying out the above recommendation, and also the necessary Water (Finance) Bill. Mr. H P. Harris moved an amendment to give effect to the main principles of the report of the Royal Commission. Mr. Cohen, M.P., seconded the amendment, and said he recognised the defects of the trust proposed by the Commission. Sir Arthur Arnold said the proposed trust was so faulty that not a single county or authority concerned was satisfied. Liverpool had already solved the water problem upon the lines recommended by this Council. They were convinced that the only way out of the difficulty was purchase by the County Council. Mr. Shaw Lefevre said that nobody believed that the report of the Royal Commission could be carried out in its entirety; such a recommendation was impossible. In that case an alternative was necessary, and the Water Commission had suggested that alternative. He was prepared, after purchase, to agree to a compromise as to future management. On a division the amendment was defeated by 70 votes to 44. Mr. Campbell moved a further amendment to the effect that the Government be requested to bring in a Bill to carry out the recommendations of the Royal Commission, but this was lost on a show of hands, and on a division the adoption of the report was carried by 71 votes to 43. The Housing Committee reported that since March last dwellings costing £150,446 and accommodating 2,428 persons had been completed. Tenders received for the supply of arc lamps for the Victoria Embankment and Westminster Bridge were referred to the Highways Committee for report. Upon the recommendation of the Finance Committee, it was agreed to lend the Hampstead Guardians £2,005 for the erection and equipment of a boiler-house and the installation of electric light; and the Metropolitan Asylums Board £75,000 for the erection and fitting of an asylum at Tooting Bec.

Law Cases.

A Builder Fined for Laying Faulty Drains. At the Coalville Petty Sessions a builder named Hewes was recently summoned for unlawfully causing a drain from certain premises to empty itself into the sewer of the Coalville Urban District Council without complying with the provisions of section 21 of the Public Health Act, 1875. Defendant's laying was faulty—there was a clay joint, with a thin layer of cement over it. A fine of £5 and 12s. costs was imposed.

Building Plots for Nothing.—The curious case of an owner of building plots having to fight an action to keep his own property was heard last Wednesday in the Queen's Bench Division of the High Court of Justice. The land was at Mill Hill, and for twenty-one years had apparently been ownerless. A neighbouring resident, however, had grazed his donkey upon the plots, had mowed the grass upon them, and had finally parted with his "vested" rights to another neighbour, who in his turn sold them to a Mr. Alder. Then suddenly appears the original owner, Mr. Dudman, a grocer, of Hampstead, who informed the judge last week that he was not aware that he had ever parted with his rights in the land. The Court agreed that Mr. Dudman's claim had never been abandoned.

Knaresborough Building By-laws: Builder Fined.—On Wednesday last, at the Knaresborough Petty Sessions, the Bench gave their decisions in three cases in which John Brooks, builder, Harrogate, was charged with contravention of the building by-laws of the Knaresborough Rural District Council. These cases were heard at the last court, and the decision adjourned until the property had been viewed. For letting a house without having first obtained a certificate Brooks was fined £1 and costs. For not having sufficient air-space to certain property, formerly used as a lock-up shop, but now connected with a house, Brooks was also fined £1 and costs. The chairman said the defendant appeared to have acted in a sprit of defiance towards the Knaresborough Rural District Council throughout. With regard to the third case, in which defendant was charged with bringing forward part of a house beyond the adjoining building line, the Bench had come to the conclusion that a conviction could not be sustained, and the summons was dismissed.

Is Hoisting an Iron Girder "Engineering Work"?—On November 13th the case of *Cosgrove* v. *Partington* was heard in the Court of Appeal. It was an appeal from an award of the Judge of the County Court of Lancashire, holden at Oldham, in an arbitration under the Workmen's Compensation Act, 1897. The injured workman was at the time of the accident engaged with other workmen in putting a fifth storey on to a mill. The work included the hoisting of iron girders by means of a steam winch. The County Court Judge found that the workman was employed on an "engineering work" within the meaning of the Workmen's Compensation Act, and made an award in his favour. The employer appealed on the ground that the employment was not on an engineering work. The Court, without calling upon counsel for the workman, dismissed the appeal. The Master of the Rolls said that the point was whether the employment of the workman at the time of the accident was employment on "engineering work." Section 7 of the Workmen's Compensation Act said, by subsection 1, that the Act was to apply to employment on or in or about a railway, factory, mine, quarry, or engineering work. Then subsection 2 defined "engineering work" as meaning "any work of construction or alteration or repair of a railroad, harbour, dock, canal, or sewer," and including "any other work for the construction, alteration or repair of which machinery driven by steam, water, or other mechanical power is used." The workman here was engaged in putting on a new top storey to a mill, which was either construction or alteration, and the work involved the use of a steam winch. Why was not this within the Act? It was argued by Mr. Ruegg that the words "any other work" ought to be limited to work *ejusdem generis* with what would ordinarily be called engineering work. But in his Lordship's opinion those words were used for the purpose of enlarging the meaning of engineering work. He did not feel inclined to cut down the meaning of the section, and he thought that the appeal ought to be dismissed. Lords Justices Collins and Stirling concurred.

Workmen's Compensation: Another Scaffolding Case.—In the Court of Appeal on Wednesday last the case of *Ferguson* v. *Green* was heard. It was an appeal from a decision of the Judge of the County Court of Lancashire, holden at Oldham, in an arbitration under the Workmen's Compensation Act, 1897. The applicant for compensation was a working plasterer. The employers were master plasterers who had entered into a contract with a building owner to do the plasterers' work to some cottages. The cottages had been constructed by means of a substantial scaffolding on the outside, they had been completely roofed, and the scaffolding had been removed. At the time of the accident the applicant was engaged on the work of plastering the internal walls and ceilings of one of the cottages, and in order to reach the ceiling and the higher parts of the walls of the room in which he was working he had constructed a platform by means of two trestles across which he had placed some loose boards. He had set on the boards a table, on which he manipulated the plaster, and he stood on the boards to do his work. Finding that the table was unsteady he used a hammer for the purpose of mending it, and while he was doing so a nail flew into his eye and he suffered severe injury. The Court allowed the appeal. The Master of the Rolls said that in this case the arbitrator had found as a fact that the arrangement of trestles and boards on which the workman was standing when he met with the accident was not a scaffolding within the meaning of section 7, subsection 1, of the Workmen's Compensation Act, and he had on that ground given his decision in favour of the masters. The County Court Judge had reversed that, and had given his decision in favour of the workman. This Court had consistently refused to give any definition in law of the word "scaffolding" as used in this Act. They had said that that question was a question of fact, and all questions of fact that arose under this Act were to be decided by the arbitrator in each case, this Court only sitting to hear appeals on questions of law. They had said this in one of the earliest cases under the Act. Then came three cases—*Wood* v. *Walsh* (1899, 1 Q.B., 1,009); *Hoddinott* v. *Newton, Chambers, and Co.* (1899, 1 Q.B., 1,018); and *Maude* v. *Brook* (1900, 1 Q.B., 575) in each of which they refused to meddle with the finding of fact of the tribunal below as to whether that which was alleged to be a scaffolding was a scaffolding or not. In *Maude* v. *Brook* the facts were not distinguishable in substance from the facts of this case. An arrangement of trestles and boards was used for the purpose of plastering the walls and ceilings of a building, and the County Court judge found as a fact that that arrangement was a scaffolding. Lord Justice Rigby and he (the Master of the Rolls) held that there was evidence on which the County Court judge could find that it was a scaffolding, and they refused to interfere. Lord Justice Collins came to the conclusion that the trestles and boards afforded no evidence of a scaffolding within the meaning of the Act. In his opinion, the County Court judge could not properly overrule the arbitrator's finding on a question of fact if there was any evidence to support it. He therefore thought that the award of the arbitrator must stand, although the result was that there had been two different findings on exactly similar facts. Lord Justice Collins said he was of the same opinion. It was now clearly decided to be the law that an arrangement such as that used in this case might be a scaffolding. Any arbitrator who directed himself now on the hypothesis that it could not be a scaffolding would be misdirecting himself. The arbitrator in this case had come to the conclusion, as a matter of fact, that the arrangement was not a scaffolding. It was difficult to see how he could, on the decided cases, so find. But he was at large to consider whether it was a scaffolding or not. In his opinion the County Court judge had pressed the decision of this court in *Maude* v. *Brooke* too far. Lord Justice Stirling delivered judgment to the same effect.

Roads and Footways: An Interesting Irish Case.—At Dublin, in Queen's Bench No. 2, before Mr. Justice Boyd and Mr. Justice Kenny, the case of *Kingstown Urban District Council* v. *Beckett* was recently heard. This was an application on behalf of the plaintiffs for an order setting aside an award made by Mr. William Collen in respect of certain works at Kingstown, on the ground of excess of jurisdiction, and that it was based upon mistake, or that the award should be referred to the arbitrator for reconsideration. The Right Hon. T. MacDermot, Q.C., appeared in support of the motion, and said he moved on an affidavit of Mr. Joseph Berry, engineer and surveyor to the plaintiffs, in which it was stated that William Beckett, builder and contractor, Dublin, entered into a contract for the formation of roads and footways at Eden Park Road, Kingstown, for the sum of £2,954 3s. 10d. Under a clause in the contract the Board reserved power "to execute any part of the works themselves, or to omit any or to add others, or to make additions to or deductions from, or alterations in them," and the clause went on to state that an addition to or deduction from the contract sum should be made according to the rates set forth in the schedule of prices. Before Mr. Beckett commenced any of the works he (Mr. Berry) had, by direction of the Board, prepared a new plan, which was submitted to Mr. Beckett, showing the work which was to be done, and by this plan a portion of the work was excluded, representing the sum of £337 6s. 10d. That was practically the sum in dispute. The affidavit went on to state that the final certificate was made out for a total sum of £2,616 17s. Mr. Beckett, being dissatisfied with the measurements, called in Mr. Patterson on his own behalf, and this gentleman said that £42 18s. 10d. should have been allowed in addition to the £2,616 17s. The deponent could not agree to this, but consented to increase the final certificate by £21 15s. 6d. The dispute eventually went to arbitration, and the award made was that the pathways were not constructed in accordance with the contract and specification. The arbitrator said: "A sum of £200 would, in my opinion, be required to put these roads into the condition in which they should have been handed over by the contractor. The causes of the present condition of the roads are the bad workmanship shown in their construction, and the deficient quantity and the inferior quality of the materials used." He then went into particulars as to defects in the work, and held that the contractor was liable for them. He then determined that the Council were to put the roads into proper condition, to maintain them to September 1st, 1900, and upon that date to pay to the contractor the sum of £2,954 3s. 10d., less the amounts already paid him, the costs of the arbitration, and the amount of £250 certified by the engineer to have been expended in putting the roads into proper condition and maintaining them to that date. Counsel said that the mistake the arbitrator fell into was that in place of making the deductions from the sum of the final certificate he made it from the original contract sum of £2,954. Mr. R. R. Cherry, Q.C., opposed the application, and said that the whole controversy was whether Mr. Beckett was to be paid by measurement or by the contract sum. Counsel submitted that he was to be paid in the last-named manner. Mr. Justice Kenny: "Did not the new plans involve the abandonment of work to the extent of £337?" Mr. Cherry: "They were somewhat less in amount, and were more favourable to Mr. Beckett than the original plans." Mr. Justice Boyd: "Was there any such statement as this:—'I have made certain deductions under clause 8 of the contract; having made these deductions, these are the plans showing the deductions and the amount of the con-

tract?'" Mr. Cherry said that, on the contrary, Mr. Berry admitted that he never made any omissions at all. That was the case Mr. Beckett made all through, and the arbitrator found in his favour. The contention of the Township Commissioners was not that omitted works should be measured at all, but that the man should be paid by measurement of the whole works. Mr. Beckett's case was that he claimed the bulk sum under the contract. If they refused to pay him that bulk sum, and said he was to be paid on the amended plans according to the measurement, then he said he was entitled to 15 per cent. on omitted works. They drew the sword and went to arbitration, and the arbitrator had found in favour of Mr. Beckett. Now the Commissioners wanted to set aside the award in so far as it was against them, and to preserve it where it was in their favour. Counsel submitted that in no view of the case could the plaintiffs succeed. The Court refused the application, with costs.

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.

AT the annual gathering of the Leeds and Yorkshire Architectural Society, held on November 12th at the Queen's Hotel, Leeds, Mr. W. Carby Hall, F.R.I.B.A., the President, remarked that, unlike the immediate past, the building trade had not tasted the apple of discord of late. He noticed, however, that there was a probability of a lock-out of bricklayers in the North, and the masons of Leeds and district were asking for a halfpenny per hour advance, so that they might earn the same wage as the bricklayers. The Society of Architects had, he proceeded, given their support to the principle, if not to the wording, of a Bill having for its object the compulsory registration of architects. The outlines of the Bill recently before Parliament were, in his opinion, very reasonable, and appeared to be framed in such a way that the profession as a whole would greatly benefit. At the same time, he felt there were objections to registration. One of these would be the compulsory registration of those men who had done, and were doing, so much mischief to the architectural profession, notably the speculative builders, clerks of works, furniture dealers, and a host of other tradesmen, who considered architecture to be on a par with insurance canvassing, and who entered the field and dubbed themselves architects, so that they might add another branch to their already (in many instances) multifarious callings. But would not this evil, he asked, go on increasing unless put a stop to, and would it not be much better to recognise this and stop it at the earliest moment? England was practically the only European country in which architecture was not a registered profession requiring a diploma before any man could commence practice, and if registration was made compulsory here the public generally would, he thought, obtain an advantage from the improved constructive and sanitary portions of the architect's work, especially in buildings designed for the artisan class.

Continuing, the President expressed pleasure that the Royal Institute had actively taken up the question of the reform of the law relating to ancient lights, and said all would admit the injustice and injurious operation of Lord Tenterden's Prescription Act of 1832. He hoped that some comprehensive system of legislation would be passed by which an architect, when he had a building to erect on a site where ancient lights surrounded him, might know at once what he could do, instead of being put to all the annoyance and cost of a visit to London to repel the issue of an injunction, besides suffering delay in the erection of the buildings and also many other evils.

The President announced that there had been practically no competition for the prizes offered by the Society. There was no competition for the silver medal offered for measured drawings of old work, nor for the design or construction prizes. Mr H. E Henderson was presented with four guineas for an essay on "Ancient Ecclesiastical Architecture in the Neighbourhood of Leeds," half of this amount being given by the President in recognition of the creditable character of his work. Mr. S. R. Day carried off the sketching prize. Subsequently a smoking concert was held.

Keystones.

A Mortuary for Ramsey is proposed to be erected by the Ramsey Commissioners.

Dulwich House, Penhill, Canton, Cardiff, has been transformed into a convalescent home for women and children.

Mr. W. L. Griffiths, architect and surveyor, of 29 High Street, Newport, Mon., has opened a London office at Oswaldestre House, Norfolk Street, Strand.

The Additions to the Fever Hospital, Sunderland, are being warmed and ventilated by means of Shorland's patent Manchester stoves, with descending smoke flues and patent Manchester grates, supplied by Messrs. E. H. Shorland and Brother, of Manchester.

Cheshire Lunatic Asylum.—The Cheshire County Council propose to greatly enlarge the County Asylum at Parkside, Macclesfield. It is proposed to build an infirmary annexe for 206 additional patients, also a department for 50 epileptic patients and a nurses' home. The plans have been approved by the Lunacy Commissioners. The estimated cost of the buildings and equipment is £75,000.

T-Square Club.—This Club has been formed for architects, artists, engineers and surveyors, and for students in these professions. The object is to promote friendly intercourse between the members by giving a series of smoking concerts, which will be held in the foyer of Covent Garden Theatre. The opening concert will be held this day (November 21st), when the chair will be taken by Mr. William Emerson, president of the Royal Institute of British Architects. More than 135 members have already joined the Club. Full particulars may be obtained from the hon. secretary, Mr. T. Wilson Aldwinckle, "Saratoga," Dacres Road, Forest Hill, S.E.

The Chelsea Pensioners' Memorial.—A monument is shortly to be placed in Brompton Cemetery to the memory of the 2 000 Chelsea pensioners who are buried there. The base of the monument will cover a space of about 10 or 12 square feet; its height is 25ft. The work is being carried out by Messrs. John Whitehead and Sons, of Rochester Row, Westminster, and Paris, Aberdeen, and Carrara. Messrs. Whitehead also supplied the design. The lower portion of the monument is composed of grey Aberdeen granite, and the upper part of red Peterhead granite. The ornamentations on the sides of the monument are to be made of gun metal, which is being supplied by the War Office. At the top of the monument is a trophy of seven flags. The cost of the monument, which will amount to between £300 and £400, is being defrayed by the Office of Works and the War Office.

Building Trades' Gift to the Nation.—The Chairman of the Building Trades' Gift to the Nation announces the receipt of a number of valuable contributions in money, collected primarily in the provinces. Among these contributions are:—£500 from the Birmingham Master Builders' Association; £200 from the building trades of Walsall; £65 from the Manchester Master Builders' Association; £20 from Mr. Warburton, of Manchester; £47 from the Nottingham Master Builders' Association; £9 from the Longridge Master Builders' Association, as well as many smaller contributions. Of recent London contributions, Messrs. Holloway Brothers have given fifty guineas, whilst their workmen have collected twenty-five guineas, and Messrs. Perry & Co's workmen have sent thirty-three guineas. All the above contributions, it will be observed, are again the result of a close co-operation between the masters, manufacturers and men of the trades concerned.

A New Board School in Paddington has been opened in Essendine Road.

The Waenfawr Board Schools, Risca, Newport, Mon., are to be altered and enlarged at a cost of £2,140. Mr. J. Pritchard is the contractor.

Two New Chapels at Clay Cross are to be built by the Latter-day Saints and the Primitive Methodist Gospel Mission, in Thanet Street and Revell Street respectively.

An Accident Hospital for Barry.—The Hospital Committee of the Barry District Council have accepted the design of Mr. W. E. Knapman, architect, of Barry, for an accident or surgical hospital for the town, to be erected on a site already secured at the Buttrills, about a mile from the docks.

Houses Coming Down in Fleet Street, E.C.—The houses from 23 to 28 are about to be demolished for rebuilding purposes. The site is of certain historical interest. Before the Great Fire the famous "Hercules Pillars" tavern stood on the spot, which was greatly frequented by Samuel Pepys, and is often mentioned in his "Diary."

An Arts and Crafts Exhibition of works by students of the Camberwell School of Arts and Crafts, Peckham Road, S.E., supplemented by specimens from the London County Council Central School of Arts and Crafts, is now open from 2 p.m. to 10 p.m., until the 26th inst., at the Technical Museum of the South London Art Gallery, Peckham Road, S.E. Admission is free.

Discoveries in the Sea.—Divers who have been at work in the sea between Cape Matapan and the Island of Cerigo, the ancient Kythera, Greece, report that they have seen statues and other archæological objects. They have brought to the surface a hand which must have belonged to a great bronze statue. The Government has undertaken the supervision of the further researches which will be made.

Proposed Addition to Rathdown Union Workhouse.—A Local Government Board enquiry was held recently at Loughlinstown, into an application from the Rathdown Board of Guardians for a loan of £4,500 for the erection of a Roman Catholic Church and Nuns' Residence within the Workhouse grounds. The application was opposed on behalf of a number of ratepayers in the Union.

The Fishery House, Maidenhead.—This well-known house, with its charming grounds and well-kept lawns sloping to the river, affords a view of scenery of remarkable beauty. About thirteen acres of the ornamental grounds are to be laid out as a building estate with about 800ft. of river frontage Restrictions will be imposed calculated to ensure a superior class of residence, and to maintain a lawn to the river for the owners of plots not directly on the river front. Several villas and bungalows are to be erected on the estate, and the architects, Messrs. Palgrave and Co., 28 Victoria Street, S.W., have instructions to complete them by next summer if possible.

New Buildings in Newcastle.—The Town Improvement Committee of Newcastle Corporation have passed plans for a block of model lodging-houses to be built upon land now occupied by Mountain's Wireworks, situated in Watson Terrace and Stepney Road. The building will accommodate 303 persons. The design show a neat elevation on both sides, three floors high. The position is an admirable one for such an institution. On the ground floor there will be the manager's offices, recreation rooms, reading rooms, stores, large kitchens, &c. On the first and second floors there will be 150 cubicles, which, though open at the top, are, from the high partitions, practically self-contained rooms. The open tops will give plenty of ventilation. Plans were also approved on behalf of the Caledonian Insurance Company for a four-storey building to be erected on a site adjoining the Friends' Meeting House in Pilgrim Street. The building will include warehouses reaching as far back as the Manors. Also plans for a block of warehouses to be built on the site of the Temperance Hotel, Charlotte Square, were passed.

COMPLETE LIST OF CONTRACTS OPEN.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
	BUILDING.		
Nov. 23	Great Yarmouth—Alterations	J. W. Argyle	Charles G. Baker, Architect, Town Hall Chambers, Great Yarmouth.
" 23	London, E.—Alterations	St. George-in-the-East Guardians	G. A. Wilson, Vestry Hall, Cable Street, E.
" 23	New Malden, Surrey—House		T. & J. Davison, Bartley Lodge, New Malden.
" 23	Spilsby—Bridge	Rural District Council	T. A. Busbridge, District Highway Surveyor, Spilsby.
" 26	Bromsgrove—Hospital	Hospital Committee	H. R. Lloyd, 33 Newhall Street, Birmingham.
" 26	Croydon—Engine House	County Council	Borough Engineer, Town Hall, Croydon.
" 26	Leigh, Lancs.—Additions		Banks, Fairclough and Stephen, Church Street, Leigh.
" 26	Llansamlet, Wales—Houses	E. Evans Bevan	J. Cook Rees, Architect, Neath.
" 26	Maidenhead—Club Buildings	Working Men's Conservative Club	Davy and Salter, High Street, Maidenhead.
" 26	Donaghadee—Houses		W. J. Fennell, Architect, Scottish Provident Buildings, Belfast.
" 26	Newmarket—Engine House	Urban District Council	Beesley and Co., 11 Victoria Street, London, S.W.
" 26	Rochford, Essex—Repairs	Urban District Council	F. Gregson, Clerk, Southend-on-Sea.
" 27	Leeds—Buildings	Lighting Committee	H. Dickinson, 1 Whitehall Road, Leeds.
" 27	Mansfield, Notts—Stables	Co-operative Industrial Society	Vallance and Westwick, Architects, Mansfield.
" 27	Dovercourt—Villa	H. Gurney	J. W. Start, Architect and Surveyor, Colchester.
" 27	Kingston-upon-Hull—School	School Board	B. S. Jacobs, Lincoln's Inn Buildings, Bowlalley Lane, Hull.
" 28	Sheerness—Laundry	Guardians of Sheppey Union	W. L. Grant, Architect, Sittingbourne.
" 28	Easington—Board Room, Offices, &c.	Union	Farthing & Dunn, 21 Pilgrim Street, Newcastle-on-Tyne.
" 28	Halifax—Roof Trusses	Gasworks Committee	T. Holgate, Engineer, Gasworks, Halifax.
" 29	Watford—Technical School	Urban District Council	W. H. Syme, 4 High Street, Watford.
" 30	Ponteland—Cottage Homes	Newcastle-on-Tyne Guardians	Oliver, Leeson & Wood, Mosley Street, Newcastle-on-Tyne.
" 30	Port of Recife—Works	Federal Government	Commercial Department, Foreign Office, S.W.
" 30	Salford—Car Depot and Workshops	Tramways Committee	Engineer, Town Hall, Salford.
" 30	North Shields—Roof	Tynemouth Gas Company	Engineer, Gasworks, North Shields.
" 30	Owston, Doncaster—Schools	School Board	J. Simmons, Bank Chambers, Doncaster.
Dec. 1	Devizes, Wilts—Dwellings		Messrs. Anstie, Market Place, Devizes.
" 3	Basford, Notts.—Additions	Union	W. V. Betts, Radford Road, Old Basford.
" 4	Birkenhead—Stations	London and North-Western and Great-Western Railway Companies	Joint Engineer, Woodside Station, Birkenhead.
" 4	Walthamstow—Schools	School Board	G. E. T. Lawrence, 22 Buckingham Street, London, W.C.
" 4	London, W.—Board Room and Offices	Paddington Guardians	F. J. Smith, Parliament Mansions, Victoria Street, S.W.
" 5	Oldham—Car Depot	Tramways Committee	S. A. Pickering, Town Hall, Oldham.
" 6	Southend-on-Sea—Technical Schools	Corporation	Town Clerk, Southend-on-Sea.
" 10	Basford, Notts.—Entrance Lodge	Rural District Council	W. V. Betts, Radford Road, Old Basford.
" 10	Romford—School	School Board	W. Smith, 24 North Street, Romford.
" 11	Southampton—Custom House	H.M. Office of Works	Collector of Customs, Custom House, Southampton.
	ENGINEERING.		
Nov. 23	Belfast—Plant	Gas and Electric Committee	V. A. H. McCowen, City Electrical Engineer, Belfast.
" 23	Eastbourne—Destructor	Highways and Drainage Committee	R. M. Gloyne, Town Hall, Eastbourne.
" 23	London, E.—Heating	St. George-in-the-East Guardians	G. A. Wilson, Vestry Hall, Cable Street, E.
" 24	Much Wenlock, Shropshire—Waterworks	Water Committee	T. S. Stooke, Severn Villa, Shrewsbury.
" 24	Stockport—Overhead Equipment	Tramways Committee	J. H. Carter, Electrical Engineer, Stockport.
" 24	Stockport—Tramways	Tramways Committee	J. Atkinson, Central Buildings, Stockport.
" 24	Kettering—Steam Roller	Urban District Council	Engineer, Market Place, Kettering.
" 26	Aberdeen—Steel Coal Breaker	Town Council	Engineer, Cotton Street, Aberdeen.
" 26	Edinburgh—Boilers	Town Council	R. Morham, Public Works Office, Edinburgh.
" 27	Dublin—Drainage Works	Corporation	G. Chatterton, 6 The Sanctuary, Westminster, S.W.
" 28	Cardiff—Electrical Equipment	Corporation	A. Ellis, Old Post Office Buildings, Cardiff.
" 28	Linslade, Bucks—Borehole	Urban District Council	Sands and Walker, Angel Row, Nottingham.
" 28	London, E.C.—Workshop Machines	East India Railway Company	East India Railway Company, Nicholas Lane, E.C.
" 30	Burley-in-Wharfedale—Heating	Managers of the Township Day School	C. Bailey, Peel Place, Burley-in-Wharfedale.
" 30	Trieste—Harbour Works	Austro-Hungarian Marine Board	Commercial Department, Foreign Office, S.W.
Dec. 6	Brighton—Tramways Materials	Town Council	T. B. Holliday, Town Hall, Brighton.
" 10	Preston—Bridge	Lancs. County Council	County Bridgemaster, Preston.
" 13	Withington, Lancs.—Boilers	Urban District Council	A. H. Mountain, Town Hall, Withington, near Manchester.
" 13	Brighton—Tramroads	Town Council	F. J. C. May, Town Hall, Brighton.
Jan. 2	Christiania—Transmission of Electric Power	Stavanger Corporation	E. Berentsen, British Vice Consul, Stavanger.
April 10	Rosario—Harbour Works	Argentine Government	Commercial Department, Foreign Office, S.W.
	IRON AND STEEL.		
Nov. 24	Stockport—Rails	Tramways Committee	J. Atkinson, Central Buildings, Stockport.
" 26	Ilford—Lamp Columns	Urban District Council	H. Shaw, Council Offices, 7 Cranbrook Road, Ilford.
" 27	Leamington—Railing	Corporation	W. de Normanville, Town Hall, Leamington Spa.
" 27	Walthamstow—Fencing	School Board	Clerk, Board Office, High Street, Walthamstow.
Dec. 5	Wolverhampton—Iron and Steel	Tramways Committee	J. W. Bradley, Town Hall, Wolverhampton.
" 5	Oldham—Iron and Steel Work	Tramways Committee	S. A. Pickering, Town Hall, Oldham.
" 10	London, S.W.—Rails		Agent-General for Victoria, 15 Victoria Street, S.W.
" 17	Wimbledom—Sewer Ventilating	Urban District Council	C. H. Cooper, Engineer and Surveyor, Wimbledon.
	PAINTING AND PLUMBING.		
Nov. 23	London, E.—Painting	St. George in the East Guardians	G. A. Wilson, Vestry Hall, Cable Street, E.
" 23	Ugborough, Devon—Lead Water Pipe	Totnes Rural District Council	C. Ellis, Buckfastleigh.
" 24	Bootle, Lancs.—Cleaning and Painting	Corporation	Borough Engineer, Trinity Road, Bootle.
" 26	Plymouth—Painting		J. Paton, Borough Engineer and Surveyor, Plymouth.
	ROADS AND CARTAGE.		
Nov. 23	Romford—Granite	Urban District Council	Surveyor, Council Offices, Romford.
" 26	Croydon—Granite	Guardians	H. List, Union Offices, Mayday Road, Thornton Heath.
" 26	Halifax—Street Works	Improvement Committee	J. Lord, Town Hall, Halifax.
" 23	Hastings—Tar Paving	School Board	A. Wells, Queen's Chambers, Hastings.
" 26	Windsor—Kerbing	Rural District Council	Mr. Menzies, Englefield Green, Surrey.
" 27	Winton, Bournemouth—Road	Land Society, Limited	W. S. Evans, 52 Old Christchurch Road, Bournemouth.
" 29	New Brompton, Kent—Roadmaking	Gillingham Urban District Council	Clerk, Council Offices, Gardiner Street, New Brompton.
	SANITARY.		
Nov. 24	Mansfield Woodhouse, Notts—Removal of Nightsoil	Urban District Council	W. F. Warner, Clerk, Mansfield Woodhouse, Notts.
" 24	Tottington, Lancashire—Sewers	Urban District Council	L. Kenyon, 33 Chapel Street, Tottington.
" 27	Dublin—Drainage Works	Corporation	G. Chatterton, 6 Sanctuary, Westminster, S.W.
" 27	Audenshaw, Lancs.—Removal of Nightsoil	Urban District Council	Clerk, Council Offices, 2 Guide Lane, Audenshaw.
" 30	Brighton—Extending Sewer	Town Council	F. J. C. May, Town Hall, Brighton.
Dec. 1	Dunstable—Sewerage Works	Corporation	W. H. Radford, Albion Chambers, King Street, Nottingham.
" 3	Hale, Cheshire—Scavenging	Urban District Council	J. G. Whyatt, Clerk, Albert Road, Hull.
" 6	Walton-on-the-Naze, Essex—Sewerage Works	Urban District Council	Beesley, Son, and Nichols, 11 Victoria Street, Westminster, S.W.
" 11	Dorking—Drainage Works, &c.	Rural District Council	W. Rapley, junr. Clovelly, Tower Hill, Dorking.
" 13	Withington, Lancs.—Sewage Outfall Works	Urban District Council	Clerk, Town Hall, Withington, Lancs.

COMPETITIONS OPEN.

DATE OF DELIVERY.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	BY WHOM ADVERTISED.
Dec. 1	Bridlington—Parade Extension	£36 5s., £15 15s.	A. E. Matthewman, Town Hall, Bridlington
" 6	Fleetwood, Lancs—Public Shelter	£15 15s.	E. Frobisher, Town Hall, Fleetwood, Lancs.
" 14	Swansea—Harbour Offices	£100, £50	T. Strick, Harbour Offices, Swansea.
" 31	Malling, Kent—Steam and Hot Water Scheme	£25	J. F. Allison, West Malling, Kent.
" 31	South Shields—Municipal Buildings	£200, £100, £50	J. M. Hayton, Town Clerk, Court Buildings, South Shields.
March 25	Basford—Sewerage Scheme		C. J. Spencer, Clerk, Public Offices, Basford.

Surveying and Sanitary Notes.

Institute of Sanitary Engineers.—At a meeting of the Election Committee held on the 14th inst. the following were elected:—As Members: Messrs. T. R. Atkinson (Penrith), F. B. Howarth (Sedgeley, near Dudley), and H. E. Milton (Gravesend). As Associates: Messrs. H. J. Hammick (Stonehouse, Plymouth), H. P. James (Chesham), J. Jenkins (Harlow), and E. Vittorio (Surbiton).

Sanitary Inspectors' Examination Board.—The next examination for certificates of qualification for appointment of sanitary inspector or inspector of nuisances, under the Public Health (London) Act, 1891, will be held in London on January 15, and the four following days. Particulars will be forwarded on application to the hon. secretary, W. R. E. Coles, 1 Adelaide Buildings, London Bridge.

The Widening of Piccadilly.—Mr. W. Willett, a member of the Metropolitan Public Gardens Association, suggests that when the County Council widen Piccadilly the railings of the park should be set back 20ft., so as to provide a strip of green turf 20ft. wide outside the railings. The effect of a broad band of grass raised 12in. above the footpath, and protected by a stone kerb, would, he thinks, be very restful to every one passing through Piccadilly, and if the railings could be covered with ivy or hidden by means of a privet hedge the effect would be enhanced.

Drainage By-laws for London.—At the meeting of the Council of the Sanitary Assurance Association, held last week, Mr. Andrew Stirling in the chair, the new drainage by-laws, as drafted by the London County Council, were under consideration, and on the motion of Mr. W. S. Halsey, seconded by Dr. E. H. Willoughby, the following resolution was passed: "That, in the opinion of the Council of the Sanitary Assurance Association, the drainage by-laws proposed by the London County Council ought to be submitted to the New Metropolitan Borough Councils before they receive the force of law, and that the President of the Local Government Board be requested to submit the proposed by-laws to the said councils before deciding as to their confirmation."

New Companies.

Dublin United Coal Factors' Company, Ltd.

This company was registered in Ireland on October 20th with a capital of £1,000 in £1 shares, for the purpose of buying, selling, and dealing in coal, sand, lime, bricks, timber, &c. The first directors are T. J. Farrelly, Christopher Keenan, James McDowell, John Byrne, John Woods, Thomas Cooke, and Patrick Maher. Registered office: 47 York Street, Dublin.

Gilwen Colliery Company, Limited.

This company was registered on November 5th with a capital of £10,000 in £10 shares to carry on the business of colliery proprietors, coal, iron, and brick merchants, &c. The first directors (to number not less than three nor more than five) are to be appointed by the subscribers.

Halifax Waterproof-Paper Manufacturing Company, Limited.

This company was registered on October 30th with a capital of £5,000 in £1 shares to carry on the business of paper, waterproof-paper, and grease-proof paper manufacturers and merchants, designers, painters, dyers, bleachers, oil and grease merchants, paint, varnish, dye, and chemical manufacturers, &c.

Northern Investment Company, Limited.

This company was registered on October 29th with a capital of £10,000 in £1 shares to acquire landed and other property, and to carry on the business of builders, contractors for public and other works, financiers, insurers, merchants, &c. The first directors (to number not less than three nor more than 12) are to be appointed by the subscribers. Registered office: 48 Cross Lane, Earlstown, Lancashire.

Parsons, Sherwin and Co., Limited.

This company was registered on November 3rd with a capital of £35,000 in £5 shares to acquire the business carried on at Nuneaton, Hinckley, Coventry, and elsewhere, as Charles Parsons, and to carry on the business of builders' furnishing and general ironmongers, builders, contractors, decorators, hardware dealers, metal trade valuers, auctioneers, &c. The first directors (to number not less than two nor more than seven) are J. F. Johnson and E. F. Melby (managing directors). Registered office: New Bridge Street, Nuneaton.

Ambrose Shardlow and Co., Limited.

This company was registered on November 2nd with a capital of £20,000 in £1 shares to acquire the business carried on by the trustees of the will of the late Ambrose Shardlow at Ealing Works, Washford, Attercliffe, Sheffield, and to carry on the business of ironfounders, hot water, electric, and general engineers, steel and iron masters, &c. The first directors (to number not less than three nor more than five) are Mrs. C. Shardlow, C. Moore, J. Lees, and A. T. Shardlow.

C. Whittaker & Co., Limited.

This company was registered on October 23rd with a capital of £120,000 in £10 shares to adopt and carry into effect an agreement for the acquisition of the business of ironfounders, &c., as carried on under the style or firm of C. Whittaker and Co., Limited (incorporated in 1897), at the Dowry Street Ironworks, Accrington, Lancashire, and also for the acquisition of a similar business carried on by Furneval and Co., Limited, at the Union Foundry, Haslingden, Lancashire, as mechanical, general, and electrical engineers, brass and iron founders, machine tool makers, smiths, ironmongers, furnishers; as millwrights, iron and steel converters, woodworkers, builders, contractors, painters, decorators, metallurgists, water-supply engineers, art metal workers, upholsterers general house furnishers. The first directors (of whom there shall be not less than three) are T. Whittaker, C. J. Whittaker, T. Whittaker, jun., and L. Whittaker. Registered office: Dowry Street Ironworks, Accrington, Lancashire.

London Wood Mantel and Art Joinery Company, Limited.

This company was registered on November 2nd with a capital of £5,000 in £1 shares to adopt an agreement with S. Callow and J. W. Wright, and to carry on the business of wood mantelpiece, and overmantel manufacturers, joiners, cabinet makers, upholsterers, decorators, &c. The first directors (to number not less than three nor more than five) are J. E. Brown, W. B. Clarke, N. J. Codner, C. Williams, and J. W. Wright. Registered office: Saracen's Head Buildings, Snow Hill, E.C.

Nevin Bay Granite Quarry, Limited

This company was registered on November 5th with a capital of £25,000 in £1 shares to adopt an agreement with F. Hall, and to carry on the business of quarry, mine, and colliery owners, stone, metal, clay, coal, and mineral merchants, smelters, engineers, &c. The first directors (to number not less than four nor more than nine) are H. Seddon (chairman), T. N. Leighton, T. S. Bowers, A. E. Hall, T. B. Edwards, and E. N. Dunderdale. Registered office: 7 St. James Square, Manchester.

The Birmingham Master Builders' Association held its annual meeting and dinner last week, Mr. F. G. Whittall (president) in the chair. The committee, in presenting their annual report, regretted to have to record a falling off in the volume of trade, owing, without doubt, to the high prices of material and labour now ruling. The first duty that devolved on the committee during the year was to deal with the notices from the plasterers and the masons for an advance of ½d. per hour, bringing the stonemasons' rate of wages to 10d. and 10¾d., and the plasterers' to 10d. per hour, who were given the asked for. Owing to the rapid advance in the prices of all material, it has been necessary to revise the schedule of day-work prices. The balance sheet showed a sum of £187. The president (Mr. Whittall), the vice-president (Mr. Albert S. Smith), the treasurer (Mr. G. Twigg), the auditors (Mr. T. Johnson and Mr. J. S. Surman), and the secretary (Mr. Ernest J. Bigwood), were re elected, and the committee, with one alteration, was re-elected.

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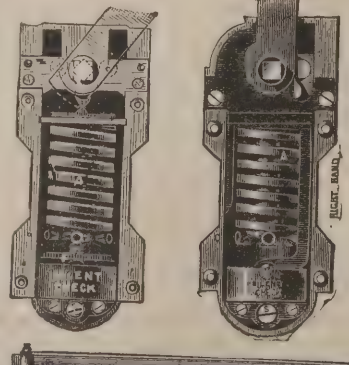
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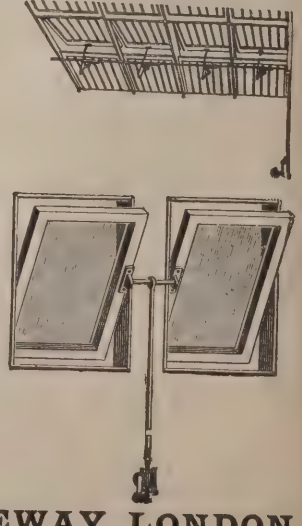
FAN OPENERS.

GEARING.

BOLTS.

CASEMENTS.

&c.



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COMING EVENTS.

Wednesday, November 21.

BRITISH ARCHÆOLOGICAL ASSOCIATION.—The Rev. H. J. D. Astley, M.A., on "The Congress at Leicester." Mr. W. A. Donnelly on "The Mound Dwellings of Auchirgaich, Dumbartonshire," 8 p.m.

RUSKIN SOCIETY OF BIRMINGHAM.—Mr. J. L. Paton, M.A., on "The Stoicism of Wordsworth," 8 p.m.

SOCIETY OF ARTS.—Opening Address by Sir John Evans, K.C.B., F.R.S., Chairman of Council, 8 p.m.

NORTHERN ARCHITECTURAL ASSOCIATION. — Students' Evening.

GEOLOGICAL SOCIETY OF LONDON.—Meeting at 8 p.m.

EDINBURGH ARCHITECTURAL SOCIETY. — Mr. C. B. Cownie on "Notes on Quantity Surveying."

BUILDERS' FOREMEN AND CLERKS OF WORKS INSTITUTION.—Ordinary meeting at 8 p.m.

Thursday, November 22.

INSTITUTION OF ELECTRICAL ENGINEERS.—Mr. John Gavey on "Telegraphs and Telephones at the Paris Exhibition, 1900," 3 p.m.

SOCIETY OF ARCHITECTS.—Presidential Address by Mr. T. Walter Emden, 8 p.m.

SANITARY INSTITUTE.—Lectures and Demonstrations for Sanitary Officers: Part II. Mr. James King, M.R.C.V.S., on "Diseased Meat, with a Demonstration of Morbid Specimens collected from Meat Markets," 8 p.m.

Friday, November 23.

ARCHITECTURAL ASSOCIATION.—Mr. A. T. Walmisley on "The Use of Rolled Joists in Construction," 8 p.m.

BIRMINGHAM ARCHITECTURAL ASSOCIATION.—Mr. Thomas Mawson on "Small Gardens," 6.45 p.m.

SANITARY INSTITUTE.—Lectures and Demonstrations for Sanitary Officers: Part II. Mr. E. Petronell Manby, B.A., M.D., D.P.H., on "The Appearance and Character of Fresh Meat, Organs, Fat, Blood, Fish, Poultry, Milk, Fruit, Vegetables, and other Food, and the Conditions Rendering them, or Preparations of them, Fit or Unfit for Human Consumption. Preserving and Storing Meat and other Foods," 8 p.m.

GLASGOW AND WEST OF SCOTLAND TECHNICAL COLLEGE ARCHITECTURAL CRAFTSMEN'S SOCIETY. — Mr. William U. Muir on "Duties of a Clerk of Works," 8 p.m.

ARCHITECTURAL ASSOCIATION OF IRELAND.—Technical Demonstration at the Works of Messrs. H. and J. Martin, Limited, Grand Canal Street, Dublin: Mr. James Martin on "Foundations, Damp Courses, Bricks, Sand, Mortar, Cements, and Asphalt," 2 p.m.

Saturday, November 24.

NORTH OF ENGLAND INSTITUTE OF MINING AND MECHANICAL ENGINEERS.—Council meeting at 1.30 p.m.

Monday, November 26.

SOCIETY OF ARTS (CANTOR LECTURE).—Professor John A. Fleming, M.A., D.Sc., on "Electric Oscillations and Electric Waves."—I., 8 p.m.

SANITARY INSTITUTE.—Lectures and Demonstrations for Sanitary Officers: Part II. Mr. E. Petronell Manby, B.A., M.D., D.Ph., on "The Hygiene of Byres, Lairs, Cowsheds, and Slaughterhouses, and of Markets, Dairies, &c.," 8 p.m.

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.—Mr. A. T. Bolton, A.R.I.B.A., on "The Dome as the Basis of an Architectural System," 6.30 p.m.

PHILOSOPHICAL SOCIETY OF GLASGOW: ARCHITECTURAL SECTION.—Mr. James Lochhead, A.R.I.B.A., on "Flanders—Commerce and Architecture," 8 p.m.

SURVEYORS' INSTITUTION.—Ordinary general meeting at 8 p.m.

GLASGOW INSTITUTE OF ARCHITECTS. — Council-meeting at 2 p.m.

Tuesday, November 27.

SANITARY INSTITUTE.—Lectures and Demonstrations for Sanitary Officers: Part II. Inspection and demonstration at the Metropolitan Cattle Market, York Road, N., conducted by Mr. James King, M.R., C.V.S.

ROYAL SOCIETY OF ANTIQUARIES OF IRELAND.—Evening meeting at Dublin.

Wednesday, November 28.

NORTHERN ARCHITECTURAL ASSOCIATION. — Mr. Frank Baker, C.E., F.G.S., on "The Armour and Costume of Mediæval Times," at 7.30 p.m.

SANITARY INSTITUTE.—Lectures and Demonstrations for Sanitary Officers: Part II. Mr. E. Petronell Manby, B.A., M.D., D.P.H., on "The Laws, By laws, and Regulations affecting the Inspection and Sale of Meat and Other Articles of Food, including their Preparation and Adulteration," 8 p.m.

CURRENT PRICES.

		£	s.	d.	£	s.	d.
FORAGE.							
Hay, best	per load	4	0	0	4	7	6
Sainfoin mixture	do.	3	10	0	4	10	0
Clover, best	do.	4	5	0	5	0	0
Beans	per qr.	1	9	6		—	
Straw	per load	1	8	0	1	18	0
OILS AND PAINTS.							
Castor Oil, French	per cwt.	1	10	0	1	11	6
Colza Oil, English	do.	1	11	6		—	
Copperas	per ton	2	0	0		—	
Lard Oil	per cwt.	1	19	0		—	
Lead, white, ground, carbonate	do.	1	4	10		—	
Do. red	do.	1	0	4½		—	
Linseed Oil, barrels	do.	1	11	3		—	
Petroleum, American	per gal.	0	0	5¾	0	0	6
Do. Russian	do.	0	0	5¾		—	
Pitch	per barrel	0	8	6		—	
Shellac, orange	per cwt.	3	0	0	0	0	5½
Soda crystals	per ton	3	2	6	3	5	0
Tallow, Home Melt	per cwt.	1	5	0	1	5	6
Tar, Stockholm	per barrel	1	8	6		—	
Turpentine	per cwt.	1	11	6		—	
METALS.							
Copper, sheet, strong	per ton	86	0	0		—	
Iron, Staffs., bar	do.	8	0	0	10	10	0
Do Galvanised Corrugated sheet	do.	12	10	0		—	
Lead, pig, Spanish	do.	17	2	6	17	5	0
Do. do. English common brands	do.	17	10	0		—	
Do. sheet, English, 3lb. per sq. ft. and upwards	do.	21	0	0	22	0	0
Do. pipe	do.	23	0	0		—	
Nails, cut clasp, 3in. to 6in.	do.	12	0	0	13	0	0
Do. floor brads	do.	11	15	0	12	15	0
Steel, Staffs., Girders and Angles	do.	8	0	0	8	5	0
Do. Mild Bars	do.	8	5	0	8	15	0
Tin, Foreign	do.	128	5	0	128	5	0
Do. English ingots	do.	132	0	0	133	0	0
Zinc, sheets, Silesian	do.	22	10	0		—	
Do. do. Vieille Montaigne	do.	23	2	6		—	
Do. Spelter	do.	19	5	0		—	
TIMBER.							
HARD WOODS							
Ash, Quebec	per load	3	17	6	4	10	0
Birch, Quebec	do.	3	12	6	3	17	6
Box, Turkey	per ton	7	0	0	15	0	0
Cedar, 1in., Cuba	per ft. sup.	0	0	3	0	0	3½
Do. Honduras	do.	0	0	3¾		—	
Do. Tobasco	do.	0	0	3½		—	
Elm, Quebec	per load	0	12	6	5	10	0
Mahogany, Average Price for Cargo, Honduras	per ft. sup.	0	0	4¾		—	
Do. African	do.	0	0	3¾		—	
Do. St. Domingo	do.	0	0	6¾		—	
Do. Tobasco	do.	0	0	4½		—	
Do. Cuba	do.	0	0	4⅝		—	
Oak, Dantzic and Memel	per load	3	15	0	5	7	6
Do. Quebec	do.	4	12	6	5	0	0
Teak, Rangoon, planks	do.	8	5	0	13	10	0
Wainscot. Riga (Baulk)	do.	3	15	0	5	15	0
Do. Odessa Crown	do.	3	15	0	5	15	0
Walnut, American	per cub. ft.	0	3	0	0	4	0
SOFT WOODS.							
Fir, Dantzic and Memel	per load	3	0	0	4	0	0
Pine, Quebec Yellow	do.	4	7	6	6	0	0
Do. Pitch	do.	3	0	0	3	11	0
Laths, log, Dantzic	per fath.	4	10	0	5	10	0
Do. Petersburg	per bundle	0	0	9	0	0	10½
Deals, Archangel 2nd & 1st per P. Std.		8	15	0	12	15	0
Do. do. 4th & 3rd	do.		—			—	
Do. do. unsorted	do.		—			—	
Do. Riga	do.	6	15	0	8	10	0
Do. Petersburg 1st Yellow	do.	12	15	0	12	15	0
Do. do. 2nd „	do.	8	15	0	9	5	0
Do. do. Unsorted „	do.	5	5	0	13	0	0
Do. do. White	do.	9	10	0	11	5	0
Do. Swedish	do.	10	10	0	21	15	0
Do. White Sea	do.	11	0	0	18	0	0
Do. Quebec Pine, 1st	do.	19	5	0		—	
Do. do. 2nd	do.	18	15	0		—	
Do. do. 3rd &c.	do.	9	0	0	9	15	0
Do. Canadian Spruce, 1st	do.	10	10	0	11	15	0
Do. do. 3rd & 2nd	do.	8	15	0	9	0	0
Do. New Brunswick	do.	7	5	0	8	0	0
Battens, all kinds	do.	8	10	0	10	5	0
Flooring Boards, 1in. prepared, 1st	per square	0	10	6	0	11	6
Do. 2nd	do.	0	10	0	0	10	9
Do. 3rd &c.	do.	0	9	0	0	9	9

TENDERS.

Information from accredited sources should be sent to "The Editor." Results of tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the Work.

BRIGHTON.—For carved communion table and deacon's stalls in Kauri pine at the London Road Congregational Church. Mr. E. J. Hamilton, architect, Brighton:—

Hammer & Co. (London) £51 10 0	J. Barnes (Brighton) £43 10 0 G. R. Lockyer* 42 10 0

* Accepted.

DUMFRIES.—Accepted for the erection of a new Free Library, for the Town Councils of Dumfries and Maxwelltown:—

Mason work.—Mr. G. M'Ildowie, Annan ...	£4,400 0 0
Joiner work.—Messrs. M'Lachlan & Son, Ayr	1,124 0 0
Slater work.—Mr. John M'Lellan, Dumfries ..	155 14 2
Plumber work.—Mr. W. M'Kay, Maxwelltown	347 15 10
Lath and plaster work.—Mr. David Telfer, Maxwelltown	376 14 8½
Painting and glazier work.—Mr. John M'Culloch, Annan	269 17 5½
Heating work.—Mr. R. M. Glover, Dumfries	208 9 7
Total	£6,882 11 4½

EPSOM.—For rebuilding the Epsom Brewery for Messrs. Bradley & Son. Messrs. R. W. Andrews & Co., brewery architects and engineers, 148 and 150 Pentonville Road, London, N.:—

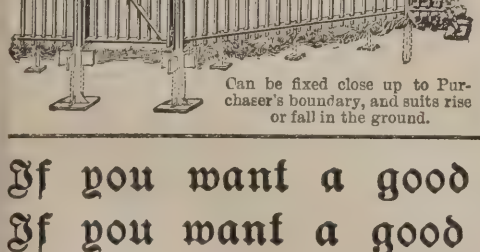
Shopland £2,700	Harris £2,887
Potter 2,569	Cropley Bros., Ltd.* ... 2,197

* Accepted.

FELPHAM, Sussex.—For the erection of private dwelling-house and enclosure walls for W. A. Huonsom, Esq., J.P. Mr. E. J. Hamilton, architect, Brighton. Quantities by the architect:—

A. Burrell £1,586	Bicknell & Pile* £1,450

[Both of Littlehampton.] * Accepted, subject to alterations.



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GODALMING.—For the construction of filter beds at the sewage farm, Unstead, for the Corporation. Mr. J. Herbert Norris, Borough Surveyor, Municipal Offices, Bridge Street, Godalming:—

A. A. Streeter	£1,487 7	Clift Ford, Harlesden, N.W.*	£1,297 0
Mitchell Bros.	1,375 0		

* Accepted.

LEWES.—For the erection of an electricity generating station, for the Electrical Power Distribution Company, Lim. Mr. W. C. F. Gillam, M.S.A., architect, Brighton:—

ooke & Co. (West-minster)	£5,150	Wallis (Balham)	£3,880
Longley & Co. (Crawley)	4,915	Martin (Eastbourne)	3,874
Patman & Fotheringham (Islington)	3,973	Hibberd Bros (London)	3,797
		W. Field & Co. * (Brighton)	3,777

* Accepted.

LEWES, Sussex.—Accepted for the erection of Sunday-school buildings, for the Tabernacle Congregational Church. Mr. E. J. Hamilton, architect, Brighton:—

E. Hammond (Lewes), at percentage on prime cost.

LONDON.—For the enlargement of Eardley Road Board Schools, for the London School Board. Mr. T. J. Bailey, architect:—

B. E. Nightingale	£8,785	W. Downs	£8,215
Bulled & Co.	8,509	W. Smith	8,187
F. & H. F. Higgs	8,423	Smith & Sons, Ltd. ...	8,152
Lawrance & Sons	8,364	Johnson & Co., Ltd. ...	8,082
Lathey Bros.	8,221	J. & C. Bowyer*	7,988

* Accepted.

LONDON.—For improvements to Winstanley Road Board School, for the London School Board. Mr. T. J. Bailey, architect:—

B. E. Nightingale	£12,581	Smith & Sons, Ltd. ...	£11,695
Marsland & Sons	11,765	Johnson & Co., Ltd. ...	10,984
W. Downs	11,581	J. & C. Bowyer	10,731
Treasure & Son	11,430	Stimpson & Co.	10,780
Kirk & Randall	11,337	Lorden & Son*	9,883
F. & H. F. Higgs	11,248	* Accepted.	

NEWCASTLE-UNDER-LYME, Staffs.—For the erection of a hospital for infectious diseases, for the Urban Sanitary Authority. Mr. J. Lewis, Newcastle-under-Lyme, and Mr. Frank Emery, Stoke-on-Trent, joint architects. Quantities by architects:—

G. K. Downing	£6,218	Saml. Wilton, jun. ...	£5,752
Thos. Maddock	6,012	Bennett Bros., Burslem*	5,241
Thos. Godwin	5,960	* Accepted.	
John Gallimore	5,715		

PULBOROUGH, Sussex.—Accepted for new porch and internal wood screen at the Congregational Chapel. Mr. E. J. Hamilton, architect, Brigaton:—

Wadey & Sons (Billingshurst)

TWICKENHAM.—For the completion of ten houses in Waldegrave Road and Southfield Gardens, for Mr. H. P. Edwards. Mr. Ernest Pennington, architect, Richmond Surrey:—

E. Seaber	£2,330	G. W. Street*	£2,150

* Accepted.

TWICKENHAM.—For the erection of two shops, with warehouses in rear, in Crown Road, Twickenham, for Mr. Vincent Bell. Mr. Ernest Pennington, architect, Richmond, Surrey:—

J. W. Brooking	£2,485	E. B. Tucker*	£1,617
Speechley & Smith ...	2,005	* Accepted.	

WIVELSFIELD, Sussex.—For the renovation and internal reconstruction of Old Hall Chapel (and Manse) erected by the Countess of Huntington in 1773. Mr. E. J. Hamilton, architect, Brighton:—

A. Godley (Hurst) ...	£183 7 0	J. Whiting (Wivelsfield)	£167 10 0
W. Wells (Plumpton)	156 2 0		

* Accepted.

WITHDEANE, near Brighton, Sussex.—For the erection of new residence and garden walling, for Mr. W. R. Hawkins. Mr. E. J. Hamilton, architect, Brighton. Quantities by the architect:—

Saunders & Sons	£4,579	H. J. Penfold	£4,144
Brown & Son	4,427	Sattin & Evershed ...	3,996
Field & Co....	4,407	W. Taylor*	3,899
J. Barnes	4,237	* Accepted. [All of Brighton.]	

CONTRACTS OPEN.

WATFORD URBAN DISTRICT COUNCIL.
TO BUILDERS AND CONTRACTORS.

The Watford Urban District Council are prepared to receive TENDERS for the ERECTION of a TECHNICAL SCHOOL as Additions to the Watford Public Library, in Queen's Road, and for Alterations to the latter.

Drawings, specification, and conditions of contract may be seen at the Office of the Architect, Mr. W. H. SYME, F.R.I.B.A., 4 High Street, Watford, from whom bills of quantities and forms of Tender can be obtained on deposit of Two Guineas, which will be returned after receipt of a bonâ-fide Tender.

The Council do not bind themselves to accept the lowest or any Tender.

Sealed Tenders, on form to be supplied, endorsed "Tender for Technical School," must be delivered to me on or before TWELVE o'clock noon, on THURSDAY, NOVEMBER 29th, 1900.

H. MORTEN TURNER.
Clerk to the Watford Urban District Council.

Council Offices,
No. 14 High Street, Watford.

TO BUILDERS.

The Commissioners of H.M. Works and Public Buildings are prepared to receive TENDERS for the ERECTION of a NEW CUSTOM HOUSE at Southampton.

Drawings, specification, and a copy of the conditions and form of contract may be seen on application to the Collector of Customs, Custom House, Southampton.

Bills of quantities have been prepared for the use of builders by Messrs. WIDNELL and TROLLOPE, of 13 Parliament Street, London, S.W., and together with forms of Tender may be obtained at the undermentioned Office on payment of One Guinea. The sums so paid will be returned to those persons who send in Tenders in conformity with the conditions specified below.

The Commissioners do not hold themselves responsible for the accuracy of the quantities, nor do they bind themselves to accept the lowest or any Tender.

Tenders are to be delivered before TWELVE o'clock on TUESDAY, the 11th of December next, addressed "The Secretary, H.M. Office of Works, &c., Storey's Gate, London, S.W." and endorsed "Tender for Southampton Custom House."

H.M. Office of Works, &c.
November, 1900.

ROMFORD SCHOOL BOARD.
TO BUILDERS AND CONTRACTORS.

The above Board are prepared to receive TENDERS for the ERECTION of an INFANT SCHOOL to accommodate 290 children.

Plans, specification, and conditions may be seen at the Albert Road School, Romford, between the hours of TWELVE and FOUR p.m., except on SATURDAYS.

Bills of quantities can be obtained at my Office on payment of Two Guineas, which will be returned on receipt of a bonâ-fide Tender.

Tenders, under seal, endorsed "Tender for Infants' School" must be delivered at my Office not later than TWELVE noon on MONDAY, the 10th day of DECEMBER next.

The person whose Tender is accepted must enter into a bond, with two responsible parties as sureties, in the sum of Five Hundred Pounds for the due performance of the contract.

The Board do not bind themselves to accept the lowest or any Tender.

By order,
WILLIAM SMITH,
Clerk.

No. 24 North Street, Romford.
November 1900.

WALTHAMSTOW SCHOOL BOARD.
TO BUILDERS AND CONTRACTORS.

The Walthamstow School Board invite TENDERS for the ERECTION of NEW SCHOOL BUILDINGS in Gainsford Road, Walthamstow.

The drawings and specification may be seen, and bills of quantities obtained, on and after NOVEMBER 22nd, 1900, at the Office of the Architect, Mr. G. E. T. LAURENCE, A.R.I.B.A., 22 Buckingham Street, Adelphi, W.C., between the hours of TEN a.m. and FIVE p.m.

Applications for copies of quantities must be sent to the Architect before the above date.

A £5 note must be deposited for the quantities, and another £5 note must be enclosed with the Tender, both of which will be returned to those sending in bonâ-fide Tenders.

Tenders to be endorsed "Tender for New Schools," and to be addressed to the Clerk of the School Board, Clevelands, High Street, Walthamstow, and delivered not later than SEVEN p.m. TUESDAY, the 4th DECEMBER, 1900, on which day they will be opened at EIGHT p.m.

The Board do not bind themselves to accept the lowest or any Tender.

T. W. LIDDIARD,
Clerk to the Board.

School Board Offices,
High Street, Walthamstow,
November, 1900.

N.B.—The conditions to be complied with as to the hours of labour and the payment of wages can be seen with the specification

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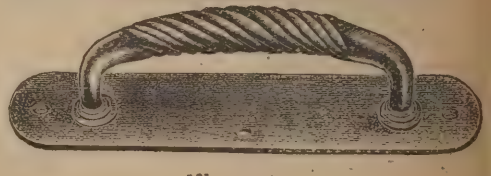
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NOVEMBER 28, 1900. No. CCCIII.

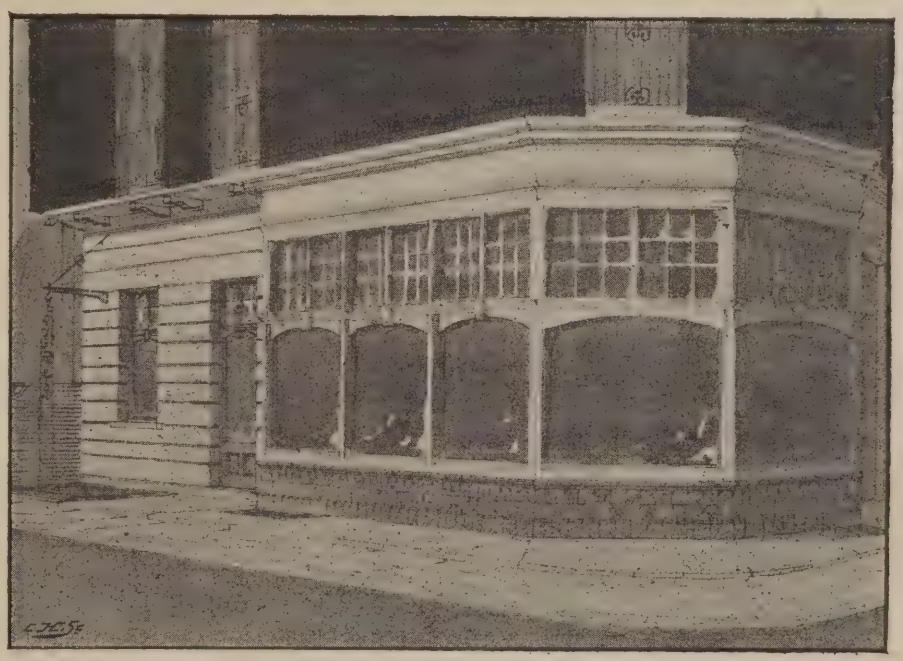
EFFINGHAM HOUSE, ARUNDEL STREET, STRAND, W.C.

An Architectural Causerie.

Official Peculiarities. THE names of the eight architects who submitted designs for the Holborn-Strand buildings having at length been announced, it is perhaps interesting to note that the predictions made at the end of our criticism (see page 251 of our issue for October 31st) are perfectly correct. We cannot understand why the Council has exercised such secrecy. In a case of this sort the only reason for not attaching the names of the architects to the respective designs is that the assessor's award may be unaffected by any personal taste or distaste for particular architects' work. It was therefore an unreasonable action of the Council's Committee when placing these designs on exhibition to continue to withhold the names, as the assessor's award had then been made and sealed. The same peculiarity was observed in the selection of the numbers, which were apparently chosen haphazard, though one can see no valid reason for doing so. It has been remarked by contemporaries that, though of course they knew from the first who were the authors of the several designs, they sealed their mouths in deference to official ruling and in fairness to Mr. Norman Shaw. Such obedience carries its own reward. The only thing which still remains to be published is Mr. Shaw's report. Remembering that he is the greatest living architect in this country at the present time, his criticism of the Holborn-Strand designs will be read with more than usual interest.

Underground Travelling. CONSIDERABLE attention was drawn last week to the fact that electricity is to take the place of steam on the "Underground," and that Bills will be placed before Parliament next session for the construction of many new underground lines. There are some things whose objectionable qualities become lessened by familiarity, but the Inner Circle cannot claim this salve—it is just as offensive on the first journey as it is after twelve months' travelling. We therefore welcome the proposed change, which will enable persons to go from one part to another without having to undergo a sulphurous treatment, with the addition, during summer time, of a vapour bath. What must be the condition of the roofs of the tunnels can only be imagined, but judging from the state of the numerous ventilators or "breathers," which disfigure everything around them, it must indeed be bad. Under the new scheme the tunnels will be lined with tiles in parts, and considering that the conversion from the new to the old system is estimated to cost £500,000 only, one is surprised that this most desirable change has not been effected long ago, for it must be admitted that the "Underground" is a disgrace to London. The experimental electric train which was running till quite recently between High Street, Kensington, and Earl's Court doubtless proved a success, and it is stated that a somewhat new system has been developed from it. This will include the adoption of Professor Sprague's invention for abolishing the locomotive by fixing motors under alternate carriages, or on every carriage. This is said to give a higher speed and a more equal distribution of weight. Of the many other undergrounds proposed to be constructed, it may be remarked that there is no semblance of unity among them, each proposal being restricted to its own particular line of route: the result is that several lines practically coincide, and, at least under the City, would result in a perfect network of tunnels. What is wanted is an intercommunication of lines like that existing in some American cities.

Wanted—A Housing Manager. THE London County Council is to be congratulated on having adopted the recommendation of its General Purposes Committee to form a Housing Department with a "Housing Manager" at the head of it. To find fault without suggesting a remedy is a very simple matter, and the Council has received much of this kind of attention, but when the figures relating to the cost of land and building are produced many reformers feel uneasy. It should be remembered that before the Council can take credit for a profit it must provide for repairs and renewals, for interest on capital and outlay, and make provision for a sinking-fund sufficient to replace in sixty years the whole of the money spent originally on the land and buildings. The first block of buildings was opened in 1894, and up to March 31st last 10,060 persons had been re-housed at a cost of £609,438; progress had also been made with proposals for the accommodation of 31,141 more, involving a further expenditure of £1,235,789. It will be seen that when tens of thousands of people have to be dealt with the housing problem becomes most complex. Opinions differ as to the proper method of effecting improvement: while railway facilities are what they are we cannot see that the Council could materially alter its programme with advantage, though it must be admitted that many of the displaced tenants do not return to the new houses: on the Boundary Street estate, for example, the class accustomed to the one and two-roomed tenements did not figure prominently among the applications for new accommodation. At present seventy persons, from surveyors to caretakers, are employed upon the 1,976 tenements owned by the Council. In the near future, when these tenements have increased to about 7,700, and the rents received amount to £160,000, about 248 officials will be needed. It is hardly necessary to remark that the official in whose hands the whole government of the Council's housing schemes will rest needs to be a very exceptional man, and we hope that the Council will be happy in their selection. Such a man ought to be obtainable for £800 a year. While dealing with the London housing question it is opportune to refer to the scheme which will be considered by the Council on December 3rd. By this it is proposed to purchase an estate of 31 acres at Norbury, in Surrey, and to erect there 551 single cottages of three, four, and five rooms, and 211 double cottages containing tenements of two and three rooms. Two roads, 45ft. wide and planted with trees, would be formed from east to west through the estate, in addition to subsidiary streets 40ft. wide. The estimated cost of the land (which is about a quarter of a mile from the county boundary), including brickmaking plant and incidental expenses, is £20,000. But even here, outside London, the rents proposed are as much as 7s. and 9s. for single cottages of three rooms, 6s. 6d. for double cottages of three rooms; two rooms and small kitchen, 6s.; four rooms, 9s. 6d.; and five rooms 11s. to 11s. 6d.; in addition to which the workman would have to pay a railway fare of 4d. per day in going to and coming from his work.



NO. 94 PARK STREET, LONDON, N.W. A. H. BELCHER, ARCHITECT.

94 Park Street, N.W. THIS was an alteration to the ground floor and basement only. The old premises belong to Messrs. F. Higgs and Son, and occupy a corner site with the end octagonal on plan on the ground floor and circular on plan above. The business was that of provision and dairy produce and of a cheesemonger, and therefore there was fortunately no stipulation that the shop front should be "all glass," as would have been the case if the business had been that of a draper for the exhibition of goods. The only stipulation was that the lower portion of the sash should lift up, and that this should be used below the shop front. Advantage was taken of this for the introduction of squares in the upper part and of the scheme shown in the perspective on this page. The architect, Mr. A. H. Belcher, says: "The lettering on the bellied frieze is not shown in the drawing, as this would, I understand, prohibit it from exhibition at the Academy"—where the water-colour drawing from which our illustration is made was shown this year.

WOOTTON WAWEN CHURCH, WARWICKSHIRE.

BY CHARLES M. C. ARMSTRONG.

OF the many hundreds of cyclists and others who daily travel on the fine old turnpike road that runs from Birmingham to Stratford-on-Avon, few give more than a turn of the head to the very interesting old church of Wootton Wawen, so beautifully situated on rising ground in the centre of the village. For those who can spare time to more thoroughly explore it, these notes and sketches have been prepared, in the hope that they may lead others to take interest in the building.

At fourteen miles from Birmingham we reach the little market town of Henley-in-Arden, where there are many curious half-timbered houses, the remains of an old market cross and a rather debased Perpendicular church; although retaining many characteristics of bygone days, the place has of late been overdone with tea-houses and tin tabernacles for beanfeasters. A quarter of a mile to the north,



WOOTTON WAWEN CHURCH, FROM THE NORTH-EAST.

separated by the Alne, is the very interesting Norman church of Beaudesert, locally pronounced "Belser." Though the south entrance arch has been much restored, it has some fine examples of zigzag and lozenge recessed Norman mouldings; but the chancel arch is in a more perfect condition—that is, it is rather less restored. A picturesque lych-gate has recently been placed at the entrance to the churchyard. For the greater part of it the architect has been able to make use of old materials, so that it looks quite in keeping with its surroundings. The poet Jago was born at Beaudesert in 1715, and was buried there in 1781, having died at Snitterfield, in the same county.

Two miles further on we reach Wootton Wawen. As for its peculiar name, there is no question that it originally arose from its situation among woods, having the addition of Wawen from one Wagen (commonly called Wawen) who was lord of this place before the Norman Conquest. Dugdale says: "This Wawen was a man of great antiquity in his time. In consideration of his stout fighting for Duke William against King Harold, he was rewarded with such vast possessions in several English counties, amongst which this town of Wootton, with the rest of Wagen's lands were part." He eventually took the name "Stafford" from his seat in that county, and from him descended the noble family of that name. When Edward Stafford, Duke of Buckingham, attained it, Henry VIII. granted it to the Marquis of Dorset, and on his attainder Queen Mary gave it to Sir John Grey, from whom it was purchased by the Smythes, who still hold it. The extent of this Wootton was then certified to be seven hides, there being at the time a church and two mills. Many centuries later Dugdale says: "In the Township of Wootton there are fifty-five families and twelve teams kept."

The church, dedicated first to St. Mary and subsequently to St. Peter, was given to the monks of St. Peter of Conches in Normandy by this Robert of Stafford shortly after the conquest of England by Duke William, and appropriated for them by Roger, Bishop of Worcester, on November 3rd, 1178.

There is no doubt that a monastery of Benedictine monks stood here in the fourteenth century, probably in connection with the priory of Maxstoke in the same county, for we find that "shortly after King Henry IV. (by the deposal of King Richard II.) attained the crown, taking into consideration that these *Priores alien* were originally founded to the honour of God, and that through the frequent seizures of them into the hands of his progenitors, by reason of the wars with France, the monks were driven away, and the houses so wasted, that such divine service as had antiently been established therein, was wholly withdrawn." Its revenues were granted in the first place by Richard II. to St. Anne's Priory near Coventry—one of the few remaining Carthusian houses in England, built in 1381—and in later years by Henry VI. to King's College, Cambridge, in whose gift the living still is.

The present church, of which the greater part is of the fourteenth century, is built of rubble and stonework, and is a very striking object, standing well against the sky-line, with the dark firs and fine elms of Wootton Hall at its east end. It is said to claim a higher antiquity than any other of the many interesting Warwickshire churches, and the late Bishop of Worcester, Dr. Phillpotts, declared it to be the most interesting church in his diocese, mainly on account of the very evident and considerable remains of pre-conquest construction; at least three-fifths of the tower are of Saxon workmanship, though from the exterior this is difficult to discern, as the north side of the tower (the only one exposed) is unfortunately stuccoed over; internally the "strip" and "long-and-short" work is very conspicuous, the once central tower standing on four fine specimens of Saxon arches. On the north side of the nave, there is a blocked-up semi-circular-headed doorway, and another below the west window, whilst traces of Saxon rubble-work may be discovered in various portions of the north wall.

On reference to the accompanying illustrations it will be seen that the church consists of north and south porches (the north doorway being now closed), clestoried nave, south aisle, a central embattled and pinnacled tower, chancel, and a chantry chapel of exceptionally large dimensions, quite out of proportion to the remainder of the building.

Entering by the south porch, which is built between, or rather on, two of the three buttresses which help to support the Early Decorated south aisle, the fourteenth-century font claims attention, standing on modern sandstone steps; the basin is octagonal on plan and is supported by sculptured hooded monks' heads. The south aisle is separated from the unusually wide nave by three pointed arches and has been re-roofed, the church having been restored in 1881, though there is little evidence of this externally. The chancel is unfortunately in a very bad condition at the present time, damp green mould and cracked plastering surrounding the north wall's beautiful Decorated windows.

The west end has a fine Perpendicular window of five lights, with sculptured corbel heads, internally, of King Edward III. and Queen Philippa. The pulpit, octagonal in shape, is a good example of fifteenth-century oak carving, and stands between the second and third bays of the nave. The east end of the nave has a carved oak screen, which has been much altered. On either side of it, and joining with it, are two large enclosed pews with open oak pannelling, not unlike the people's altar at Burford in Oxon, but without a tester over. There has been much altercation as to what these were originally intended for, but there seems to be little doubt that they were used for chantry chapels, as three brackets for figures are still to be seen at the east end of each. The altar is now placed in the east end of the tower, the chancel not being used: access to this is obtained by what must surely be one of the smallest chancel arches in the country, measuring only 4 ft. 9 in. across. The northernmost of these four "long and short" circular-headed arches has been filled in with a modern plain glazed window, which rather spoils the effect, though the light is necessary. The chancel, divided from the chantry chapel by two double-faced arches and a plain seventeenth-century screen, has a very fine Decorated window of seven principal cinquefoiled lights, the mullions of which are carried straight up to the head, these being also divided into twenty-two smaller panel lights. Around the edge of the interior of its jambs and architrave is the curious and almost unique feature of a continuous series of crockets set in a hollow moulding, a double row above the springing of the arch and a single row below; this occurs also on the exterior, but the crockets are placed further apart. The finial-headed pews, west screen and altar rails in the chancel are of seventeenth-century date.

The church has some interesting tombs, the oldest of which stands against the north wall of the chancel; this is a high stone-stuccoed tomb, with plain shields at the sides, bearing a sculptured effigy in alabaster of an armour-clad man, his feet resting upon a long-eared dog with a chain collar round the neck. This represents John Harewell, who died in 1428, bequeathing his body to be buried in the church. The figure is unfortunately badly mutilated, initials and dates of the vandal English sight-seer being much in evidence. The Harewells were "ranked amongst the superior gentry of this shire"; a female descendant of this same Harewell married a Smyth, and "from him was lineally descended Sir Charles Smyth, Knight, who manifested his fidelity to the late King Charles the First, in the times of his greatest distresses, by divers considerable aids; in consideration whereof, he was, by Letters Patent, in the nineteenth year of his reign, advanced to the degree of a baron of this realm, by the title of Lord Carrington of Wootton, and subsequently to Viscount Carrington of Barrefore, within the Province of Connaught, in Ireland. This Viscount Carrington having occasion to travel in France, lodging at Pontoise, was there barbarously murdered by one of his own servants in February, 1664, for lucre of such money and jewels as he then had at that place."

Within the altar rails is another tomb to the Harewell family covered with a dark-coloured marble slab, with finely-preserved inlaid brass

effigies of John Harewell (who died in 1505) and his wife Anna; the dress of the period is well represented. Underneath these figures are brasses to their ten children, whilst the whole is completed by four coats of arms, amongst which may be discovered the heads of hares as armorial bearings. The following inscription in brass runs round the edge :—"Hi jacet Johes Harewell,'armig' et dna Anna qondam uxor eius ac nup' uxor Edwardi Grey militis qui quidem Johes obiit X° die Aprilio anno dui MV°V et qui quidem Anna obiit. . . . . die . . . a dui MV . . . . quorum aiabz ppitietur deus." No doubt this monument was erected before the wife's death, causing the omission of that date. Under the altar lies Stanford Wolferstan, apparently a local doctor, who died in 1698, as the hardly decipherable doggerel under his name implies,

"To souls and bodies too he med'cines gave
Like his great Master, willing both to save."

The chantry chapel has a series of monuments and tablets upon its walls and floor, the more interesting of which I have endeavoured to locate on the plan. Against the north wall is a high canopied tomb, supported by pilasters and Ionic columns, of a man in armour reclining on his side; this represents another of the Smith or Smyth family who died in 1626. A very ugly monument and urn stands against the east window, whilst a pretentious erection of Corinthian columns and wings occupies the centre of the south wall. Perhaps the memorial of most interest in this chapel is that to William Somerville (who died in 1742), the well-known author of "The Chase" and other poems. His epitaph is said to be his own composition; the present vicar, who happily takes a deep interest in the church, has recently caused a memorial brass to his memory to be fixed on the north side of the nave. A richly-decorated but apparently unfinished piscina stands in the south wall.

In the chancel there are two old oak chests. The one at the east end is at least three hundred years old; standing on four pannelled legs, it has three wrought-iron locks, and double fleur-de-lis ironwork; of this my cicerone said, on the occasion of my first visit to the church "'twas worth a king's ransom!"

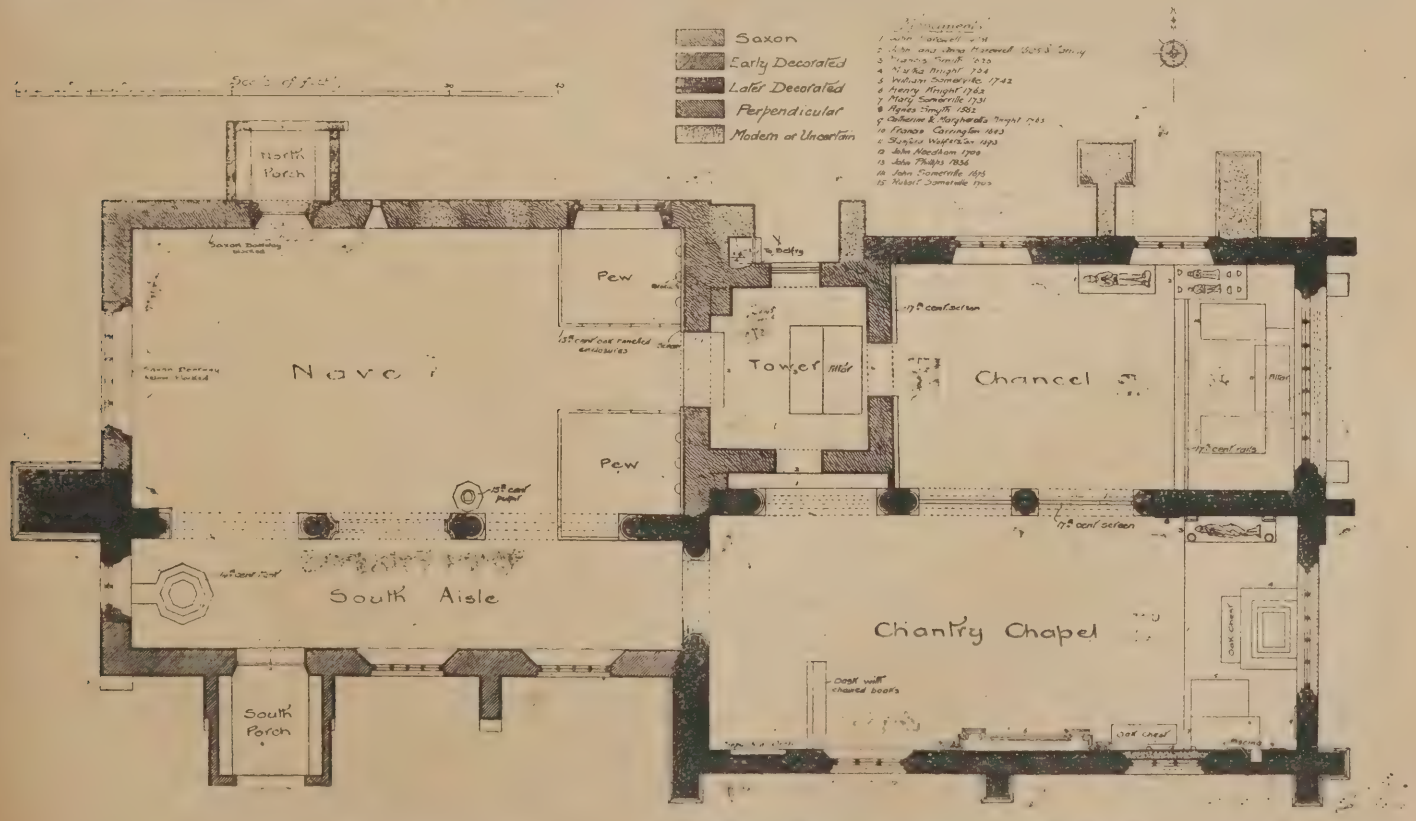
A long desk, forming part of the primitively enclosed vestry at the west of the chapel, contains eight chained theological works, published between 1578 and 1673, the oldest two being "Christian Religion," by John Calvin (1578), and "Common Prayer" (1633); some of these books are in the most perfect state of preservation, and but for their quaint print and discoloured paper might have been issued this year. The registers date from 1654.

The belfry, which is reached from the outside —further proof of the building's ancient character—contains six bells, with dates ranging from 1719 to 1742 engraved upon them; one bell has also the letters of the alphabet from A to S inclusive. The fine deep oak beams in the tower are worth inspecting, also the open framing which supports the roofs of chancel and chantry.

The north porch is plain, but the doorway contains a beautiful example of Late Decorated mouldings, upon the jambs of which hangs a delightful old door with Saxon double-headed nails; the door handle itself is a real gem in ironwork, wrought in the days when the local blacksmith was a craftsman and not a machine, as he appears to be at the commencement of the twentieth century. The scutcheon is pierced with a trefoil-headed design of very fine workmanship, and the ring to the heavy circular handle has two hammered pieces of iron soldered on; the accompanying drawing of which will give some idea of its merits.

There are many other interesting bits which are well worth studying and sketching, such as the four beautiful Perpendicular windows on each side of the clerestory, an old sun-dial on the south wall, the time-eaten gargoyles and crocketted pinnacles, round which the rooks circle with a never-ceasing call. In the village, also, days might well be spent amongst the half-timbered houses: the old Georgian farmhouse with its delicately-designed pedimental head over the front door; that truly rustic village inn "The Traveller's Rest"; or again, at the Stratford end of the village, what a charming view is obtained from the old bridge which spans the little river Alne. Fringed by beautiful trees, the Italian mansion of Wootton Hall, built in the seventeenth century, with the Smythe coat of arms on its huge pediment, is very conspicuous, whilst built into the bridge itself is an old milestone dated 1806, informing us that we are exactly 100 miles from London's turmoil. Lower down the road is one of the remaining mills mentioned by Dugdale; it cannot be called beautiful, with its huge front elevation and many formal windows; yet for those very reasons it appeals in a certain way to an observer on first entering this village on a summer's day.

But the church is Wootton Wawen's magnet, or ought to be, and yet how few know more than its odd name. The admission charge of sixpence cannot surely keep away visitors, for in no better way could those who have a love for our old buildings lay out this modest sum.



WOOTTON WAWEN CHURCH, GROUND PLAN. MEASURED AND DRAWN BY C. M. C. ARMSTRONG.

SOCIETY OF ARCHITECTS.

PRESIDENT'S ADDRESS.

MR. T. WALTER L. EMDEN delivered his presidential address to the members of the Society of Architects on Thursday evening last. He said: My thanks are again due to the Society for electing me unanimously for the fourth year to the presidential chair. I need only say I shall give my best attention to the work of the Society.

Whatever may be the position of this Society, and being the youngest of the English societies it must be looked upon as the junior society, it undoubtedly has succeeded in making a position for itself which is at all events unique as far as the architectural societies of England go. It is the first Society which has ever taken up as its principal object the improvement of the status of the architectural profession upon a solid and sensible basis. Whatever may be said of the work of the Institute or of any of the other architectural societies, and they have done much good work, they have not lent their aid to the principle of the registration of the profession and the system of compulsory education and examination before registration.

It seems extraordinary that the oldest profession in the world should in this country, which is supposed to stand foremost in civilisation, never have been guarded by any scheme of education or examination, and that no attempt has been made by the older societies to place their members on a level with the foreign branches of the profession.

Registration.

It seems hardly resonable to suppose that there can be any real benefit obtained from the institution of the various architectural societies when voluntary education and voluntary registration is the limit to which they attempt to elevate the profession.

If the profession is to be recognised in the manner which its antiquity and standing demand, and its power for good or evil for the public interests warrants, then certainly it ought not to be a profession so open, so uneducated,

and so easy of entry as the profession in England is at the present time. The education of its members cannot in any way deteriorate from their artistic ability, while a thorough knowledge of the profession, and all its necessities in construction and sanitation, cannot but add to the protection of the public and to the ennobling of the art of architecture, which we profess to practice.

The Society of Architects has attempted—and if it has not been able to do more it is for lack of support from the Institute and other societies—to press forward the work of compulsory education and registration; which should long ago have been made the chief aim of every architectural society in existence. That we may succeed in awakening the Institute to its obvious duty is the hope of every member of the Society, and if we do not succeed in this we must continue the work ourselves. That we have not succeeded sooner is to be accounted for solely by the opposition, active and passive, which is shown by the Institute, and by other societies influenced more or less by it. The eventual outcome will no doubt be what common-sense points out as being absolutely necessary; that is, everyone who proposes or desires to enter the profession will be first compelled by Act of Parliament to show himself competent to do so.

The protection of the title of Architect is one apparently of international importance, as we find at the late International Congress at Paris that a resolution was adopted in favour of restricting the practice of architecture to those provided with a proper Government certificate, placed within the reach of all by the diffusion of architectural education, and so protecting the public by preventing incompetent persons from entering the profession. I would earnestly appeal to those who desire to see the status of the profession raised, and the door closed to incompetent men, to join this Society, and to lend their aid to the work of registration which we have taken in hand.

Architectural Training.

A good deal of controversy is at present proceeding as to what should be the proper training for an architect. Many think that the present system of pupilage and premiums should be replaced by a course of training in studio or college, but while the present method may be open to improvement, it seems to me that there cannot be much wrong with the system which has produced such distinguished men as those who now adorn the profession. The discipline and business habits now obtained by pupils who are trained in an office could not be obtained by attending classes or lectures alone. It is by a combination of the two that improvement can be effected. Every pupil's articles should contain a provision for him to attend regularly and at stated times classes and lectures provided at some recognised centres.

But I do not see much chance of this improvement until we have a scheme arranged by, say, the London University, with lectures, classes and professors similar to those existing on the Continent and in America. To multiply the present so-called architectural training centres is only peddling and dabbling with the question and will only increase the evils now existing; it will not provide a sound and solid basis upon which to build a proper architectural college. If all the existing teaching agencies were to combine their forces, something satisfactory might be evolved.

Light and Air.

Passing from this question, all-important as it is, I come to another matter which it seems to me has been dealt with somewhat late in the day. Not until it had grown into an evil of such dimensions as to make building operations almost prohibitive in many cases have the Institute attempted to deal with it; even then, only after this Society had brought the matter into prominence by its petition to the Lord Chancellor and by ventilating the question at its meetings. The matter is one which can be so simply and fairly dealt with, as is the case in Scotland, that it is difficult to understand why it has not been more prominently brought before the public at an earlier date. However, the Society may be pleased that its efforts in this direction have met with the approval of the profession generally, and that the Institute have now come forward and formed a committee to deal with the question. We hope that it will press forward without delay until this much-needed reform is accomplished.

The members of the Society must not, however, think that they have now done their duty and need not further press the question upon public attention. Those who grow old sometimes grow feeble, and it is not, therefore, to be taken for granted that because the Institute has put its shoulder to the wheel that it will press forward vigorously for this important alteration in the law of England. We must, therefore, on all occasions still continue to ventilate the subject, and in doing so we trust to help the endeavours of the Institute and at the same time to make up for any lack of vigour which the elder Society may show in dealing with it.

Rebuilding London.

It has been suggested that the improvements and alterations made in London streets are not made upon any consistent plan, and that London should be laid out on a great comprehensive scheme irrespective of its present streets. Such a suggestion, of course, is absolutely impracticable in a busy business city of the magnitude of London to those who make a study of the problem. Apart from the fact that it is probable that no agreement would ever be arrived at as to the best method of relaying out London, the vast expense would tax even a nation's wealth, and it would be impossible for any municipality to carry it out.

Attention is constantly drawn to the Ring Strasse of Vienna, the Unter den Linden of Berlin, and the Boulevards of Paris, and the suggestion is more or less given to the minds of those who do not know that these cities consist of a series of great streets and boulevards. Such is not the case, for practically outside the streets mentioned these cities consist of narrow irregular streets, in an infinitely worse sanitary condition than those of London.

I do not think the average of narrow streets in London, proportionate to its size, is anything like as high as they are in any of the cities mentioned.

Again, it would be well to remember that though London may not be as beautiful in some of its main streets as certain of the streets in continental cities, yet at the same time there is a picturesque feeling about many of the streets of London which appeals, I believe, to the great body of the British public and its home-like appearance is appreciated by them in a way which no great straight new thoroughfare would.

I am of opinion that the London County Council in the question of improvements has done decidedly well of late years; and while I do not agree with all that is proposed, yet I do not think that the Council has carried out its schemes of improvement without giving full consideration to the effect upon London as a whole. I do not disagree with the idea which has been carried out for obtaining designs for the new street, but I think that the instructions were drawn with insufficient consideration.

The necessity in dealing with a business street like the Strand was that the designs should be made for the accommodation of business premises, not for a public building or monument. Great Classic blocks may be beautiful, but in the Strand, if they are erected, they will be practically useless from a business point of view.

Buildings such as are proposed by the designs have not sufficient light for their use as ordinary offices and are absolutely unsuited and impossible for shops, and to erect them with three great floors, in a building at least eighty feet in height, instead of seven, is so uneconomical that if such restrictions are imposed it will not only hamper the letting of the land but make it absolutely impossible to deal with it upon anything like commercial terms, or may even prevent it being dealt with at all. The Strand is a street of shops and offices, and it would be quite out of reason to expect anyone to erect buildings in which it was utterly impossible to carry on a shop business, and to erect offices of dimensions suitable only to the principal rooms and halls of the Foreign Office.

Desirable as it is to see the corporations of our great cities consulting the profession on the elevations to its new streets and improvements, it must be remembered that such consultations can, on the one side, be only of use when the corporation clearly define the purposes for which the street is to be used, and will only be asked in the future if architects will mix some common-sense with their suggestions, and design buildings not only architectural but suitable for the purpose and position.

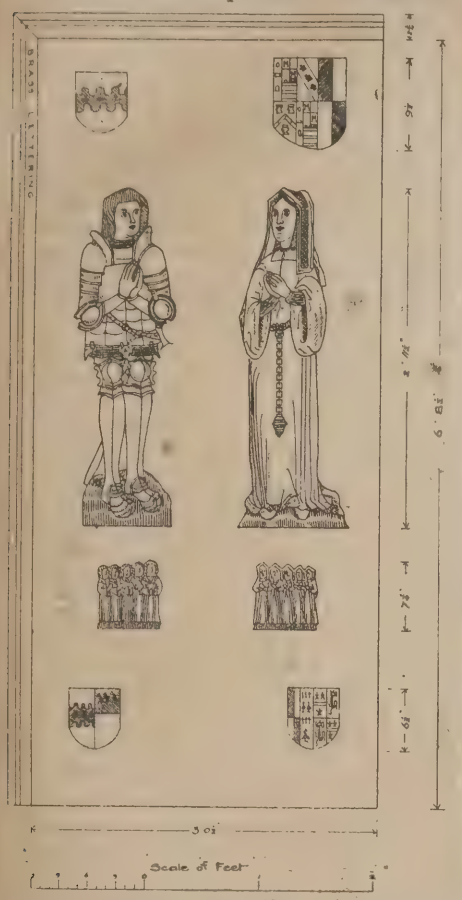
There are at the present moment in the provincial cities and boroughs, and particularly in London, many opportunities for the profession which should provide openings for proving, from an artistic and constructive point of view, that the profession is not deteriorating but making solid advance. The many improvements and the opening of good streets must necessarily provide sites for buildings; and the increasing necessity for wider streets must in itself give opportunity to the architect for a better illustration of his art than at present is obtained in the narrow thoroughfares of many of our cities.



WOOTTON WAWEN CHURCH, FROM THE CHANTRY CHAPEL, LOOKING NORTH.

Subways.

There is another matter with which I would like to deal, which in my opinion, particularly in this crowded city of London, is of such immediate and vital importance that attention



BRASS TO JOHN AND ANNA HAREWELL AND FAMILY. MEASURED AND DRAWN BY C. M. C. ARMSTRONG.

should be drawn to it and it should occupy a prominent position in the work which the new municipalities ought immediately to take in hand. It is not perhaps strictly speaking, an architectural question, though it is certainly akin to it. I am alluding to the question of subways to meet the congested and ever-increasing volume of passenger and vehicular traffic which crowds and makes our public streets impassable, and the constant pulling up of the thoroughfares for pipes, wires, &c., which is so serious a loss to many, and an inconvenience to all.

I am the more induced to speak upon this subject because it is now some years past since I commenced to ventilate the question by the kindly aid of the press; and while much attention was then given to it, nothing has been done which substantially deals with the question. I have attempted, by proposing resolutions in the London County Council, to bring the question into a prominent position, and into what might be called the region of practical politics; so far, however, little, as I have said, has been done. We certainly have subways in the shape of a small tunnel down some of the new streets, but as a system, or to be of any material use, they are practically non-existent.

It always appears to me that there is a vast waste of useful space in the ground under the streets and roadways. The pipes and tubes and sewers which are under them scattered about all over the surface would occupy an extremely small space if all were brought together into a convenient subway; it cannot be argued that it is necessary for them to occupy the whole surface of the road or to occupy it even to such an extent as to prevent or interfere with any thorough scheme of subways.

The method of dealing with subways seems to me to be by excavating the whole of the ground between the houses on either side of the road to a sufficient depth and then arching over to the road level. Such space as is now allowed for vaults would still be allowed and would belong to the houses on each side of the road, and there would be a still further amount of cellarage which could be let at fairly remunerative rents, particularly as the work of construction would be carried out at the low rate of interest which is paid by a public body.

There would remain space for one or two footways (according to the width of the street) down which the public could pass, much to its personal safety and convenience, particularly in crowded thoroughfares. There is also no reason why, where space admits, provision should not be made for a special track for cyclists. The middle portion of the subway would be retained as a tunnel, in which all the various pipes and tubes belonging to water, gas, electric, hydraulic and other companies could be laid. Under it the sewer, with the necessary manholes, &c., for entering.

There may be, and necessarily would be, difficulties in carrying out such a scheme of subways, but this would be compensated for by the many advantages which would be gained to the public when they were once constructed. Apart from those advantages which are obvious from the description I have already given, I would point out that there being in the arch a solid concrete foundation upon which the road and pavements would be laid, there would be no such thing as the sinking and giving way of portions of the road surface, and as a further consequence, and because it would not be constantly torn up, the road would wear more evenly and last for a much longer period.

Another advantage would be in the fact that whenever it became necessary to relay the road the inconvenience would be extremely slight, inasmuch as it would merely mean the taking up of the old cubes or blocks and the immediate re-laying of the new, a matter which could be performed in small sections and with the smallest amount of inconvenience to the traffic and to the business carried on by the occupants of the street. At present the loss to the shopkeepers and owners of businesses on roads which are constantly up, and partially if not wholly closed, is a very serious matter of ever-growing importance. I do not suggest that the system of subways in a great city like London could be carried out in every street at once, but certainly the leading thoroughfares might reasonably be dealt with without delay.

As a matter of fact, the saving of the very expensive methods which have now to be adopted in not only laying but in repairing tubes and wires under the ground would be saved, and so the great monopolies benefited to such an extent as to make it well worth their while to pay a fair rental for the use of the subway. The cost of attention to their tubes, &c., would be merely nominal to the various companies as compared with what it is at present, while they could deal with them at once in a subway instead of having the delays, risks and expenses of taking up the street.

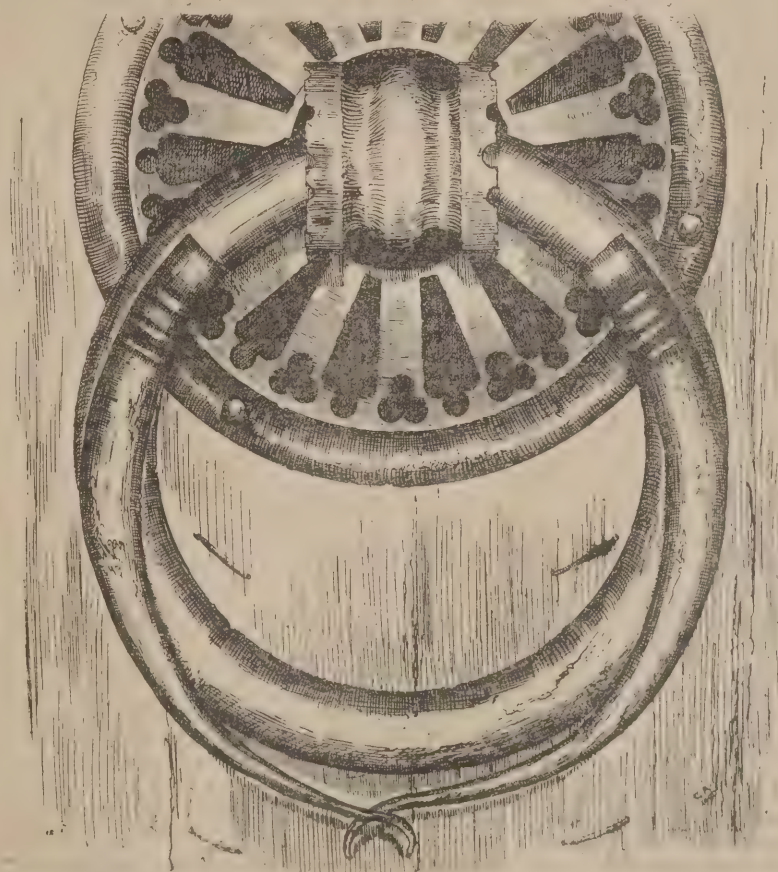
It is the case that in some of the leading thoroughfares there are, under the surface of the road, over thirty different pipes and tubes of which only a portion are what might be called alive or in use, as, rather than take up an old pipe, often enough it is abandoned and left under the road, and a new tube or main laid down.

To sum up the advantages

in constructing a comprehensive scheme of subways, there is not only the fact that the probable rentals obtained from the various companies occupying them with their tubes, pipes, and from the cellarage, would be sufficient to pay a good interest on the outlay, but the roads would last longer, the public would be rarely inconvenienced—if at all—by any taking up and relaying of roads, and all the powers of the numerous companies so harassing and difficult for a public authority to deal with, and by which they can and do constantly pull roads up would be done away with, and the expense incidental to the superintendence, &c., of all these pullings up and relayings would be saved to the public authority, and hence to the public rates.

Lastly, but not least, the inconvenience to the public and the loss to business would become things of the past. For these reasons I believe this is one of the subjects which should be strongly commended to the attention not only of the London County Council as the central authority, but also to the new municipalities, as while rates may increase from many causes under the new authority, by this corresponding advantages would be given, even if a valuable source of income is not provided, as I believe would be the case.

I trust in calling your attention to this subject I am not going too far outside my province as the President of your Society; but it is a matter of serious importance to the public and



WROUGHT-IRON SCUTCHEON AND RING, NORTH DOOR. DRAWN BY C. M. C. ARMSTRONG.

so closely allied to the work we have to do that I hope I may be forgiven the transgression, if it is one. In conclusion, I would express my hope that the Society will continue its prosperous career, and that its sphere of usefulness will be, by the energy of its members and those whom we hope will join, considerably increased. I particularly wish to express to the members of the Society the great debt they are under, for the successful working, to the honorary secretary, Mr. Ellis Marsland, and to the secretary, Mr. C. McArthur Butler.

LONDON COUNTY COUNCIL.

Housing—Electric Tramways—Subways—The Embankment — Holborn-Strand Designs — Female Sanitary Inspectors—River Wall for Wandsworth Park—Widening of King Street, Hammersmith—Leicester Square Fountain—Regent's Canal—Camberwell Workhouse Extensions.

AT last week's meeting of the Council the General Purposes Committee recommended:—(*a*) That, with a view to the reorganisation of the housing work of the Council and in order to secure more efficient and economical administration, a Housing Department be formed. (*b*) That the head of the department be styled "Housing Manager." (*c*) That a housing manager be appointed at a salary of £800 per annum. (*d*) That the duties of the housing manager be as follows: (i.) To be responsible for the charge and control of all estates and buildings laid out and erected by the Council for the housing of the working classes, including all lettings, small repairs, and the collection of rents subject to the supervision of the comptroller as at present; (ii.) to advise the committee as to the most suitable class of buildings to be erected, and generally on the whole question of dealing with the housing of the working classes; (iii.) to advise as to the rents ruling in the neighbourhood of any particular scheme, and as to the amount which should be set apart annually for necessary repairs, and generally to prepare the estimates as to the financial effect after obtaining all necessary information from the various departments; and (iv.) to search for and advise as to sites suitable for the erection of working-class dwellings. (*e*) That the valuation of land and the acquisition of property in connection with housing schemes do remain in the hands of the Council's valuer. (*f*) That the architect do prepare the designs for new buildings as directed by the Housing Committee, do supervise their erection, do advise thereon, and be responsible for the main structural repairs required to the dwellings. (*g*) That the duties of the medical officer of health in connection with the housing work do remain unchanged. After discussion the recommendations were agreed to.

Mr. Baker moved: "That, in view of the desirableness of no longer withholding from North and East London the advantages of electric tramway traction, and of the importance of providing a complete and united system of electric tramway intercommunication between the different parts of the metropolis, the Highways Committee be instructed to ascertain from the North Metropolitan Tramways Company at what price they will surrender the lease now held from the Council, which expires in July, 1910." This was carried.

Mr. Parker moved: "That, to mark the importance of the addition to the civic interests of the metropolis by the creation of the new Borough Councils, it be referred to the General Purposes Committee to consider the best manner of bringing before those councils the imperative necessity of making subways under, at least, all the leading thoroughfares of the metropolis to contain all the gas and water pipes, and telephone and telegraph wires; and, if necessary, to summon a conference to formulate some comprehensive scheme for remedying the scandalous and ever-increasing inconvenience to pedestrian, omnibus, and mercantile traffic caused by the constant tearing up of the footways and roadways for the purpose of inserting or removing the pipes, wires, &c., above referred to." While Mr. Parker was speaking to the motion the Council was counted out.

The Highways Committee reported that they had had before them an application from the New River Company for permission to lay a 30-in. water main under the carriageway of the Victoria Embankment from Blackfriars Bridge to a point opposite the foot of Northumberland Aveuue. In the ordinary course they would have suggested that the company should be required to lay the main in the Embankment subway. They were, however, informed that the subway was already too full to allow the main to be placed there, except for a very short distance; and, that being so, they thought that the company's request should be acceded to, subject to certain conditions. An amendment was moved, but negatived, in favour of obtaining some payment from the New River Company for the use of the roadway.

The Improvements Committee reported that upon opening the sealed envelopes containing the names of the architects of the elevations of the buildings for the new part of the Strand they found that they were as follows:—Mr. Ernest Runtz (No. 17), Mr. Edward W. Mountford (19), Mr. Mervyn Macartney (20), Mr. Reginald Blomfield (21), Mr. Ernest George (23), Mr. Henry T. Hare (26), Mr. W. Flockhart (27), and Mr. Leonard Stokes (29). Mr. Shaw Lefevre asked the chairman of the committee whether the architect and the valuer would be instructed to report on Sir Frederick Bramwell's suggestion for an upper row of shops in the new street on the lines of Chester "Rows." He did not say he agreed that the scheme was practicable, but, coming from such a man of eminence, and, considering the great public interest taken, it would be very satisfactory to obtain expert opinion upon the matter. Dr. White (Mayor of Lambeth) asked if any use would be made of the plans. Dr. Longstaffe said the matter referred to by Mr. Shaw Lefevre would be considered by the Council. With reference to Dr. White's question, he was not in a position to give an answer. The Improvements Committee were now in communication with the Sites Committee.

The Council, after some discussion, agreed to pay half the salaries of those female sanitary inspectors who, in addition to their other duties, would use such opportunities as presented themselves of inculcating habits of cleanliness and the best methods of utilising food.

A report recommending the acceptance of a tender for the construction of a river wall for Wandsworth Park at a cost of £16,250 led to considerable dissatisfaction among the members. It was stated that the original estimate amounted to £6,000. Being impressed with objections of Lord Meath and others as to not only the cost of the wall but the wall itself, Mr. Davies decided to withdraw the report for a time.

The Council agreed to contribute £5,918 towards the cost of widening King Street, Hammersmith.

The Parks Committee recommended: "That the Council do sanction an expenditure of £250 for carrying out certain alterations and repairs to the Shakespeare fountain in Leicester Square Garden, including the taking down and re-erection of the fountain on a new foundation, the formation of a proper chamber for the accommodation of the water fittings, and the construction of a manhole and subway to lead to the same, and the execution of such repairs, cleaning, &c., as may be necessary; and also do authorise the Parks Committee to invite tenders from selected firms and to enter into any necessary contract in the matter." This was agreed to.

The Public Health Committee submitted a lengthy report relating to the nuisance alleged to arise from the condition of the water in the Regent's Canal, between Chalk Farm Road and the Cumberland basin. Dr. W. J. Collins said it was time serious consideration should be given to whether or no a stagnant open sewer, such as the canal, should any longer be allowed to menace the sanitary condition of London. Several members also protested against the state of the canal, and eventually it was decided to send a letter to the councils of metropolitan boroughs asking them to keep the canal under careful observation.

Upon the recommendation of the Finance Committee, it was agreed to lend the Camberwell Guardians £2,550 for alterations and additions to the workhouse.

Builders' Notes.

The Wandsworth Borough Council had a heated argument last week over a proposal to exclude builders from the Highways Committee, a motion to that effect being rejected upon a division by 32 to 22.

The Works of Messrs. Raworth and Allen, joiners and builders, at the junction of Bower and Strawberrydale Roads, Harrogate, were completely destroyed by fire last week. The damage is estimated at £3,000, and is only partially covered by insurance.

Mr. Augustus Lewis, contractor, of Cardiff, died recently at the age of 61 years. Mr. Lewis was born at Kingswood, near Bristol, but came to Cardiff in early life. After some years he started business as a contractor, and erected several large buildings, including the Grand Theatre and Grand Hotel. In conjunction with his brother, Mr. Robert Lewis, he was also contractor for the building of many places of Divine worship in the town.

Fireproofing at the Building Trades' Exhibition, 1901.—An important feature of the coming Building Trades' Exhibition will be a special section devoted solely to fire-resisting materials, methods of construction, and appliances. This section, which will form the first collective exhibit of its kind, is to be organised by the executive of the British Fire Prevention Committee, whose members fully recognise the importance which the trade aspect of fireproofing has assumed since the Cripplegate fire, and are anxious to obtain for this trade the importance and recognition of an independent department of building construction. A separate hall has been set aside for the fireproofing exhibits, and the space in this hall has been very carefully set out, so that there will be the possibility of a thoroughly practical display on the part of the firms interested. A special sub-committee is being formed by Mr. Edwin O. Sachs, the chairman, in conjunction with Mr. Frederick R. Farrow, who presides over the commercial section of the British Fire Prevention Committee, and it is proposed to issue invitations to the leading authorities on fire protection, &c., throughout the country, to participate, by attendance and otherwise, in the Exhibition in question. The whole of the business arrangements will be in the hands of Mr. Montgomery, of Essex Street, Strand, the organiser of the Building Trades' Exhibition, but all questions of scientific interest and practical display will be in the hands of the Fire Prevention Committee, with the view of making the section thoroughly useful to the architectural, surveying, and engineering professions, as well as to the local authorities and insurance companies. The Fire Prevention Committee will themselves be exhibiting a model of their testing station, reports, photographs, &c., and will prepare a special technical catalogue and analysis of the section in question.

Builders' Benevolent Institution.—The fifty-third annual dinner of this institution was held on Thursday last in the hall of the Carpenters' Company, London Wall. Mr. John Greenwood, C.C. (president), occupied the chair, and the company numbered altogether about 140. The president stated that the charity was founded in 1847, since which time there had been 289 pensioners elected, the present number being 46. Of these the men received £39 and the women £27 a year. New annual subscribers were urgently needed to take the place of those who had been removed by death. The institution depended entirely on the liberality of the members of the building trade, who might be sure that whatever they subscribed would be thankfully received and faithfully applied. Major Brutton (secretary) read the list of donations, which showed a total of £720. Of this amount the president's list represented £574, his own subscription being £105. Major Brutton was presented with a testimonial, together with a cheque for £160, by upwards of 200 subscribers, in recognition of twenty-five years' faithful service as secretary of the Institution.

Enquiries Answered.

The services of a large staff of experts, including all those engaged on "Specification," are at the disposal of readers who require information on architectural, constructional, or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Widening a Bridge.

SHIPTON.—ASSISTANT writes: "It is proposed to widen the bridge as shown on the accompanying sketch (not reproduced). I shall be glad to know if you consider the retaining walls (shown in section) to be of sufficient strength, also the girders, the greatest live load being that of a steam roller weighing 13 tons."

The tracing enclosed with query is very rough. The new girders appear to be 30ft., 25ft., 22ft., and 20ft. span respectively, placed closer as the span increases, but, say, 5ft. apart. They should therefore not be less than 15in. deep. Assuming that they have to carry a dead load of 1½cwt. per ft. super. and a live load of the same amount, the load on the 25ft. span will be 18·75 tons, requiring 15 × 6 × 59lbs. rolled steel joists. Between these should be placed transversely 4 × 3 × 12lbs. rolled steel joists 4ft. 6in. apart, embedded in the cement-concrete and level with underside. The retaining wall should be 4ft. 6in. thick at bottom and batter 3in. per ft. of height. The back may be stepped in 4½in. set-offs to a thickness of 2ft. at top. If the shale has a dip towards the railway the wall on that side might batter 4½in. per ft. of height.

HENRY ADAMS.

Cements.

COLWYN, N. WALES.—CONTRACTOR writes "What are artificial cements and natural cements; what are the usual tests for Portland cement; for what purpose is silver sand used in combination with Portland cement?"

Portland cement, slag, Robinson's, and similar cements are artificial cements. Roman cement, plaster-of-Paris, and similar cements are natural cements. The term natural is only applied to those cements which are made direct from a mineral by burning and grinding, and without the addition of other materials. The usual tests for Portland cement are colour, weight, fineness, tensile and transverse strengths. There are other tests which are sometimes used by manufacturers for their own satisfaction before sending the cement to the users. Silver sand is used with Portland cement to give the fining coat a close and uniform texture, also to impart a white, or a silver-grey, colour to the finished surface.

W. MILLAR.

Movable Floors for Swimming Baths.

PRESTON. NOUVEAU writes: "I should be glad to know how to construct a movable wood floor over a swimming bath 30ft. wide, to be used as a gymnasium and entertainment hall during the winter season. Can you give me the names of any baths where this has already been done, and is the scheme a success as regards rigidity of construction and easy removal? Are there any good books published on swimming baths?"

We have constructed movable floors to the baths at Hampstead and elsewhere, and they have always proved satisfactory as regards rigidity of construction and easy removal. The usual arrangement is to have rows of longitudinal bearers, framed in sections, in the pond of the bath, with stout flooring boards across, the bearers being placed about 5ft. apart.

SPALDING AND SPALDING.

Mr. Saxon Snell's article on public baths and washhouses, published in our issue for March 28th last, will doubtless be of use to our correspondent. "Public Baths and Washhouses," by R. O. Allsop, is a book which may be obtained from Mr. B. T. Batsford, 94 High Holborn, for 5s. (postage 3d.).

Book on Specifications, Quantities and Prices.

CARDIFF.—S. M. writes: "Kindly mention a good book on specifications, quantities, and the price of same."

"Specification: No. 4," price 5s., which can be obtained from these offices.

Duties of a Clerk of Works.

FULHAM, S.W.—M. A. B. writes: "Is there any book published that gives instructions as to the duties of a clerk of works?"

"The Conduct of Building Work and the Duties of a Clerk of Works," by J. Leaning. Price 2s. Published by Mr. B. T. Batsford, 94 High Holborn, W.C.

Strength of Balcony.

PRESTON, LANCS.—NOUVEAU writes: "I should be glad to know what would be the safe live load per sq. ft. to allow for the balcony shown in the accompanying sketch. The balcony is to carry the switchboard in an electric-light station, and the switchboard will be fixed in the centre. The concrete floor is 8in. thick and composed of brickbats 2in. mesh and 4 to 1, finished off with 1in. rendering to floor. Owing to the level of the floor being fixed wrongly the concrete has worked out thicker than was intended, and has, therefore, brought more weight on the cantilevers, although very little vibration is felt when standing on the points of the cantilevers and jumping on them."

The concrete and ironwork together will weigh about ¾ cwt. per ft. sup., and the balcony will be safe with a live load of ¾ cwt. per ft. sup. in addition to the dead load. The weight of switchboard, according to the weight and space occupied, will reduce the above estimate.

HENRY ADAMS.

Examinations in Geometry.

BRECHIN, N.B.—H. A. F. writes: "Please say how much geometry is necesssry for me to prepare for the advanced examination in that subject. I am using Angell's text-book; if you could name the chapters in that book required to be learned I should feel obliged."

The whole of Angell's larger book, in two volumes, in addition to his small book, should be thoroughly mastered, and not merely learned.

G. A. T. M.

Appointments under Colonial Governments.

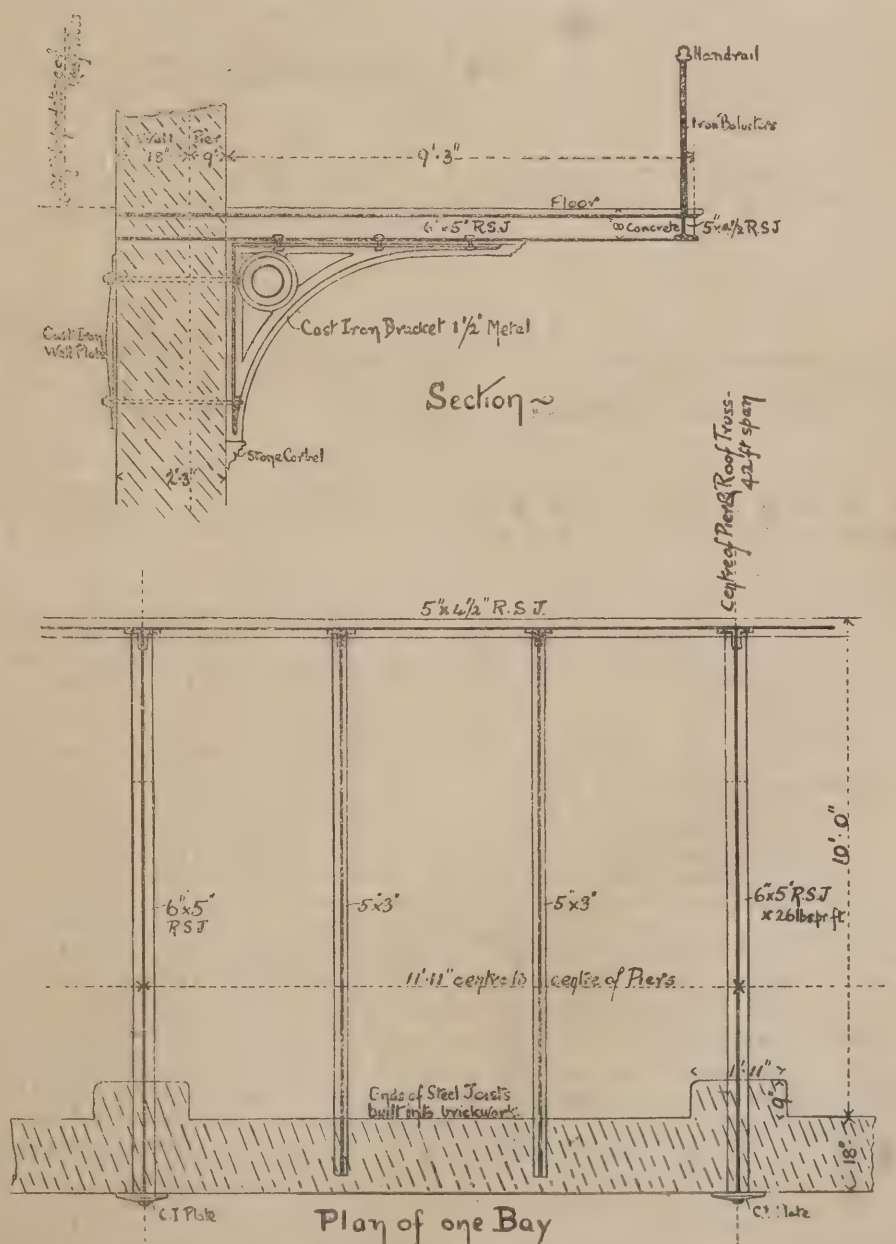
SOUTHSEA.—J. H. M. writes: "To whom should I apply for information about appointments in the Civil Engineering, Surveying, and Architectural Departments of the Governments of Canada, India and Australia?"

Write to the Agents-General for Canada, Victoria, New South Wales, Queensland, and Western Australia, all of whom have their offices in Victoria Street, Westminster, S.W., and to the Secretary of State for India, Whitehall, S.W.

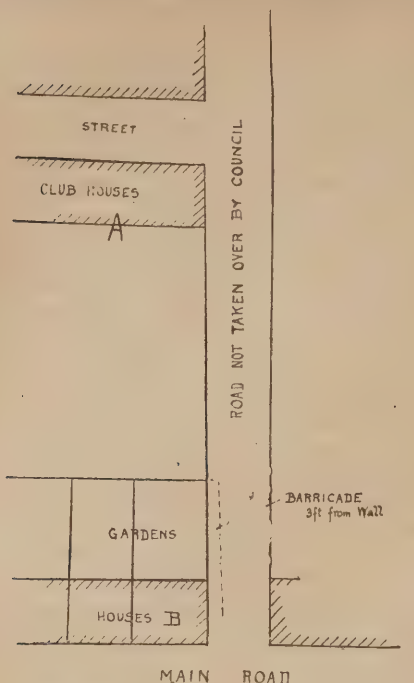
G. A. T. M.

Right to Erect a Barricade.

HENGOED, CARDIFF.—P. V. J. writes: "Referring to the accompanying sketch, a building club built houses as shown at A. The private road from the main road to the entrance of the



STRENGTH OF BALCONY.



RIGHT TO ERECT BARRICADE.

street in front of the houses was in a bad state of repair, and in order to increase the value of the houses the club, with a little pecuniary aid, decided to repair the road; but as soon as this was commenced the owner of the house marked B (on lease from the estate) abutting on the main road, put up the barricade shown, and says he owns three feet outside his wall, although it is a known fact that for thirty years past the road has been open to the public. Can the owner be compelled to take down the barricade?"

It appears that the owner of the house in question has allowed the public to acquire a right over the ground which he claims, and that he has now no right to enclose it.

G. H. B.

SCIENTIFIC SOCIETIES.

IN dealing with "The Origin, Development, and Aims of our Scientific Societies" at the opening meeting on Wednesday last of the 147th session of the Society of Arts, Sir John Evans, F.R.S., the new chairman of the Council, admitted that the subject was a large one, and that it would be impossible to enter into details with regard to its almost innumerable ramifications. Beginning with very ancient history, he showed that the Academia in Athens and the museum founded by Ptolemy Philadelphus in Alexandria were much of the nature of scientific societies, though no doubt mainly educational. In England no learned society received the Royal Charter before 1662, when the Royal Society was incorporated by Charles II., but it had been instituted in 1660. Fifteen years previously a society of friends of experimental philosophy had been formed in London, where they met weekly. About the year 1572 "divers gentlemen of London, studious in antiquities, framed themselves into a College or Society of Antiquaries." The honour of this foundation was due to that munificent patron of letters and learned men, Archbishop Parker. In 1589 they decided to apply to Queen Elizabeth for a charter and for some public building where they might assemble. It is uncertain whether the petition was presented or not, but the Queen seems to have given the society her countenance, and it flourished until the reign of James I., who for some reason dissolved it in 1604. The society remained dormant until 1707, was reconstituted in 1718, and received its charter in 1751 from George II., who thereupon declared himself its founder.

Having traced the inception of the two oldest of our learned societies, Sir John Evans proceeded to indicate the proper aims and objects of a learned society, and then reverted to the history of the Royal Society and other institutions in the eighteenth century. He went on to show how later societies were derived directly or indirectly from the two older ones, with which the Society for the Encouragement of Arts, Manufactures, and Commerce, founded in 1754, was associated as a third parent. For the Society of Arts it was claimed that at least as numerous an offspring could be cited as for its two elder sisters. Even the Science and Art Department at South Kensington might be included, as that institution grew out of the 1851 Exhibition, which was organised by the Society of Arts. The chairman went on to show what good work the society had done in promoting useful inventions and educational movements, and for the advancement of art. Perhaps the first public exhibition of pictures was held in its rooms in 1760, from which sprang the Royal Academy. In conclusion Sir John Evans referred to what might be termed the societies representing the philosophico-historical sciences as distinct from mathematical, physical, and biological sciences.

OUR NEEDS AND PROGRESS IN THE ARTS.

IN the course of a lecture with the above title, delivered at Leeds on Thursday last, Mr. Frederick Wedmore said that real artistic progress was scarcely a matter that lay within our command. Education could not compass it, and neither schools nor Universities could bring it about. The finest works of art, in painting, sculpture, music, or literature, came at no one's beck and call; and all that higher education could do was to make men readier to receive a beautiful production when it arrived. But, of course—and in handicraft and applied art especially—there was such a thing as a general improvement in taste, and within the last twenty years great improvement had had to be noted, and in rooms of many styles, expensive and inexpensive, it was possible now to be surrounded with tasteful form and attractive colour. Exhibitions of arts and crafts, said Mr. Wedmore, had done something, and they had done most when they had not been narrow. If they had decided that French eighteenth-century furniture was of a "bad period," taste and fashion had gone beyond them; the style of Louis XV., in France, was now firmly rooted in England as pure and good. Respecting our needs in art, one of the first of them—especially amongst artists—was the absolute avoidance of that narrowness which resulted in condemning great things only for want of understanding them. The word "artistic" was used too commonly and falsely; to some people, for instance, a curtain was an "art curtain" if only it was of sage green colour, and absorbed all the light. A door-mat was the only thing in household furniture which did not yet put forth its preposterous claim to be "artistic." Nevertheless, with all this silly prating about art, by those who had not got the root of the matter in them, the lecturer did really believe that there was some progress in taste—some added sensibility to lovely colour and line. Women's dress showed it. In the decorative arts there was great need not to extol too much the interesting and curious school of Japan, which happened of late years to have been popular. We were caught by mere novelty; and now that the art of Japan, and its principles of ornament, were novel no longer, there was perhaps a greater chance even amongst most ordinary people for the appreciation of the Renaissance. What—despite its admirable ingenuity and ready effectiveness—was Japanese ornament by the side of Inigo Jones, Holbein, and Aldegrever? That the fine art of engraving had fallen into disuse, was a lamentable fact the lecturer had to glance at. Some compensation, perhaps, lay in the appreciation of original etching; but yet no one art could fulfil the functions of another. Photography was a craft now both popular and ingenious, but it must not be suffered to stifle the life out of an art that nothing of its own could replace.

Quarry Notes.

Mr. R. R. Jones, late manager of the Pa dreiniog Quarry, Bethesda, has been appoin general manager of the Foxdale Slate Quarr Isle of Man.

Mr. W. C. Bryant, of 42 and 43 Main Stre Birmingham, having given up the represen tion of the Maglona Quarries, Limited, inte to trade in enamelled-slate chimney pieces his own account.

The Largest Block of Stone ever blasted Derbyshire was recently raised from the Asho quarry. It measured 33ft. long by 31ft. w and 23ft. deep, and contained upwards 23,500 cubic feet.

A New Grey Granite, known as Craiglart about to be placed on the market. It is scribed as light grey in colour and of cl texture; it can be quarried in large blocks, a if all that is said of it be true, it is likely prove a valuable addition to the trade.

The Quarry at Crelly has been reopened. has been worked on two previous occasic but owing to the unsuitable nature of the st was abandoned. The extra amount wh must be spent on the quarry at Carnmenellis ensure a further supply of stone was conside a reasonable cause for making another atten at Crelly, hence the activity now displayed the workmen at the foot of Crelly Hill.

The Devon Slate Quarries, Limited, a compa which was some months ago formed for purpose of acquiring and working the sl quarries at South Larcombe, New Larcon and Totnes, is making very satisfactory p gress. The slate proves to be of an excell quality, and commands a sale to the full ext of its production. The registered offices of t company are at 25 Victoria Street, We minster, S.W.

The Slate Trade seems to be somewhat pressed. At Portmadoc stocking tends lower the prices. For some kinds of sl there is a fairly good demand; the mid sizes of the best and second qualities are s at Carnarvon almost as quickly as they can produced. Labour is scarce, some of t quarries are not in working order, and there a lock-out at Lord Penryhn's quarries, whe the quarrymen, numbering 4,000, removed th tools on Saturday.

Marble Tile Pavements are constantly i creasing in favour in England and on t Continent. According to the "Bankok Time the head priest at Wat Mahatat, in Mua Pitsanuloke, is also about to pave the floor the temple there with marble. He has received large number of subscriptions, including one 2,000 ticals from Queen Phra Boromarac Devi.

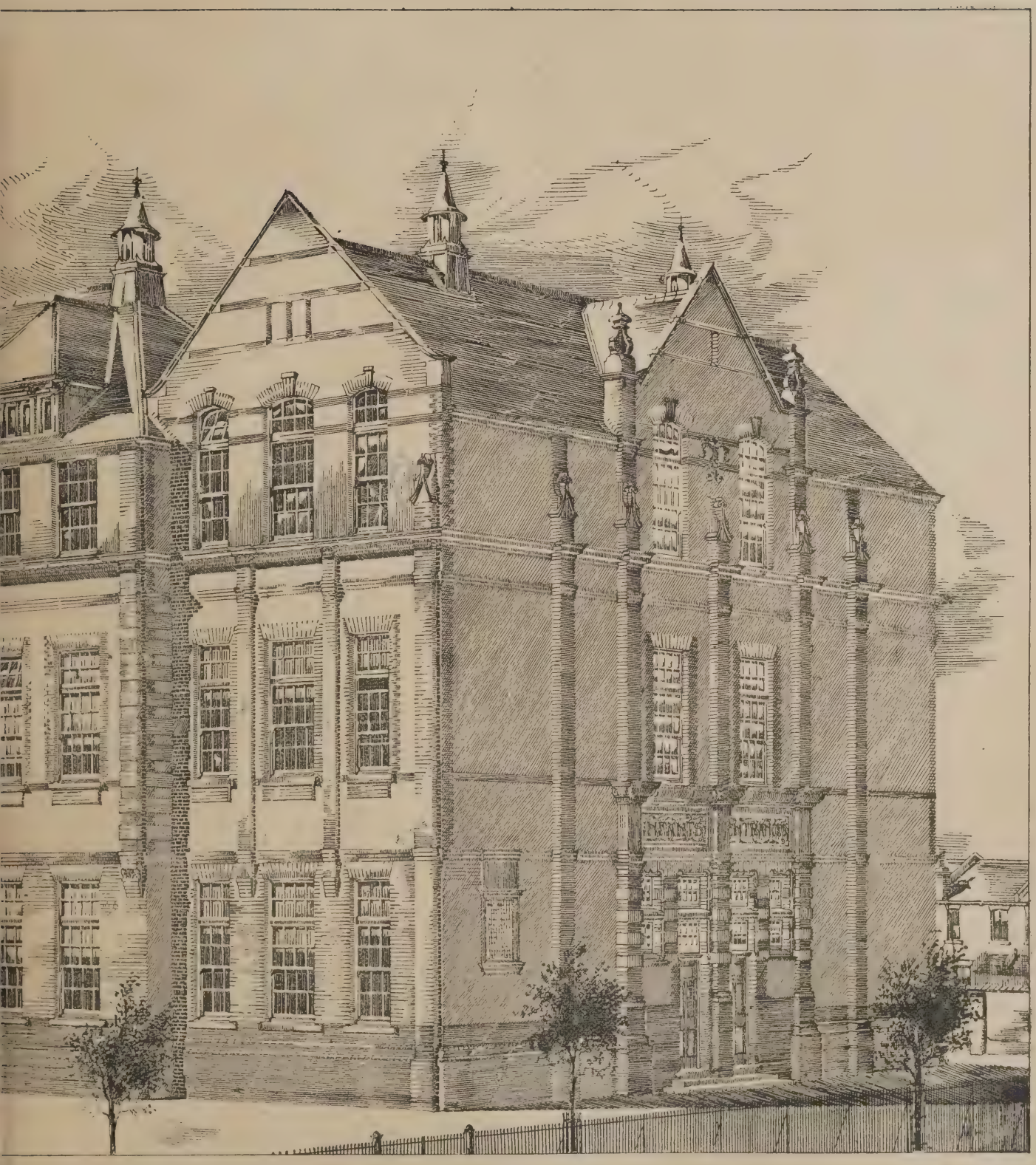
The Llanberis Slate Quarries, the secor largest in the kingdom, are about to mal great developments. A large area of grani rock in the mountain side, known as t Dyffryn Rock, which has prevented much goo slate from being worked, is to be removed at cost of between £40,000 and £70,000. Mo than 400 extra quarrymen will be needed f the work, and it is quite likely that many the locked-out miners from the rival Penrhy quarries at Bethesda will seize the opportuni for employment.

The Architectural Granite Trade is very slo although several large-sized contracts ha been recently placed. The demand for ra material, however, remains keen, and the in ports from foreign ports will no doubt conside ably increase. The Aberdeen granite firm who have for many years imported abo 10,000 tons of foreign granite, mostly fro Norway and Sweden, are trying the exper ment of supplementing the supply by bringin Irish granite from County Donegal, which ha literally miles of granite formation waiting t be developed. If the experiment proves financial success, we may expect to see shi ments made direct to London and other larg centres.

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BESSBOROUGH ROAD BOARD SCHOOL, I



E ILFORD. S. Jackson, Architect.

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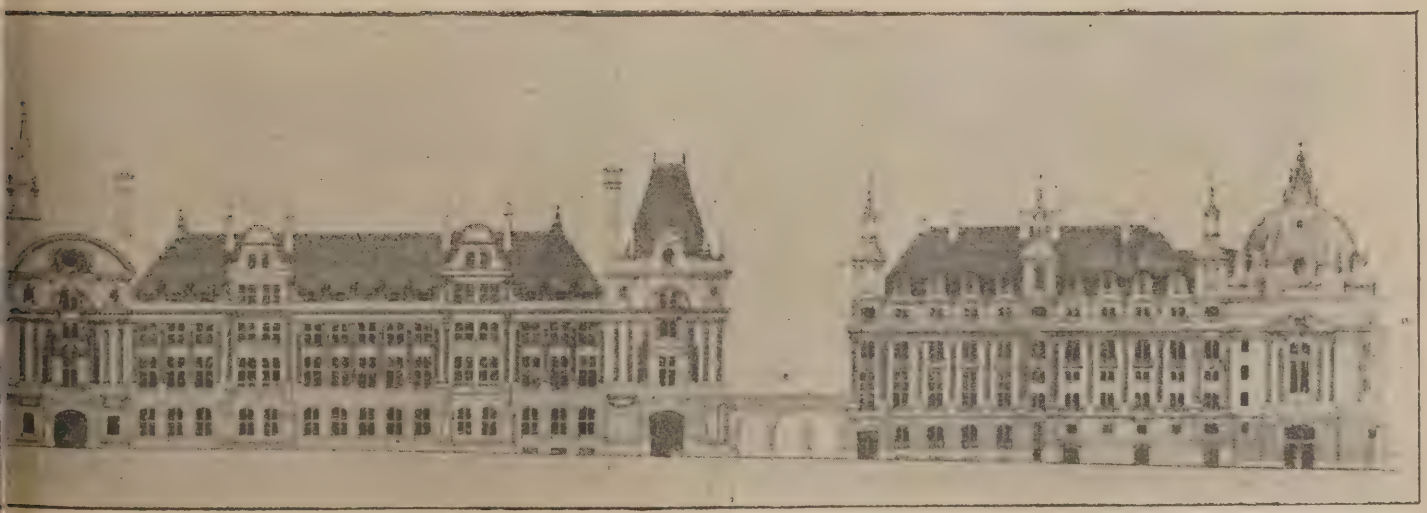
THE HOLBORN TO STRAND THOROUGHFA



THE STRAND.



DE OF CURVED STREET.



DE OF CURVED STREET.

Design No. 27. WILLIAM FLOCKHART, Architect.

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Bricks and Mortar.

APHORISM FOR THE WEEK.

"Seraphs share with thee
Knowledge: But Art, O man, is thine alone!"
SCHILLER.

Our Plates. We give this week Mr. Flockhart's designs, numbered 27, for the Holborn-Strand buildings. Bessborough Road School was erected by the Little Ilford School Board and was opened in June last. It is built to accommodate 1,709 children, namely, 529 infants, 540 girls, and 540 boys. The site comprises an acre and a half, and there is a caretaker's cottage in the playground. The total cost was £19,850. Mr. S. Jackson, of 65 Fenchurch Street, E.C., was the architect, and Messrs. Gregar and Son, of Stratford, E., were the builders.

Cripplegate's "Four Shoppes." The block of buildings in Cripplegate known as the "Four Shoppes," which is parochial property, has been sold to the Corporation for the respectable sum of about £19,000, and is shortly to be demolished. No other buildings are to be erected on the site, but the ground will become part and parcel of the churchyard. Consequently, says the "City Press," the section of the ancient church of St. Giles which is now hidden will be thrown open to public view, as it was about three or four hundred years ago. "The entrance gateway to the churchyard, which is part of the block, and which is looked upon as one of the finest and most unique specimens of early architecture extant, is, we are glad to say, not to be included in the demolition scheme as a permanent removal. The Corporation propose to simply set it back, and allow it to remain as the entrance to the church path. There are two blank windows on the side of the church, and Mr. Joseph Mann and other prominent parishioners will set a scheme afoot at the next vestry meeting to open up the windows and place in one a memorial of the great fire of three years ago, when, though about half the parish was burnt down, the church again escaped. The fire-station facing the entrance to Jewin Street is nearing completion, and the authorities recognise the fact that some provision must be made to facilitate the brigade getting smartly away. This part of the thoroughfare is characterised by constant stagnation in the traffic, and it has been suggested that, when the demolition of the buildings mentioned takes place, a way from Fore Street into Jewin Street should be cut through the block of buildings on the east side. If this is done, the traffic will be greatly relieved."

Sculptured Crosses. Lecturing recently at Barrow on sculptured crosses dating from 670 to 1050 A.D., Mr. W. G. Collingwood, M.A., said that some of them were Anglo-Saxon, while others were Irish or by Norse settlers who came from Ireland. He next described those to be found round the coast, dealing particularly with those in West Cumberland (chiefly Norse), the Gosforth Cross, and at places like Cross Canonby, Dearham, Aspatria, and all round where the old Roman road went. From Ravenglass round the coast to Carlisle the Norse from Ireland settled and left one type of cross. At Bewcastle, on the border, there is the old Anglican cross, a monument to King Alcfrith, carved by workmen hired probably by St. Wilfrith. Going up the Eden Valley one strikes the Roman road again and gets on the track of the much later Norse and Danish settlers. At Penrith there is the Giant's Grave. Then at Halton, on the Lune, one finds very late crosses with an interesting story of Siguard, the mythological legend of the Norsemen, a Christian cross, but with heathen myths upon it. This series ends at Heysham, where there is the old arch of a Saxon chapel, and gravestones both of the earlier Saxon and later Danish type.

Nothing New under the Sun. It is probable that Sir Frederick Bramwell considered he was distinctly original when he proposed to construct footways at the first-floor level, but the late Mr. Charles Henman, F.R.I.B.A., and Sir Martin Conway appeared to have forestalled him. The former exhibited at the Paris International Exhibition in 1855 a design showing shops at the first-floor level with a covered footway fronting them, connected by bridges at the intersection of the side streets. He also submitted to the Royal Commision "a design for embanking the Thames," showing a roadway (at the level of that now in existence) having warehouses along its land side. Above is a second roadway at the level of the bridges, while the shops bordering this have covered footpaths in front of them. This design was exhibited at the London International Exhibition, 1862, and also at the Royal Academy. Sir Martin Conway, in March, 1895, put forward a scheme practically identical with Sir Frederick Bramwell's, though it had no immediate reference to a specific improvement. Criticising the two schemes, the "Daily Chronicle" remarks that we must remember that Sir Frederick Bramwell, though a most distinguished engineer, is not an architect, and Sir Martin Conway is chiefly famous for climbing mountains, which is a different art from designing level streets. It is interesting to note that a block of buildings now in course of erection at the corner of Shaftesbury Avenue and Vine Street (from designs by Mr. Robert J. Worley) has shops and a covered footway at the first-floor level.

Electric Lighting in Theatres. The electric light is, without doubt, the finest illuminant yet discovered, but it is remarkable to note how very recent its application for general purposes has been. At the present time almost every theatre and music-hall in London is lighted by electricity, but all this has taken place since 1881, when the Savoy Theatre was fitted throughout. Mr. D'Oyly Carte's chief trouble was to prove to the theatre-going public that there was no danger. As the "Daily News" points out, the more timid seemed to have some idea that an accident to the electric lights might involve some sort of lightning flash, while even more level-headed folk shook their heads lest the electricity might suddenly fail, and a stampede should occur in the darkness. So Mr. Carte, in order to reassure everybody, made a speech on the stage, showing how the "pilot" of the sunlight was always kept burning, so that the house could be flooded with gaslight at a moment's notice, and smashed an electric incandescent lamp with a hammer to prove there was no danger. The audience were also invited, after the representation, to see the electric lighting on the stage, where they were received by Mr. George Edwardes, who was then Mr. Carte's acting manager. The only real difficulty which Mr. D'Oyly Carte found in adopting the electric light was with the scenery, for the white electric lamps rendered necessary totally different colours to those used by scene painters for the yellow gas lights. The difficulty was, however, overcome by the skill of Mr. Henry Emden. Now, as already mentioned, almost every stage in London has the electric light, while at the opera the very scenery is henceforward to be shifted by electric power.

Spoiling an Old Street. The "Daily Graphic" states that Prince Christian has approved the plans for a volunteer drill-hall and gymnasium near Windsor Castle, and has consented to the building being dedicated to the memory of the late Prince Christian Victor. Laudable and opportune as the proposal is, there are many who will learn with regret that the Mayor and Corporation of Windsor have decided to erect the building at the expense of some of the oldest and most historic houses in the town. The site chosen is in the old street which lies between the Guildhall and the vicarage, and is well known to visitors of the Castle, facing as it does the Henry VIII. gateway. The majority of the old houses in this street were built purposely for the residences of ladies and gentlemen in attendance at the gay Court of Charles II., and an underground passage connects all the houses on the east side of the street as far as the old vicarage, and branches off from there to the Castle. This passage was closed up about forty years ago. The house in which Nell Gwyn is said to have stayed is on this side of the street, but it is more than doubtful if she really resided there. The old Town Hall, stood at the Castle end of Church Street, but was done away with when the present Guildhall was built (1789). At the opposite end of the street was the lock-up, and it was here, early in the nineteenth century, that the notorious Barthelmy was brought after his arrest at Priest's Hill, the scene of his last duel, in which he killed his antagonist, a fellow-countryman. Strong protests are being made by many of the leading residents against the contemplated defacement of this ancient street, and it has been suggested that a memorial should be got up and presented to the Town Council.

A Man who Dislikes Builders. Says a writer in the "Country Gentleman":—"With builders there is nothing to do but endure. Speech is unavailing. Very often they don't even hear it. They go about intent on one thing—the utter and complete demolition of everything old that you hold dear, in order that something new may be forthcoming which you did not really want. They are brusque, unswerving, unapproachable. . . . The real trouble is bricks and mortar. If we were content to live in wooden houses all would be well. One brick can spoil a landscape, but no quantity of accumulated logs can injure it. Indeed, a heap of logs is always appropriate, always fits itself naturally into the picture. Planks certainly are not becoming; but planks are for the most part kept indoors. . . . Now, the well-sinker is a vastly superior person. . . . He leaves very little mess, he works in a small area, and he makes no noise. Better still, he keeps himself hidden. One's only chance of seeing him is to lean over the edge of the hole and peer down. After a while, when the eyes are accustomed to the darkness, one is aware of a patient little gnome, absurdly foreshortened, filling a bucket with a spade. It is the well-sinker. At the top, with their brawny arms at ease on the windlass, are his two subordinates. . . . The men at the windlass talk and smoke and are happy; the man below toils all day. But—a strange variation upon the usual rule—it is the man below who is the master, the employer, the capitalist, and the men above who are mere labourers. . . . One well-sinker is, to my mind, worth a myriad builders."

St. Augustine's, Canterbury. Canon Routledge announces that excavations have been commenced on the site of St. Augustine's Abbey, which, it will be remembered, was purchased by subscription a few months ago to prevent its falling into the hands of unsympathetic builders. The works are being carried out under the direction and personal supervision of Canon Routledge and Mr. W. St. John Hope, and have already yielded satisfactory results. The remains of the early Saxon Chapel of St. Pancras have been uncovered, and the floor was found to be covered in places with masses of fallen Saxon masonry. A Roman pillar was found *in situ*, and portions of two others were discovered among the *débris*. The plan of the chapel as now revealed is a valuable addition to the few early Saxon plans previously known. Operations have also been commenced on the site of the great Abbey Church of SS. Peter and Paul, which is known to cover the sites of two earlier Saxon churches, one built by King Ethelbert for St. Augustine, and another raised by Eadbald. The north end of the transept was opened out, showing remains of an apsidal chapel to the east, and structures at the east end of the church have been partly unearthed, while the chapter-house and the walls of a large hall (probably the infirmary) have been traced. The work on this portion of the site will, however, have to be postponed, partly on account of the approach of winter, and partly on the score of expense, as a huge mass of earth was deposited on the site of the presbytery twenty years ago.

THE NEW COLSTON HALL.

THE new Colston Hall, Bristol, was opened yesterday. It is now some two years since competitive drawings were submitted for the restoration of this hall. The designs were then assessed by Mr. H. L. Florence, and those submitted by Messrs. F. H Jones and Cummings, London, selected. The apparent defect of the scheme, however, was the limited space available for the large orchestra and chorus and for a grand organ. The directors therefore fully considered the matter with their architects, and determined, if possible, to secure the piece of ground adjoining the organ end; this they were fortunate enough to do. Most of the old walls of the hall have been retained.

The site is admirably adapted for a public building of this kind, entrances and exits being obtained at the four corners of the building leading directly into streets, and the level of Trenchard Street being so much higher than Colston Street admits of easy and safe exit from the gallery and grand tier at that side of the building. The principal entrance to the building is from Colston Street under the existing loggia, from which a new vestibule having three large double doors leads to the entrance hall, on one side of which is a room for the directors, and on the other a reception room for distinguished guests. On either side of the hall, doors also lead to cloak-rooms for ladies and gentlemen, with a large crush-room between, and having communication with these rooms and the entrance hall. Two large flights of steps, each divided by a centre rail, lead to the principal floor. This has a corridor formed by a panelled screen round the entire hall, allowing the public to reach their seats without crossing the body of the hall. The floor is constructed in a manner suitable for dancing. Two large emergency exits are provided to Trenchard Street, which at these points is a few feet above the floor.

The principal approach to the grand tier is from the main staircase. This arrangement was adopted so that on certain occasions, such as a ball, direct access can be obtained from the principal floor to the grand tier, which on such occasions would be used as a supper-room. The risers of this floor are so arranged as to be capable of forming a perfectly level floor. Along one side of the tier, and overlooking the grand staircase, is a spacious balcony, which forms an ante-room to this part of the building. As in other parts of the hall, the columns are placed in such a position as in no way to obstruct the view of the audience. The gallery, which, like the grand tier, occupies three sides of the hall, has an open corridor the entire length of seating. This is so arranged that a view of the platform can be obtained from any part of it. There will thus be no danger of the public obstructing the passage to exits. Separate entrances to the gallery have been arranged for.

Particular attention has been paid to the arrangement of the orchestra. The seating is so arranged that the eye of each singer looks towards the conductor without turning the head, and the rise of seats is in the form of a parabolic curve, and of such a height that the mouth of one singer is above the head of the singer below. Each group of singers has a separate retiring room at the side of the platform at which they sing, they also enter as near as possible at the level they occupy. Thus the band enters at the lowest level of the platform, the soprano and alto by vomitoria at an intermediate level, and the tenor and bass at the highest point. The principal artistes have separate rooms as nearly as possible on the level of the platform, the few steps necessary owing to existing levels being placed in corridors at some distance from the actual entrance to the platform. Two spacious staircases are provided at the back of the orchestra; the sopranos and tenors entering from Trenchard Street, and the altos and bass from Colston Street. The band and chorus are exceptionally well provided for in having for their sole use two large refreshment rooms under the platform. The conductor and organist have each a spacious retiring room. A portion of the platform is made movable so that a large stage may be formed, the movable portion being removed to the basement by means of a large lift.

A magnificent organ, the gift of Sir W. H. Wills, and built by Messrs. Willis and Sons, London, occupies a space at the end of the hall. The chamber is about 22ft. square, and the height from engine-room to top of case is a little over 70ft.; it is blown by three electro motors. The ceiling over the organ was carefully designed to throw the sound of the organ into every part of the large building. Every attention has been paid to the acoustic properties of the hall. The grand staircase separating the two halls has been somewhat modified. The landings have also been considerably altered and a *foyer* at the north end, having large arched openings overlooking the staircase, has been added.

Serveries and lifts are provided in positions leading directly from the large kitchens in the basement to the principal floor, grand tier and chorus refreshment rooms. The kitchens will eventually be fitted up in the latest manner, and part of the scheme has already been carried out. The interior of the new hall has been treated in a broad manner. The decoration is concentrated on the ceiling and gallery fronts, the latter having ships and dolphins worked in the design, suggested by the legend of Colston. Small panels in the grand tier will be filled in with the names of celebrated composers and prominent citizens of Bristol. No attempt has been made to colour the hall at present, but a colour scheme is in the possession of the directors. The hall is capable of containing some 4,000 persons, being 1,500 more than the original building. Between 1,400 and 1,500 can be accommodated on the ground floor, 700 in the grand tier, and 1,000 in the gallery. Double windows have been provided, thus securing freedom from street noises. The building throughout is lighted by electricity, the fittings being effectively arranged. The staircases and landings have in addition gas jets, for use in case of emergency. The heating is on the low pressure hot water system, and the ventilation by means of fresh air inlets and large extraction fans. Fire appliances have been placed in convenient positions throughout the building. The work has been carried out by Mr. A. J. Beavan, contractor, Bedminster, and the company were fortunate in securing the services of Mr. John Perrott as clerk of works. The sanitary appliances are the work of Mr. A. S. Scull, of Redcliff Street.

CARPENTERS' COMPANY'S EXAMINATION.

SANITARY BUILDING CONSTRUCTION.

THE Carpenters' Company held its annual examination in sanitary building construction the week before last. The examination was that for which the lectures, delivered lately, lead up to. The average attendance at the lectures was over 74. The numbers entering for the examination this year were not so large as during the last few years, but the high average of merit was fully maintained: the actual average of the marks obtained being greater than last year. The board of examiners included Professors T. Roger Smith and H. E. Robinson, Mr. John Slater, B.A., V.P., R.I.B.A., Mr. W. H. Seth Smith, President Architectural Association, Mr. Wynter Blyth, M.O.H., Marylebone, and other well-known men. We give below the list of successful candidates arranged in order of merit:—Messrs. W. H. Johnson and John Sanderson, gold medals; Messrs. C. B. Burnett and Hugh Byron, silver medals; Messrs. F. C. Brown, W. J. Collins, J. S. Knight and J. I. Lonnen, bronze medals. Messrs. J. W. Devonshire, E. W. F. Martin, J. Rees and A. W. Stiles, Robert. Phillips, W. T. Sweett, Allan Storey, W. H. Gale and A. J. Griffiths. Candidates who sat to improve their positions but who failed to do so do not appear in this list.

A Presbyterian Church at Reading is to be erected in Caversham Road.

Engineering Notes.

A new Electric Lighting Works at Beckenham was formally declared open on Thursday last. The works have cost £37,000.

Important London Gas Scheme.—The South Metropolitan Gas Company gives notice that in the coming session of Parliament it will promote a Bill to enable it to purchase the property and rights of the Gas Light and Coke Company south of the Thames. The Gas Light and Coke Company now charges 2s. 10d. per 1,000ft. on the south side, the same as the South Metropolitan Company, and says it loses by it, and recoups itself by what it makes out of those on the north side, who pay it 3s. 5d. per 1,000ft.

London Bridge Widening.—Among the Parliamentary Bills for the next session is one by the Corporation of London for power to remove the walls, parapets, and carry out such work as necessary to enable London Bridge to be widened on both sides from Adelaide Place on the City side to the steps on the Southwark side by the inclusion of the present footpaths into the roadway. New footpaths will be constructed on either side of the present structure, supported on granite corbelling (see p. 341). Sir Benjamin Baker recommends a scheme for the expansion of the structure from 53ft. 5in., its present width between the parapets, to not less than 65ft. This will give a width of 34ft. 6in. for four lines of vehicles, 2ft. 6in. for central lighting, and 14ft. for each footway, instead of 9ft. 6in. as at present.

Bournemouth Tramways Scheme.—A Board of Trade enquiry was recently held at Bournemouth into the application of the Corporation for sanction to borrow £174,750 for the construction and electrical equipment of a tramway. The Town Clerk pointed out that the Poole and District Electric Traction Company had a light railway order to construct a tramway from Bournemouth to Poole, which was now being laid, and the Christchurch and Bournemouth Company had powers, in their order of last session, to construct a tramway between the two towns. They had running powers over the Bournemouth East line from east to west. Mr. Francis said, on behalf of certain property owners, that he did not object to the expenditure of £170,000 for the tramways, but to the item of about £5,000 for a generating station in Southcote Road, as it would depreciate the value of other property in that neighbourhood. Mr. Turrill also objected, but Mr. Lacey said the proposed site was the only suitable vacant one in the whole of Bournemouth. The Town Clerk said that if the Corporation did not complete the proposed works within two years from August last the other companies would have the power to step in and construct the line. As soon as the Corporation got the necessary sanction they would at once proceed with the work. The Inspector then concluded the enquiry.

Proposed Bridge over the Tyne at Shields.—A scheme has recently been adopted by private enterprise for erecting over the Tyne, between North and South Shields, a bridge of the "transbordeur" class, described and illustrated in our issue for January 10th last. The company, or syndicate, has been floated with a capital of £130,000, and the corporations of Tynemouth and South Shields are so far disposed to give every possible countenance and aid to facilitate the accomplishment of the undertaking, which will revolutionise the means of transit between the twin boroughs. The scheme has been so far advanced that the syndicate will be in a position to apply in the next session of Parliament for the powers they require. Mr. G. H. Gadsby, consulting engineer, Victoria Street, Westminster, and M. Arnoden, a celebrated French engineer, are the engineers who will carry out the scheme. The bridge will have a clear span of 640ft., and will be on the principle of a platform suspended by cables, which will be sufficiently large to accommodate tramcars, horses and carts, and 200 passengers, the whole to be worked by electricity. A five minutes' service will be established, and the electric power will be purchased from the respective corporations. Two piers will be erected at either extremity of the bridge.

QUANTITY SURVEYING.*

METHODS PRACTISED IN SCOTLAND.

By C. B. COWNIE.

WHEN I started to write this paper I intended to deal more fully than I have now done with the subject of quantity surveying itself, namely, the measuring of quantities and the mode of setting these down in schedule form; but on second thoughts I came to the conclusion that in a paper of this sort, a long list describing how the different materials in a building are measured would prove tedious and uninstructive, and that if dealt with generally the subject would be of much greater interest.

An attempt to deal with quantity surveying in any detail within the short space of an hour would lead to little instruction and much confusion in the minds of any but those who had a thorough grasp of the subject beforehand. I have therefore attempted to give the main principles of measuring without going into any unnecessary details.

The Object of the Schedule of Measurement.

The business of a quantity surveyor is to ascertain the amount of work done in the construction of a building and to adjust the value according to a determined basis. A schedule of measurement constitutes this basis, and is drawn up to help the contractor when estimating to arrive at the amount which the work will cost him by supplying him with the quantities of the different materials and the different varieties of labour required in the construction of the building. At the same time the schedule affords the different contractors a uniform basis for competition. The items of a schedule describe the work in more or less detail, according to its nature. In some cases one item deals only with the material, and another only with the labour, and in other cases both labour and material are included in one item. It is found that no advantage is gained by measuring certain classes of work in much detail and a convenient base to work upon is therefore discovered and used in practice, *e.g.*, instead of measuring a door in detail by stating separately the stiles, rails, panel mouldings, &c., it is usual to describe the different parts and state at the superficial foot. The prices for the different items the contractor can, in most cases, only learn by experience. To the prime cost of materials such as stone or timber he requires to calculate and add the cost of carriage, and in most cases of labour also. Even in estimating from a schedule of measurement there is a certain amount of speculation. The contractor takes the risk of finding, when executing the work, that through some error in judgment his rates are too low to give a reasonable profit, but by means of the schedule of measurement this risk in contracting is perhaps reduced to a minimum. Of course, the schedule of measurement serves another purpose by giving the architect a basis to work upon. With the contractor's rates before him, the cost of any deviation from the plans can be calculated with ease, whereas without fixed rates he would have no hold upon the contractor should he render an exorbitant account for the work resulting from such deviation.

Jobbing Work.

There is, of course, certain work in the erection of buildings, and more especially in the alteration of existing buildings, which cannot be satisfactorily measured or dealt with in a schedule of measurement. Such work is usually charged as time and material and priced at the current jobbing rates. The jobbing rates are compiled by the trades' associations and issued from time to time as the wages or prices of material rise or fall. These rates are, however, for ordinary jobbing work in connection with a contract, much higher than is compatible with a reasonable profit, and it is therefore usual for the contractor when estimating to agree to discount a percentage on these rates for all jobbing work connected with his contract. The checking of the time and material charged by the contractor in his jobbing account is usually done by the clerk of works. Every district has its own mode of measurement and its own trade allowances. In some parts of the country, to avoid disputes, these have been considered by committees of the local surveyors and builders and formed into sets of rules and regulations, issued in printed form. In Edinburgh the modes of measurement for only two trades—namely, mason and brickwork and carpenter and joiner work—have as yet been published, but steps are now being taken to compile sets of rules for the measuring of the other trades as well. Meanwhile there are certain unwritten rules and customs for the measuring of these trades which are generally adhered to. The tendency at the present time in measuring is to go more into detail. The measuring of work too much in detail is not unattended with evils, one of which is that with inexperienced contractors the increase in the number of items is almost sure to produce a corresponding increase in the amount of the tender.

The Schedule of Forty Years Ago.

It is interesting to look back forty or fifty years and compare the number of items in the schedules of that time with the number of those of the present day. Then it was only with very large jobs that a mason's schedule exceeded three or four pages. The measurer in those days roughly allowed for any extra labour the contractor might be put to in executing certain work by adding extra measurement. For example, instead of stating circular rubble or arching in separate items he would give double measurement and include the whole in the quantity as ordinary rubble. The quantities of rubble work being arrived at in this way the whole would be reduced either to 12in. or 24in. thick, and stated at per rood of 36 sq. yds. in one item.

The whole of the hewn work of rybats, sills, lintels, corners, and even the outside face of the building, if necessary, would be slumped together in the same way, and stated in one item at per cube foot. In carpenter and joiner work the same principle of slumping was practised. The wood in bound roof trusses was taken by the cube foot; the contents of wall plates were added to the superficial measurement of the roofing; door standards of all sizes were reduced to 3in. square and measured by the lineal foot; facings, skirtings, door stops, &c., less than 8in. wide were reduced to 4in. wide and taken lineally, and all those more than 8in. wide were taken as plain lining in a superficial quantity. One can easily understand that only a small number of items would be necessary in two schedules drawn up on this plan. This mode of measuring meant practically fixing certain rates, or at least their proportions, for the contractor, as it was pure conjecture on the part of the measurer to assume, for instance, that sunk hewn work would cost double as much as plain, or that circular hewn work would cost three times as much as plain.

A schedule made up in this way was of little practical use either to the architect or to the builder, as it was utterly impossible for anyone but the measurer to unravel its mysteries; and even he, without his notes of measurement, would be able to make little of it. The cost of the work would, moreover, be apt to depend as much upon the measurer as upon the contractor, on account of the uncertainty and indefiniteness of the mode of measurement.

Mason Work.

In giving a sketch of the mode of measurement at present in vogue in Edinburgh, I propose to follow the order of an ordinary schedule.

The first heading in a schedule of mason work is usually "Excavations and Foundations." Stripping of the surface soil is the first thing required in the preparation of a new site for a building. The depth of this soil is usually about 12in., but varies according to the agricultural richness of the ground. Should farther excavation be required it is measured by the superficial yard if it be more than 12in. deep, and by the cubic yard if less than that depth.

In measuring surface excavation over an uneven piece of ground, vertical sections would be taken at intervals, and the areas of each section calculated. From an average area of two of these sections the excavation in the portion of ground lying between them could then be calculated.

If the excavation be in rock an extra price is given over ordinary excavation for rock-cutting. Excavations for foundations are measured the nett size if the foundations are of concrete, but if they be of stone an allowance of 3in. is made at each side of the foundation to give room for setting, and a further allowance of 3in. for every foot of depth is given for the batter of the earth. Excavations from different depths are kept separate, and the cost of all shoring or strutting required at trenches, &c., is included in the prices of excavation. The foundations themselves, whether of stone or concrete, are taken in superficial or cubic quantities, according to their thicknesses.

Passing on to rubble, the whole of the stonework from the top of the foundation courses is measured as rubble, except steps, plats, hearths and pavement. All cube stone in piers and in dressings is included in this quantity to go for building. Rubble more than 2ft. thick is reduced to that thickness, and rubble less than 2ft. thick is stated in different items according to its thickness. All rubble is measured nett except in the case of circle walls, which are girthed. The projections of sleeper scarcements, pilasters, cornices, string courses, &c., are measured the nett size and reduced to the thickness of the respective walls to which they belong. In taking a balustrade for rubble, properly speaking, the rubble in each baluster should be measured nett, but in practice the balustrade is sometimes measured as if it were solid, and stated in an item by itself. The daylight sizes of all openings are deducted from the rubble. In the case of windows the rubble in the breasts is usually thinner than in the main wall, but this is measured at the full thickness to allow for the scuntions required at the angles.

Beamfilling at wall heads between the rafters, whether of rubble or brick, is not included in the quantity of rubble or brick, as the case may be, but is stated separately according to its height, and measured by the lineal yard. This rule is necessary on account of the extra labour required in packing the rubble in this position after the roof is on. Scribbled scuntions are required at all angles inside the building and below the ground line outside the building, and are measured by the lineal foot. Scuntions are also required behind the rybats at doors and windows, and if the inband rybats pass through the wall and break bond with the scuntions then half the height only is required. Stones built into walls to form beam rests are numbered, and savings over wood safe-lintels of long stones or brick arches are either numbered or measured by the superficial foot of safe lintel-covered. The mason takes delivery of and raises and sets the iron and steel work. The lengths and weights of the beams, &c., are usually given, and the light beams kept separate from the heavier ones. An item is sometimes given in the mason's schedule for hoisting and setting the joisting and roofing timbers for the joiner; this is an item which saves the joiner a considerable amount of trouble and costs the mason comparatively little expense, as he has his steam crane or other appliances already upon the site.

Regarding the measurement of brickwork there is not much to be said. The walls are sometimes stated as so many bricks thick, or each brick is calculated as 5in. on bed, to allow for the thickness of the joints, and the walls stated as 15in, 20in. or 25in. thick, as the case may be. In practice the walls turn out rather less than these thicknesses. The sizes of the bricks themselves vary considerably according to their make, and it is impossible to tell to an inch or two the actual thicknesses of a brick wall. The plumbings at all external are measured in brickwork, except in the case of 4½in. partitions, which are girthed. The plumbings at internal angles, however, are included in the price of the brick, and are not stated separately. Enamelled or other face bricks are measured as extra price over ordinary brickwork. All stonework, such as lintels, sills or ashlar, if built into a brick wall, is included in the brickwork to go for building, and is not, of course, measured again as rubble. Voids in

* Paper read before the Edinburgh Architectural Society on November 21st, 1900.

brickwork are deducted the daylight size, as in rubble, but the thinner brick in window breasts is deducted and stated in a different item according to its thickness. Bevelled plumbings and angles rounded for plaster are measured by the lineal foot. Brick arches are measured in the superficial quantity of brickwork and an extra price is given for forming the arches according to their size, and also for forming springers.

Measuring Hewn Work.

We now pass on to the consideration of the measuring of hewn work and cube stone, which is perhaps the most interesting part of quantity surveying. Stonework may be measured by the lineal, superficial, or cubic foot, as the case may be, or each stone may be stated separately with its description. Sills, lintels, base courses, plinths, cornices and the like, if of small section, are measured by the lineal foot, the sizes, girths, and descriptions of hewn work being stated. The limit sectional size of stone to be measured in this manner is 12in. by 12in., according to the rules. For instance, a sill or lintel 12in. by 12in. could be measured lineally and the price would include the hewn work, but one 12in. by 13in. would be measured by the cube foot and the hewn work taken by the superficial foot and stated separately. This rule is, however, not always strictly adhered to with sections slightly above 12in. by 12in., partly on account of the extra trouble which the second method entails. Corners, rybats, upstarts and mullions are measured by the lineal foot for labour and material. In measuring the hewn work on ordinary lintels and rybats the girth is taken to the inside angle of the check, beyond that point being taken as scribbled work.

Solid stonework in piers, &c., whether built in courses or otherwise, is measured by the cube foot. Stone in the larger sills, string-courses, cornices, &c., if less than 12in. thick, is measured by the superficial foot and if of more than that thickness by the cube foot. The stones are classified according to their sizes as below 5ft. cube, or from 5ft. to 10ft. cube, 10ft. to 15ft. cube, and so on, progressing each time by 5ft. This of course is necessary as the quarry prices of the stone vary according to the sizes of the blocks.

If a stone, when wrought, is of an irregular shape, the smallest possible rectangular size from which it could be cut is taken for the cube stone. In measuring the cube of a rectangular stone the exact finished size is taken and not the original size of the block before dressing. This is a general rule all over the country, except, perhaps, in Manchester, where 1in. each way beyond the nett dimensions of the stone (except in the case of ashlar), is allowed for the waste in dressing. The hewn work of stones where exposed to sight is measured by the superficial foot and described as polished, scabbled, droved, or scribbled, &c., and also as plain, sunk, double-sunk, splayed, circular, moulded, sunk-moulded, circular-moulded, circular-on-the-circle, entasised, or otherwise. Polished, scabbled, and droved work are different varieties of hewn work put on stones where exposed to sight.

Scribbled work is taken for the stonework which will be covered up by plaster or otherwise and will not be exposed to sight. Plain hewn work is the even surface worked on a stone without sinking more than necessary to remove its irregularities. Sunk hewn work is measured on stone where the mason has to sink a portion of the surface from one level to another, as in rebates, &c. Double-sunk work is measured where this sinking is repeated. Moulded work if under 12in. girth is measured by the lineal foot, and if above that by the superficial foot. The extreme lengths of moulded work at internal and external angles are measured. Sunk-moulded work is taken at all places where the mason cannot work in a straight line from his zinc moulds. The moulded work on a stone forming an internal mitre of a cornice would, for instance, be sunk. All dentil, egg and dart, or other ornaments are measured by the lineal foot as extra price over moulded work. Arches, if under 12in. by 12in., are measured by the lineal foot for stone and labour; if above that size, by taking the cube stone in one item and the hewn work in another. Circular hewn work is the labour required to form convex surfaces, as on the shafts of columns. Sunk-circular hewn work is the labour required to form concave surfaces, as for the soffits of arch stones, or it may be ordinary circular work worked on a sunk face. Circled-circular hewn work is that required to form a sphere or the soffit of a niche. On account of the varieties of circular hewn work it is better to state always what the work is to form. All plain beds and joints are included in the price of the stone, except in the case of arches. The sunk, splayed, circular, and radiating joints are measured separately for extra price over ordinary joints. In the case of arches, however, the radiated and arched joints and beds are included in the price of the stone.

This mode of including the labour of working the beds and joints in the price of the stone is not general over the country. In some parts of England the custom is to measure the whole of the beds and joints, and in other parts to measure only one bed and one joint to each stone. There is not a great deal of advantage in going to the trouble of measuring beds and joints, as every stone requires them, and the builder can after a little experience very easily calculate the price of such, and add it to the cost of the cube stone.

The facework of walls is described according to its quality and measured by the superficial yard. All openings are deducted, also all the stone dressings such as rybats, sills, lintels, panel stones, &c. An allowance of 3in. is made for bond on both walls at internal angles, and at upstart rybats and such like. The extra labour and waste cutting and fitting facework to the bevel or circle is measured by the lineal foot.

Raking out the joints and pointing with lime or cement is measured by the superficial yard, stating whether this has to be done while the work is in progress or after the roof is on. In the latter case the cost is considerably greater, as the erection of special scaffolding is necessary after the building is completed.

The stone in plats and landings is measured by the superficial foot, the wall-holds and cover included. Plain, moulded, and piend-checked edges are measured by the lineal foot.

Digging and refilling tracks for drain pipes are measured by the lineal yard and classified according to their depths. The price includes any planking or shoring required. Fireclay drains should be according to the mode, measured by the lineal yard the nett finished length over all bends, branches, &c. A better way, however, is to allow 3ft. for each length used, as the contractor has, in many cases, a great deal of waste in cuttings. The only disadvantage which this method has is, that once the drains have been covered up the surveyor has no means of checking the number of pipes actually used. General items are given for tools, tackling, sheds, watching, lighting, and jobbing for other tradesmen. In Edinburgh the usual practice is for the mason and painter to provide their own scaffolding, and for the joiner to provide scaffolding for all the rest of the trades. These other tradesmen erect and shift the scaffolding to suit themselves. Each contractor carries out the rubbish arising from his own department, and the whole is carted away by the mason. Either the mason or the plumber lays on the water, but the former pays the rates for water required for his department, and these amount to about ½ per cent. on the total cost of the work.

Carpenter and Joiner Work.

The rules for measuring carpenter and joiner work in Edinburgh were only issued about a year and a half ago, and were drawn up by a committee of surveyors and joiners a short time before the formation of the Ordained Surveyors' Society. The new mode altered the existing methods considerably, and entailed extra trouble to the surveyor by going more into detail and increasing the number of items in a schedule. One difference in the modes is in the measurement of joisting, which is now taken by the cubic foot instead of by the superficial yard as formerly; and another difference is in the numbering of all mitres, and scribings of skirtings, architraves, facings, &c., which is required in the new mode, but which in the old mode was included in the price per lineal foot. In measuring safe-lintels over voids, behind stone lintels, the old plan was to allow one inch for every foot of span for the thickness, to add 9in. on each side for wall-hold, and to state at the cubic foot. In most cases this allowance of one inch to the foot of span was more than necessary, and the contractor knowing this, put in a price which would only cover the cost of what was actually required. By the new mode, safe-lintels are measured by the superficial foot and the actual thicknesses stated. Centres for arches are described and numbered, the price, including the slack, blocks, and the taking down again when required. Wall plates are measured by the lineal foot, the laps being included. Special bat bolts for fixing to the wall head are numbered. Sleeper joisting, joisting for upper floors, bridles, trimmers, &c., are now measured by the lineal foot. Formerly joisting was stated at the superficial yard, the distance apart being given. By this way the quantity of sleeper joisting was the same as that of the flooring. The objection to this mode was, that by taking the nett floor area one of the joists against the wall was not included in the measurement, and the contractor was thus unable to ascertain the exact number of lineal feet of joisting from the superficial quantity given. In the case of rafters, branders, &c., which are still measured by the superficial yard, this inaccuracy is rectified by multiplying the length of the slip-joist or brander, as the case may be, by the distance between the centres of the timbers, and adding the quantity to the superficial measurement. Dwangs in joisting, whether solid or herringbone, are taken by the lineal foot over the joisting. In a framed roof-truss the timbers are described with method of jointing and measured by the lineal foot. Iron straps or bolts fixing the timbers are numbered. In ordinary roofs the timbers, such as rafters, ties, struts, platform joists, &c., are measured by the superficial yard, the extra or slip timbers in each section being included as described above. In making deductions for chimneys, cupolas, &c., from timbers measured in this way, the nett size of the opening is not deducted, but an extra or slip timber is allowed for in the measurement.

The labour and waste in cutting and fitting rafters at piends and flanks is stated at the lineal foot, both sides being measured. Flank and piend rafters and flank plates are measured by the lineal foot. Declivity or tapered pieces laid on the top of the joisting to form a run for the water off a platform roof are measured by the superficial yard in the same way as rafters are. Framing and astragals of cupolas also, closed curbs, facings, &c., are measured by the lineal foot. Strapping, brandering, ceiling joists, &c., are dealt with in the same way as rafters. Standard partitions are measured by the superficial yard, the runners and dwangs being taken by the lineal foot. Lath is measured by the superficial yard, the cuttings and waste to the angle or circle being allowed for in the measurement. Steps and stairs are described and numbered, the price, including the tread and riser, and all glued blocking, stringers, moulded plates, skirtings, handrails, &c, are measured by the lineal foot. Scrolls, ramps, mitres, &c., of the handrail are numbered. Grooved and tongued linings on walls, &c., are measured by the superficial yard. Bound linings are, however, measured by the superficial foot. Coping at top of lining, picture and cornice mouldings, skirtings and base plates are all measured by the lineal foot, the mitres, scribes, bolts, returned ends, &c., being numbered. Sash and case windows are stated by the superficial foot, and the price includes pulley boxes, pulleys, cords or chains, weights, and case. An allowance of 9in. in the width and 3in. in the height is made over the daylight size of the mason work; the daylight size in the case of mullioned or transomed windows being understood to be the distances between sill and lintel and rybat and rybat. Mullion or transome plates if panelled or moulded are measured by the lineal foot for extra price over the superficial measurement. Casement windows are

measured by the superficial foot, but the price is for the sash only, and does not include the sill and frame, as in the case of sash and case windows, these being measured by the lineal foot in detail. Architraves or facings are measured to the floor and the blocks are numbered for extra price. The mitres of these are also numbered. Joinery finishings and fittings are usually measured in detail. The mitres, butts, scribings, &c., of mouldings, leaseplates, and such-like are numbered. Allowances are made by the joiner contractor for jobbings for other tradesmen, and for dooks, straps, &c. In some cases the joiner cuts holes for the dooks, bars, &c., or the mason may do this for him. Allowances are also given for masons' sheds, scaffolding, tools, housing the moulds for the plasterer, and for watching, lighting, &c., if this is not done by the mason.

Doors are measured by the superficial foot and their finishings by the linear foot. Ironmongery is usually included in the joiner's schedule. The different articles are usually numbered. Ordinary butt or backflap hinges are known by their vertical heights, and tail hinges by the length of the arm from the knuckle. Rim, mortise, and press locks are known by the horizontal length and padlocks by the horizontal width when the lock hangs perpendicularly. Barrel and tower bolts are known by the length of the barrel itself. Lock furniture or mounting may be stated by the set or by the number of sides of doors provided.

Glazier Work.

Glass is measured by the superficial foot. The glass in most cases is measured over the astragals, whether these be straight or circled, and the contractor's price covers the labour in cutting and the waste. As the price of plate glass depends very much upon the sizes of the panes, the panes which vary more than two superficial feet are stated separately. Bevelling edges of plate glass is taken by the lineal foot, according to the breadth of the bevel.

Plumber Work.

There are no recognised rules for measuring certain items in plumber work. It is therefore usual to state in the schedule the way these items are taken. Head in flashings, &c. is measured by the lineal or superficial foot according to its breadth. The weight of the lead for ordinary purposes is 5lbs. or 6lbs. per superficial foot. The lighter lead is used for flanks, aprons and flashing lights, &c., and the heavier for platforms, gutters and ridges and piends. For very cheap work 4½lb. lead is used in place of 5lb., and for superior work 7lb. lead may be used in place of 6lb. The laps in lead work are included in the measurement. Zinc for roofing is manufactured in sheets of two sizes, 7ft. by 3ft. and 8ft. by 3ft. Almost all the zinc used here is manufactured by the Vieille Montaigne Zinc Mining Company. The zinc is made in nine different weights, which are distinguished by the company's own gauge. For platforms Nos. 14, 15 or 16 gauge may be used and for flats or piends Nos. 13, 14 or 15 gauge. In this case the higher the gauge the thicker is the metal. This is different from the Birmingham wire gauge in which the thicker the metal the lower is the number of the gauge. Zinc on platforms and roofs is measured by the sheets and half-sheets—i.e., if anything less than half a sheet is required for a particular portion of the roof, then a whole half-sheet is allowed in the measurement. Likewise if anything over half a sheet and below a full sheet be required, then a whole sheet is allowed. The reason for measuring zinc in this way is that the cuttings off the sheets are of little use to the plumber, as they cannot, of course, be melted down, as is done with lead cuttings, and be used for other purposes. In the case of covering dormer haffits and such like with zinc, it is better to measure the nett amount used, as is done with lead, as the pieces of zinc are often of triangular shape, and two haffits can in that case be sometimes covered with the one sheet cut in two pieces. Zinc roll caps to cover the joints of the sheets are measured by the lineal foot, and the slip, kneed or mitred and nozzle ends numbered. Rhones are usually measured the nett length of extremes, the angle pieces, stop ends, and drop pieces being numbered for extra price. Conductors and other cast-iron pipes are measured in 3ft. and 6ft. lengths. This is, I think, the usual practice in Edinburgh, but there is no reason why rhones which are cast in 3ft. and 6ft. lengths should be measured nett, and the cast-iron conductors in 3ft. and 6ft. lengths, unless it be for convenience to the measurer, who can more easily count from below the number of lengths and half-lengths of the cast-iron pipes than measure the exact length with a tape. The prices of rhones and pipes include the jointing and fixing in position with ordinary holdfasts. Holderbats, ornamental ears, and other special fixtures for cast-iron pipes are numbered for extra price over ordinary holdfasts. Cast-iron rain conductors and waste pipes are usually jointed with hemp and red lead if outside the building. Cast-iron soil and all waste pipes inside are jointed with hemp and molten lead run in and staved. Lead water pipes are stated according to their weights specified by the Water Trust. Pipes supplied from the main require to be heavier than those supplied from the cistern. Lead pipes up to 1¼in. bore are specified as weighing so many lbs. per yard. But lead, waste, or soil pipes are specified according to the weight per superficial foot of the lead from which they are made. The joining of the supply pipes to the main in the street is done by the water company, but the fee of 5s. is paid through the plumber. Gas meters are supplied by the Gas Commissioners, and in towns the pipe between the main in the street and the meter in the building is provided and laid by the company. Allowances for wrapping exposed water pipes in felt and for upholding the plumber work for a certain term, usually two years, are given.

Plaster Work

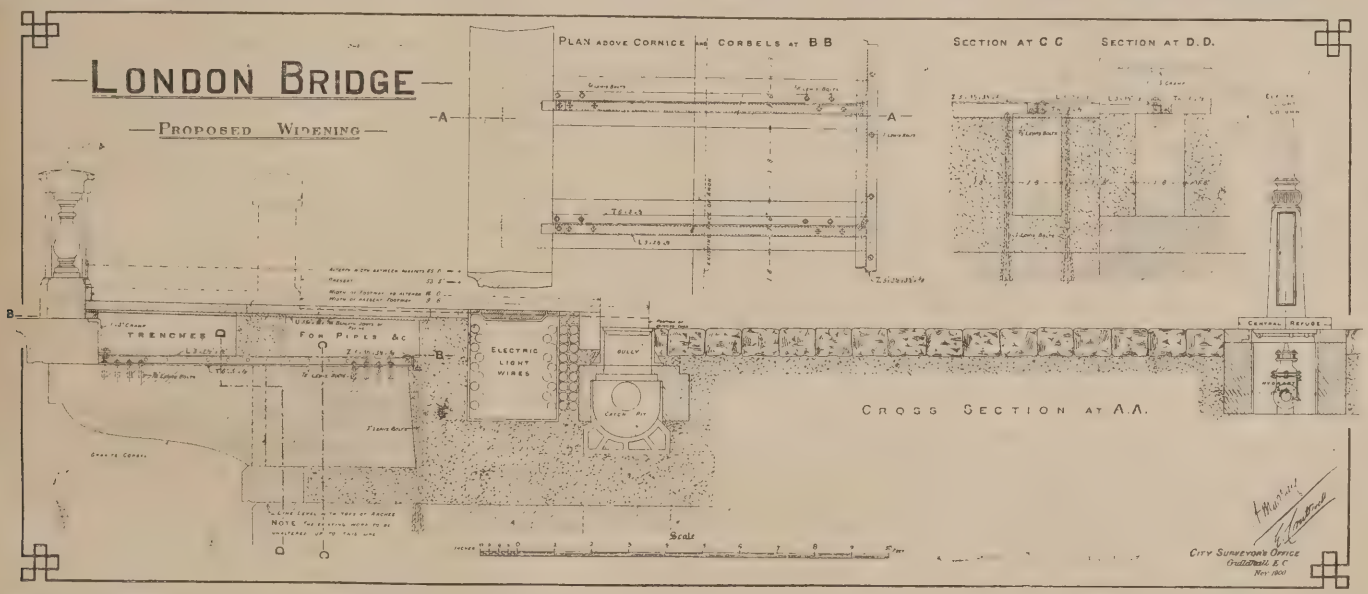
is measured by the superficial yard. The height of plaster on the walls of a room is taken from floor to ceiling over the baseplate or skirting. Some surveyors give an extra price over the plaster for the pugging behind the baseplate or skirting, but the usual practice is to let the extra measurement of plaster go for the pugging. Deductions at doors, fireplaces, &c., are measured nett daylight size. If the cornices be small and have no brackets the plaster is measured behind these.

In patching old work considerable labour is required to make a proper fixing between the old and new plaster by softening the old work, and for this an allowance of 1ft. is usually given. In very small patches this allowance is too much and it is better to make nett measurements and state them in a separate item. Plaster beads, arrises, splays, mouldings, cornices, &c., are measured by the lineal foot at extreme points and their mitres and butts numbered. In cornices where four mitres are necessary in every room, the price per lineal foot is sometimes held to cover these and the extra mitres only are allowed for. A better way is, however, to number the whole of the mitres. Mitres or butts may be either numbered, or allowed for by adding 1ft. for each mitre, or 6in. for each butt to the lineal quantity of cornice. Iron and steel work is usually priced at per cwt., but the lengths of beams, angles, tees, &c., should also be given. Angle-plates, bolts and holes drilled in the beams, &c., are described and numbered. The cost of wood patterns required for cast-iron work are usually included in the price per cwt., but it is important to state this explicitly in the schedule, as, if this be not done, the contractor is not slow to claim the patterns as an extra. In iron or steel roofs, where the amount of labour in fitting and fixing is sometimes as great as the cost of the material itself, the materials, such as angle, tee, or other steels, the bolts and rivets and the labour in drilling holes and cutting and fitting, should be minutely described.

The weights of wrought iron and steel are usually calculated with the help of the handbooks of the different makers, and the weight of cast iron can be ascertained by calculating the number of cubic inches in the casting and multiplying the result by 26, which gives the weight in pounds. The prices of iron and steel work include carriage and delivery at the building.

Glasgow Mode.

Having taken note of the principal points in the Edinburgh mode of measurement, it might be of interest to glance very briefly at the more prominent features of other modes. The Glasgow mode for mason work differs from the Edinburgh mode practically in only one respect, which is that cube columns, pillars, cornices or other courses which go through the full thickness of the wall are not measured as rubble, as is done in Edinburgh, but the price of the stone itself includes the building and setting.



The Glasgow mode for carpenter and joiner work is very similar to the Edinburgh mode. One difference, however, is in the measurement of all the roof timbers, such as rafters, by the neal foot instead of by the superficial yard as is done here. The plaster, slater and painter trades are measured in Glasgow in much the the same way as in Edinburgh. The modes for plumber work, however, vary considerably, the great difference being that lead and zinc are measured and calculated to bring out the nett weight, and are charged per cwt., while the Edinburgh practice is to state these by the superficial foot. The English modes of measurement vary, not a little, from those employed in Scotland and also from each other, for almost every country has a different mode. Rubble walls are measured by the cube yard and the stone in cube piers, &c., is not included in the quantity. The price of cube stone does not include the working of plain beds and joints, but these are measured by the superficial foot. In some districts the whole of these beds and joints are measured, and in other districts only one bed and one joint are taken for each stone. In carpenter work, as a general rule, all timbers above 3in. square, such as joisting, wall plates, rafters, purlins, ties, standards in partitions, &c, are taken by the cube foot. Lathing, flooring, and such like are taken by the square of 100ft. super. In Manchester two customs are practised which are peculiar to the district, one being that all brickwork of whatever thickness is reduced to 4½in. thick and stated at the superficial yard, and the other that an extra item in the carpenter work is given for superficial labour and nails in connection with flooring, roofing, &c.

In London the dimensions are abstracted and put into schedule form in rather a curious fashion. Instead of the schedule being divided up under different headings as is done here, the whole of the quantities in each trade are slumped together and set down as follows: First, the cubic quantities commencing with the highest denomination and the items of each according to their value; second, the superficial quantities; third, the lineal quantities, both arranged according to their denomination and value; and fourth, are stated those articles which are enumerated and these also according to their value.

In England it is usual to contract with one party for the execution of all the trades required to complete the building, the contracting party sub-letting such of the trades as he desires. It will be seen that much diversity exists in the modes of measurement practised throughout the country.

The establishment of a uniform mode of measurement for Great Britain is most desirable, but at the same time most difficult of accomplishment. Each part of the country is tied up with its local customs, and the mind of the average practical artificer is too conservative to accomodate itself to any new methods of calculating his labour. One of the objections to the present system is that contractors cannot readily offer for work outside their own district without running a certain risk in pricing a schedule measured according to a mode with which they are not acquainted.

In France the method of contracting is very different from the methods employed in this country. The plans are not measured before the building is erected, but two surveyors are employed to measure up the work as executed, at completion. In Paris the various tradesmen tender to execute the work at certain percentages below an official schedule of prices known as the "Série-de-la-Ville-de-Paris" (i.e. the List of Prices for the Town of Paris). The contractor who offers the largest discount on these prices is then accepted, and forthwith proceeds with the work. At completion he employs a surveyor, known as a "métreur," who measures up the work, and also prepares drawings of the building as executed. The surveyor's report, together with the drawings, is then forwarded to the architect, who thereupon appoints a second surveyor known in this case as a "verificateur" or auditor, who revises and checks the measurements on behalf of the proprietor. Throughout Europe quantities, either prepared from the plans or from the building itself after execution, form, as a general rule, the basis of contracting. In America the usual custom at present is for the contractor to make rough measurements himself from the plans and with the help of a specification supplied by the architect, and an offer is often made to execute the work for a slump sum. There seems to be, however, a strong feeling throughout the country in favour of adopting some such system as ours.

The Evolution of the Modern System.

I shall now say a few words upon the manner in which the practice of measuring has developed into the modern system. In the case of large buildings erected in the Middle Ages, such as cathedrals, abbeys, churches, or colleges, the custom was for the ruling authority to supply from its own property the stone, timber, &c., which it produced, and to purchase such other material as it did not produce. The labour, as far as the masonry was concerned, was executed from the twelfth to the fifteenth centuries by the Brotherhood of Freemasons, who were paid by time. The other tradesmen in connection with the building were also paid by time, the rates per day being often regulated by Act of Parliament. Occasionally an individual workman would be employed to supply items as a single door or window. This system, by which the proprietors provided the materials and employed tradesmen to perform the labour did not of course originate in the twelfth century, but can be traced back to the earliest times. In Egypt and other countries the labour would often be done by slaves. The custom of erecting a building and having it afterwards measured by a surveyor was practised about a century ago. The prices in some cases were arranged beforehand, and in other cases were not; or the prices of a few of the leading items only, such as the rate per rod of brickwork or the rate per cube foot of timber, would be arranged beforehand and the rest left to be settled by the measurer at completion, the tradesman appointing one surveyor and the architect or building owner another. The great expense of this system led to its gradual abandonment. The client did not know beforehand what the work would cost and the uncertainty as to the mode of measurement led to frequent disputes. In the erection of several buildings about sixty years ago a clerk of works was employed who purchased the materials and engaged and paid tradesmen to execute the labour.

The desire of the building owner to know the cost of the operations beforehand led to the system of contracts by which an offer to execute the whole of the works would be given by one master builder, who either prepared his own quantities or employed a surveyor to do this for him. Each contractor who tendered was put to so much expense by this system that the increase of competition led to an arrangement by which the builders met and appointed a surveyor to prepare the quantities, arranging beforehand, either that the expense should be mutually borne, or that the succesful contractor should pay the whole of the surveyor's fee. This arrangement has now been superseded by the present one, under which the surveyor is appointed by the architect and the fees paid by the proprietor. In England two surveyors are sometimes appointed, one by the architect and another by the contractor, in which case both surveyors are supposed to act together.

Liability.

In several towns in the colonies very accurate modes of measurement have been adopted. In Melbourne the proprietors and contractors are protected from suffering any loss through the carelessness or incompetency of the measurer, the latter being required, before starting business, to make a deposit of £500, from which sum any loss to the proprietor through over-measurement or loss to the contractor through under-measurement is made good. Of course, in this country, damages might be obtained from the measurer in a court of law if such a discrepancy in his final report were proved. A case of this sort, I believe, was brought up in the Court of Session some months ago, in which the measurer, who happened also to be the architect, was found liable to the proprietor for some hundreds of pounds which he had overpaid the contractor through overloaded quantities.

After the completion of a building it is usual for the measurer either to measure up the whole of the work as executed or to adjust the schedule measurements. In Government jobs, however, the contractor undertakes to execute the whole work for the amount of his estimate, and is held bound to complete his contract for this slump sum. Of course any alteration caused by a deviation from the original plans is adjusted, but any inaccuracy in the schedule, whether it be caused by over-measurement or by under-measurement or omission is not taken account of. This arrangement is, needless to say, thoroughly unsatisfactory to both parties and cannot be too strongly condemned. If the quantities happen to be overloaded, then the builder is receiving payment for work he has not done, while on the other hand, if the quantities of work be understated then the proprietor is receiving work for which he has not paid. This process is, nevertheless, practised not infrequently in some parts of the country. The schedules are issued and at the same time any responsibility of their accuracy is repudiated and the contractor is informed that he may if he wishes verify the quantities before tendering. This, of course, the contractor can only do with the greatest difficulty.

Impracticable plans and inaccurate specifications and schedules of measurement may be placed in the same category and if the conditions of contract stipulate that the plans and schedules are simply in the nature of information supplied to the contractor to facilitate his tendering to execute the work, then the contractor is bound to fulfil the contract. This practice of issuing plans and schedules under these conditions is not common in Scotland, but in England no small number of similar cases have been upheld in the courts of law. The system is only excusable in the case of very small contracts when the amount of the estimate required is too small to warrant the expense of the ordinary schedule and the adjustment at completion which it entails.

The most satisfactory way is undoubtedly to make the schedule of quantities the basis of the contract. There are, of course, objections even to this mode, one being that the proprietor does not know for certain before the work is commenced what the exact cost will be; there is, therefore, a chance of the proprietor being called upon to pay at the completion of the building a larger sum than he had anticipated when entering into the contract.

Extras upon a contract may occur in various ways, through deviations from the original plans, through omissions from the schedule of measurements, or through some unforeseen circumstances arising in connection with the site or the building. Extras can only be priced and paid for at schedule rates if the work is done while the contract is in progress. Work done after the contract is completed must be looked upon as a fresh transaction.

As a result of the keen competition in offering for work contractors are apt in some cases to quote unremunerative rates for certain articles and trust to their being able to obtain permission to replace these articles by others for which no schedule rate is given. As it is often impossible to get proportionate rates for these new articles, a considerable amount of extras may occur in this way.

The pricing of the contractor's work in the final report of the work as executed is done as far as possible by the surveyor, and those prices about which the surveyor and contractor differ are sometimes left to the decision of the architect, who acts as arbiter. In other cases the conditions of contract may stipulate that the surveyor will finally fix the rates.

Society of Ordained Surveyors.

Before closing, it might be of interest to say a few words on the new Society of Ordained Surveyors in Edinburgh. This society was formed last year with the objects—(1) of advancing the professiou of surveying; (2) of considering and discussing any subjects or questions connected with the profession

(3) of establishing and conducting examinations in connection with the qualification of candidates for admission to the society; and (4) of establishing a uniform mode of measuring all kinds of artificer's work. At the start the society admitted to its ranks all persons who had been ordained as surveyors prior to the first general meeting of the society. The examining board consists of a representative nominated by the magistrates and town council, a representative nominated by the Sheriff of the Lothians and Peebles and three members of the society elected annually. All applicants for admission to the society must have served a five years' apprenticeship with an ordained surveyor or a Fellow of the Institute of Measurers of Glasgow. An apprentice must pass a preliminary examination on general knowledge within twelve months of his admission to an office. All apprentices who have passed the preliminary examination and completed their terms of apprenticeship may present a petition to the magistrates and Town Council or to the Sheriff of the Lothians to be ordained and thereafter come forward for examination before the Examining Board of the Society. The examinations are held twice a year in the months of April and October. The preliminary examination occupies one day. The final examination occupies two days, and includes an oral examination. The subjects are quantity surveying, land surveying and levelling, and building construction, including the strength of materials. Candidates are also required to produce the notes of dimensions of a building they have measured, along with the plans from which the measurements were made. The examination fees for the preliminary examination are £1 1s., and for the final examination, £6 6s. After being found duly qualified by the Examining Board, the candidate must take the oath before the magistrates and Town Council, or before the sheriff, and is then qualified for admission to the society. After being proposed and seconded, he will in course of time be admitted, provided that he has paid the entrance fee of £4 4s. and first annual subscription of £2 2s.

The custom of ordaining surveyors through the magistrates and Town Council or the Sheriff of the Lothians is evidently a very old institution. I have endeavoured to trace its origin, but have so far been unsuccessful. Prior to the formation of the Society a surveyor might be ordained by applying either to the magistrates and Town Council or to the sheriff. If he applied to the former he would be examined by two ordained surveyors, appointed annually by the Town Council for the purpose. If, however, he applied to the sheriff, the candidate could choose his own examiners.

The society should have, I think, a good effect upon the profession, especially as it ensures the proper conduct of the qualifying examinations, and quantity surveying is a profession which requires such examinations, for it will be seen that much injustice could be done through incompetency on the part of a surveyor.

Church Crafts League. — The Bishop of Rochester presided over the first annual general meeting of the above society on Tuesday evening last week at Bishop's House, Kennington Park, S.E. In moving the adoption of the annual report, his lordship made reference to the steady progress the League had made, in spite of the many difficulties which attended a new society in this already overcrowded age. At the inaugural meeting in February last, the League had 29 artist and 35 ordinary members. The membership has now been raised to 164, of whom 43 are artist members. After the formal business of the meeting had been transacted, an interesting discussion was raised on the objects and aims of the League. Mr. T. Stirling Lee reminded his hearers that since the time of Henry the Eighth the divorce of art from religion had been absolute. Canon Rhodes Briston, Mr. Henry Holiday, and the Rev. Percy Dearmer also took part in the discussion. The Rev. C. R. D. Biggs, vicar of St. Phillip and St. James', Oxford, announced that he had arranged for a meeting to be held in Oxford to explain the methods and aims of the League.

Professional Practice.

Leamington.—The foundation stone of the new Leamington Free Library and Technical School was laid recently. The site has a frontage on the south to Avenue Road, on the west to the newly-constructed thoroughfare leading from the Avenue Road along the upper portion of the Pump Room grounds, and overlooks the Leam. The building will contain three floors, a lower ground floor, a ground floor, and a first floor. The lower ground floor will face entirely to the north. It will contain a room for manual instruction. The Free Library is placed altogether on the ground floor. The main entrance will be from Avenue Road. The northern side of the building will be taken up by a range of seven class-rooms belonging to the Art and Technical School, and by a room for the secretary, each of which will be separately approached by a corridor running from east to west. Movable screens will enable the class-rooms to be used separately or collectively as desired. The first floor will be occupied entirely by rooms set apart for the teaching of art and science subjects, with the exception of two rooms set apart for instruction in cookery and laundry work respectively. The art rooms will occupy the whole of the northern part of the building, and will be 10ft. long by 20ft. wide. The Free Library and the Art and Technical School, although under one roof, are to be kept entirely distinct and separate. The only public entrance to the Free Library will be in the centre of the south front and approached from Avenue Road. The entrances to the Art and Technical School are to be on the eastern and western sides, one for male and the other for female students. The building will be warmed throughout by hot water upon the low pressure system, having radiators placed in the most convenient positions, each of which will be capable of individual control. Ventilation will be effected by the admission of fresh filtered air from the outside passing through the gills of the radiators, while the foul or vitiated air will be drawn through openings in the walls and ceilings into the main extract shaft fixed in the turret over the lecture room. The style adopted is a free treatment of the Renaissance. The entrance to the Free Library from the Avenue Road will be flanked by pilasters and heavily canopied. Above, in the main gable of the building, will be the main windows of the lecture hall. The centre gable will be flanked on either side by gables of minor importance having semi-circular pediments. Similar gables and dormer windows will break the façade of the north elevation fronting the Pump Room Grounds. The building throughout will be faced with pressed bricks from the Cherry Orchard Yard, enriched by mouldings and by heads, cills, mullions, transomes, pediments, cornices, &c., of terra cotta, supplied by the Hathern Station Terra Cotta Company. Westmorland green slates will be used for covering the several roofs, where these are not of glass. The contract for the whole building, amounting to about £16,000, has been let to Mr. Richard Bowen of Tavistock Street, and the clerk of the works appointed by the Town Council is Mr. E. Atkins, of Grove Street. Mr. J. N. Bottomley is the architect.

London, W.C.—De Keyser's Royal Hotel, Victoria Embankment, is undergoing considerable alterations. The former courtyard of the hotel is being converted into a lounge, 54ft. by 62 feet long. The central dome will be 40ft. in diameter, the height from the ground being 32ft. and supported by Languedoc marble, 16ft. high. The vases are panelled with alabaster. The marbles that go to make up the scheme of decoration include grand antique from Belgium, Languedoc from the South of France, Piastraccia marble from Italy, and alabaster from Staffordshire. Above the dome there will be a smaller one, and the height from the ground to the top of this crown will be 40ft. The remainder of the decoration of the lounge will include an alabaster dado, and an enriched cornice of the same stone. The addition which will be made to the dining-room of the present corridor, where the entrance to the billiard room formerly existed, will enable guests to dine within full view of the lounge. The scheme of alterations covers an area of 12,800ft. Provision has also been made for new offices, the reception office itself measuring 34ft. by 15ft., while the roof will be supported on four columns of the same marble. The lounge, when completed, will be the largest in London. One great advantage it will possess will be that no artificial light will be used there in the daytime, as not only will the dome be of suitable glass, but the space between will have 14 dominal lights, dome-shaped, and 19ft. from the floor. The construction of this apartment will lead to the enlargement of offices in close proximity. Visitors to the hotel will in future be received in an outer hall, 70ft. by 25ft., which will be decorated in the same way as the lounge. The roof will be supported on six octagonal marble columns, and the whole of the dado, walls and cornice will be of alabaster. In order to keep the whole of this hall, and also the lounge, free from any draught, two Vankanell revolving doors of Spanish mahogany, with carved capitals and pilasters, will be made use of. Mr. E. Gruning is the architect, and is assisted by Mr. A. Pelley. The builders are Messrs. Holland and Hannen.

Newcastle.—Bensham, Gateshead.—The foundation stone of the new church of St. Chad, at Bensham, Gateshead, was laid last week. The church is to be built entirely of stone, and is designed in the style which prevailed at the early part of the 15th century. The whole of the roofs, doors, and internal wood fittings are to be of oak, and the wood block flooring of teak. The plan consists of a lofty nave and chancel, north and south aisles, transepts, chancel aisle, morning chapel, clergy and choir vestries, organ chamber, porches, &c. The chancel does not terminate in the usual way with a blank wall at the east end, but with three arches which open on to the morning chapel, which is 28ft. in length and 15ft. 6in. in width. The total length of the church, including morning chapel, is 150ft. The feature of the church internally and externally will be the central octagonal tower springing from lofty arches at the crossing between nave and transepts. Its panelled and moulded ceiling will be ornamented with carved bosses and wooden groining. Externally, the tower will be crowned with pinnacles and traceries, and battlemented parapet. Sitting accommodation will be provided for 650, but with ample floor space many more could be seated on great occasions. A spacious cellar is provided below the west end of the church for heating purposes. The contractor for the work is Mr. Isaac Bewley, of Dunston, and Messrs. Hicks and Charlewood, of Newcastle, are the architects.

West Hartlepool.—A church, with large hall, classrooms, and caretaker's house, was designed for the Park Road congregation of the Presbyterians of West Hartlepool by Messrs. Badenoch and Bruce, architects, of Newcastle, and their plans were approved by the local building committee. The foundation stone of the hall was laid on March 3rd of this year, and the hall and a front block of buildings have now been completed. These buildings were publicly opened last week. The new buildings are of brick, with stone dressings, the principal front being faced with red pressed Commondale bricks. The block facing Sandringham Road has an entrance hall, a staircase, lavatory accommodation, secretary's room, a library, and a large infant-classroom on ground floor; session room, ladies' room, lavatories, and access to hall gallery on the first floor. The stairs are fireproof, and have ample landing room. The hall is placed behind the front block. It is about 51ft. long by 39ft. wide, and 29ft. high to ceiling, having a gallery at one end. The roof is open-timbered up to collars, and is of selected pitch-pine, with similar ceiling, cleading and mouldings; and a pitch-pine dado is carried all round the hall on ground and gallery floors. The gallery, and under same, is divided into classrooms, with heavy woollen curtains. Behind the hall a corridor leads to a large kitchen for tea meetings, with heating chamber under and back exit to Angus Street. The hall is ventilated with "Climax" concealed roof ventilators and "Sherrington" inlets, additional summer ventilation being provided by hopper-

sashes in the windows. The heating is by low-pressure hot water, with pipes and radiators. The lighting is by electricity, with supplementary gas-jets for emergencies. The general contractor is Mr. William Pearson, of Burn Road, West Hartlepool; the heating apparatus is by Messrs. Dinning and Cooke, the electric lighting by Messrs. Thomas G. Usher and Co., and the lead-glazing is by Messrs. Atkinson Bros., all of Newcastle-on-Tyne.

New Patents.

These patents are open to opposition until December 31st.

1899.—Valves for Cisterns and Tanks.—21,493. F. J. BRAZIER, 56 Seven Sisters Road, Holloway, London, N. The float is not fixed at the end of a lever, but is free to slide up and down a vertical tube attached to the water-supply pipe. Levers attached to the float at each side operate the valve at the bottom of the tube. It is claimed that the water enters without noise, that the device can be fixed in very small cisterns, and that it is simple in construction and operation.

Automatic Bricklaying.—21,823. J. H. KNIGHT, Barfield, Farnham, Surrey. At each corner of the building to be built an iron or wooden post is erected. Between two of these a beam stretches, capable of being fixed at any height on the posts and having a rack on its upper side. Working on the rack is the bricklaying machine proper, this consisting of a frame carrying a pinion and a lever; the bricks are fed to it by hand and the laying of both mortar and bricks is then done automatically. A guide board acts as a straight edge for setting the bricks and window or door openings are provided for by substituting for bricks suitable pieces of wood or metal, which are afterwards removed.

Sanding Brick-Moulds.—25,338. E. T. BENNETT and J. BRENNAN, Towanda, Pennsylvania, U.S.A. The invention consists of certain features of construction by which the mould, after being sanded, is automatically inverted and rapped, so that the surplus sand is removed; and also of a mechanism for feeding the mould direct to the moulding machine. The sanding is accomplished very rapidly.

Brickmaking Machines.—25,540. T. C. FAWCETT, LIMITED, and J. D. FAWCETT, Whitehouse Engineering Works, Hunslet Road, Leeds. This invention relates to wire-cut brickmaking machines. It consists in the combination of a hinged stop plate or movable end piece, link, lever, weighted spindle, and stop piece, all arranged so as to be simple and effective in action.

1900.—Band Saws.—487. J. W. KING, 19 St. Leonard's Avenue, Bedford. The wheels carrying the saw each have a recess in the centre of the rim, in which a seating of india-rubber or other flexible material is fixed. The material projects slightly above the surface of the rim, and is a little narrower in width than the saw. The feature of the invention is that the wheels used run on parallel axes.

Broken Stone Paving Material.—13,169. J. WARD, Northern Quarries Company, Grange-over-Sands, Lancashire. The rock or stone is fed to the crushers, screened, and mixed with tar—whilst in a dry and warm state. By this means the full capacity of the machines is obtained whatever the weather may be, and the stone is more evenly covered with the tar.

The following specifications were published on Saturday last, and are open to opposition until January 7th. A summary of the more important of them will be given next week. The names in italics within parentheses are those of communicators of inventions.

1899.—21,707, HOWATH, coal saver for attaching to firegrates. 21,889, THOMPSON (*Rech*), theodolites and similar measuring instruments. 22,104, BODGER AND HANDFORD, guards for circular saws. 22,459, CHARLES MURRAY FORD, cheeks of hopper windows. 22,605, DOULTON, valve water-closets. 22,631, WAYLAN, plumbers' shave-hook. 22,647, FISHER, windows. 22,926, GREEN, chimney tops for preventing down-draught. 24,310, BEAUMONT, coin freed appliances for locks or fasteners of lavatories. 25,214, SELLARS, manufacture of hollow building blocks and tiles. 25,430, BULLIVANT, pulley blocks. 25,516, HADFIELD AND JACK, crushing machines. 25,590, LAKE (*Röper*), registering devices for use in connection with hoisting apparatus.

1900.—129, HARVEY, dusting and sweeping apparatus. 151, KESSELRING AND RÖTHENBACHER, traps or syphons for drains. 1,803, CHANT, construction of fireproof floors and ceilings. 3,995, PLACE, construction of mantles for incandescent gas light. 5,997, MADAN, shower baths. 9,152, EVANS (*Faller and Chisholm*), manholes. 10,168, MILBURN, chimney cowls. 11,442, RECTOR, portable houses. 11,874, THOMPSON (*Simonini*), lighters for gases. 13,275, GOULDING, device for raising and lowering the gratings of cooking ranges or stoves. 13,942, VANDERMAN, couplings for sewer and other pipes. 13,996, LUCAS-GIRARDVILLE, apparatus for the production of acetylene gas. 14,114, KLEE, emulsion for removing paints and varnishes. 15,292, TITUS, production of acetylene gas. 15,568, EINFELDT, construction of buildings. 15,939, TYLER, mitering machines. 16,367, REES AND BOUNDY, generators for acetylene gas. 17,050, LAKE (*Cunningham*), universal joints. 17,343, DOUGILL, adjustable spanners. 17,546, WELCH, external shop lanterns. 17,548, COLLINS, ceiling lamps. 17,557, KING, cold-water paint.

Law Cases.

What is Rubbish?—The case of *Benjafield* v. *Wall* was heard in the Queen's Bench Division of the High Court of Justice on November 21st. This was an action for damages for breach of contract for delivery and carting away of material from the archway at Highgate. The plaintiff was the executrix of the late Allen Albin Benjafield, who, in his contract with the defendant, had made use of the word "rubbish," and in the course of the carting the meaning of the term "rubbish" was raised, the plaintiff alleging that in the building trade it was always used in the sense of "brick rubbish and hard core." The defendant, Charles Wall, denied that it had that meaning. The President, in delivering judgment, said that he was satisfied that both parties had honestly believed that the view each had held was the true view that ought to be adopted in construing the contract that had been made between them. The preponderance of evidence, however, was in favour of the defendant's contention, namely, that "rubbish" meant that which was *per se* inherently useless. There would, therefore, be judgment for the defendant with costs.

Disregarding the By-laws.—At Brighton recently a greengrocer named Luxford was the defendant in three adjourned summonses issued by the Corporation, for infringements of the building by-laws. One was for erecting a new building without delivering proper plans to the surveyor, another was for building an addition to his premises beyond the main front wall without the consent of the Town Council, and the third was for erecting a new building nearer to the centre of the street than the prescribed line of frontage. Mr. Hugo Talbot, Deputy Town Clerk, said defendant had erected a building in front of his shop covering the whole of the forecourt. There was no doubt there were many similar buildings in the Gardens; they ought not to be there; but some of them were erected before the Corporation had the power to deal with this sort of thing, and others had grown up gradually, little by little, unobserved. In this case he relied upon the definition of a building contained in the Improvement Act, and maintained that the case was not only within the letter but the spirit of the by-law. It was very regrettable that these buildings had in the past been allowed to come into existence, for they very seriously obstructed the Gardens. The Stipendiary thought it might have been arranged that the summons should be withdrawn on payment of costs and defendant promising to remove the structure. Mr. Talbot said he was afraid the Council would not approve of this course being adopted. A nominal penalty of 5s. and costs was accordingly imposed. The other two summonses were adjourned until the 30th inst.

Water Supply in Brickmaking.—At the Chichester County Court the case of *Hayter* v. *Tate* was recently heard. This was a claim for £1 11s. 1d. in respect of retention-money, at the rate of 3d. per 1,000 bricks, on a brickmaking job. The plaintiff, it appeared, had been employed as a brickmaker under an agreement at the brickyard of the defendant, Mr. W. Tate, the rate of payment being 5s. 9d. per 1,000, with 3d. retained until the end of the season. After working for some weeks, the plaintiff left because, as he alleged, the defendant wanted to break his contract by deducting 1d. per 1,000 in respect of water laid on from the company's mains when the well in the yard failed. He accordingly now sued for his retention-money. Plaintiff called Mr. Geall, brickyard proprietor, with a view to prove that the charge of 1d. per 1,000 for water was not customary and that he never enforced it at his own yard. For the defence, however, it was contended that the charge of 1d. was a customary one and that the fact was well known to the plaintiff, who was dealt with on exactly the same conditions as the other moulders employed in the yard. Evidence was given for the defence showing that when the water was laid on from the mains the plaintiff was informed that the conditions would be the same as formerly. The charge for water had, it appeared, been made four years previously when the plaintiff was in Mr. Tate's employ, and two of the moulders, Alfred Novis and James Stallard, stated that the plaintiff was fully aware of the conditions. The charge was made because the water was for the benefit and advantage of the men in their work. His Honour decided that the plaintiff had broken his contract by leaving before the end of the season and must therefore forfeit his retention-money. Judgment was accordingly given for the defendant.

Trades Unions: Can they be Sued or Not?—On Wednesday last a decision was arrived at in the Court of Appeal in the case of the *Taff Vale Railway Company* v. the *Amalgamated Society of Railway Servants* and others. This was an appeal by the Society from the refusal of Mr. Justice Farwell to order that they should be struck off the record as defendants in an action brought by the railway company. The Master of the Rolls said this was an action against a trade union in its registered name, and against Richard Bell, M.P., and James Holmes, officers of the union, for unlawful picketing, and it claimed an injunction and other relief, which would include a claim for damages. No question upon this appeal arose as to the competency of the action against Mr. Bell and Mr. Holmes; the point made was that this action was not maintainable against the trade union. The point was important, for if a trade union could be sued in the manner proposed the funds of the union would be liable to be taken in execution under a judgment obtained against the union in the Society's name. In the Companies Act of 1862 it was expressly provided that a registered company could be sued. The same provision was to be found in the Building Societies Act of 1854 and in the Industrial Provident Act of 1893. But the Court failed to see any such provision in the Trades Union Acts. Mr. Justice Farwell did not suggest in his judgment that in the Trades Union Acts he could find any sections in terms authorising an action against a trade union in its registered name, nor that, by the Acts, trade unions were incorporated; but the learned judge said that the Legislature had legalised it (i.e., the trade union), and it must be dealt with by the Courts according to the intention of the Legislature. As there was no statute empowering the action to be brought against a trade union in its registered name it was not maintainable against the Amalgamated Society of Railway Servants, and these defendants, concluded his lordship, "must therefore be struck out, the injunction against them must be dissolved, and the appeal as regards

these defendants must be allowed with costs here and below." The rest of their lordships concurred.

Builders' Bankruptcies: An Important Decision.—At the Sunderland County Court on Thursday last His Honour Judge Meynell gave judgment in the motion made at last month's court by the trustee of W. H. Brown, builder, a bankrupt, claiming (1) payment from the Athenæum Buildings Company, Limited, of £218 7s. 6d., the value of material, plant, &c., which belonged to the bankrupt, and was upon the new Athenæum Buildings in Fawcett Street, Sunderland, and which was taken possession of by the company when the bankrupt disappeared in November, 1899; and (2) payment of £58 17s., the value of dressed stone which was in the bankrupt's stoneyard in Holmeside, and was also taken possession of by the company in November, 1899. The facts are:—Brown contracted with the company to build the new Athenæum Buildings in Fawcett Street. The contract authorised the company to terminate it if the works were not duly proceeded with, and also empowered the company to take possession of and use all the plant, material, &c., upon the works should Brown become bankrupt or should the company have to exercise their power to terminate the contract, &c. Brown disappeared about the 10th of November, 1899; on the 22nd of November the company gave notice to terminate the contract, and on the 18th, 20th, and 21st November a quantity of dressed stone, intended for the Athenæum Buildings, was removed from Brown's stoneyard to the buildings in Fawcett Street by order of Mr. Eltringham, the company's architect; on the 28th November the company took possession of their buildings and everything thereon, and on the 15th of December, 1899, Brown was made bankrupt. After referring to the facts and to the law as argued by counsel on both sides at last month's Court, the Judge held that the contention of the Athenæum Buildings Company as to the claim for £218 7s. 6d. was right, and therefore refused the trustee's application as to that sum; but he considered that the company had no power to seize the dressed stone on the Holmeside ground, and therefore gave judgment for the trustee for £58 17s.; but as both sides had been partially successful he gave no costs, but said the trustee could have his costs out of the bankrupt's estate.

Surveying and Sanitary Notes.

The Westminster Improvement.—The Westminster City Council Finance Committee are considering the advisability of making a contribution of £100,000 towards the projected improvement of Millbank.

The Coal Smoke Abatement Society.—H.R.H. The Princess Louise (Duchess of Argyll), has, states the "Public Health Engineer," been graciously pleased to join the committee of this society, with the objects of which she deeply sympathises.

Proposed Improvement at Manchester.—The Manchester City Properties Company is one which proposes to purchase the whole of the area bounded by Market Street, New Brown Street, Cannon Street and Corporation Street. This space is covered by buildings used for business purposes, and is intersected by a number of narrow streets. The property is old, and the fabric does not boast of any particular architectural pretensions, but the land itself, as it abuts upon Market Street, the principal business thoroughfare, is of enormous value. The company, in case it is successfully formed, intends to raze all the existing buildings to the ground and to replace them with property of a more ornamental character. It is also proposed to cut two important streets through the land from opposite corners, and, of course, crossing in the centre of the area, the buildings thus being in the shape of a Maltese cross. It is suggested that the buildings in the proposed new streets should be erected on the principle of the "rows" in Chester, and that they should be six storeys high. This would, under usual regulations of course, mean that the street would have to be of great breadth, as according to the city by-laws, the height of a building must not be greater than two and a half times the width of the street upon which it has its frontage. There is, however, a clause in the prospectus of the company seeking to set aside or alter the provisions of Acts relating to buildings and streets. It is estimated that the cost of the scheme will amount to £1,500,000. Messrs. W. Telford Gunson and Son, architects, of Manchester, have prepared the plans.

Keystones.

Six Church Homes at Ealing have been erected.

The Restoration of Wilby Church, near Attleborough, is proposed.

Colton St. Andrew Church, near Wymondham, has just had a new stained-glass window added.

A New Board School at Grimsby is to be erected in Harold Street, subject to the approval of the Education Board.

The Church of the Good Shepherd, Lake, has had a new stained-glass window added. The window is the work of Mr. E. Frampton, of Buckingham Palace Road, London.

The Purchase of Alexandra Palace and Park in the public interest has now been completed at a cost of £138,000. The total amount subscribed has been £150,120, but the balance will be required to reinstate the buildings and park.

The New Military Barracks at Crownhill, near Plymouth, which have been erected on the hutment principle, are now ready for occupation. The barracks, which comprise fifty distinct buildings, provide accommodation for 1,000 officers and men.

A Fire at Oak House, West Bromwich, occurred last week. This old Elizabethan building was used by the town as a museum and art gallery. The fire, it is stated, originated through a defective flue. The middle turret of the building was destroyed, but all the pictures and curios were saved.

People's Baths for Liverpool.—The baths committee of the Liverpool City Council have adopted the plans, specifications, and quantities for the first proposed people's baths along the line of docks, in Beacon Street, referred to on p. 288 of our issue for November 14th. The finance committee are to be asked to sanction the expenditure.

Isolation of the National Gallery.—Steps are at last being taken, hastened no doubt by the recent fire in Pall Mall East, to isolate the buildings of the National Gallery, on the north side of Trafalgar Square, the Commissioners of her Majesty's Works and Public Buildings giving notice that application is intended to be made in Parliament in the Session for an Act authorising them to acquire by compulsory purchase or otherwise certain lands, houses, and buildings adjacent to the west side of the Gallery.

British School in Rome.—The managing committee announce that the school will open in December. The director, Mr. G. Rushforth, is on his way to Rome. Communications to him should be addressed, "G. McN. Rushforth, Esq., the British Embassy, Rome." Intending students are requested to apply to Professor Pelham, Trinity College, Oxford, from whom all particulars as to admission, &c., can be obtained. The school is intended to promote the study, not only of classical history and archæology, but of mediæval history, art, and literature. The director will be happy to explain the principal recent discoveries relating to ancient and mediæval Rome to any University graduates and members of the teaching staff of public schools who may be visiting Rome during the Christmas or Easter vacations. Those who wish to avail themselves of this offer are requested to communicate with the director as soon as possible. Should there be any expenses connected with the lectures, a small fee may be asked for.

A new Church at Chapel Allerton, Leeds, has been erected at a cost of £20,377.

A new Church at Eaglescliffe Junction, Holy Trinity, Stockton, is to be erected.

St. Lawrence's Church, Brundall, has been enlarged by the addition of a new north aisle of three bays, with a vestry at the eastern end.

A new Presbyterian Church at West Kilburn is to be erected at a cost of £5,000 on a site secured from the Ecclesiastical Commissioners.

The new Church Tower of St. Nicholas, Henstridge, which has been erected at a cost of £2,000, was opened last week. Six new bells were also dedicated.

The death is announced of Mr. W. Law Bros at the age of 55. The deceased contributed several articles to our columns upon Istria and Dalmatia, and was an authority upon the rude stone monuments of the Skelligs, and upon the coast of Ireland generally.

The Roman Pavement at Dorchester, which was recently discovered, has been purchased by Mr. Alfred Pope, a member of the Dorset Antiquarian Society, who has presented it to the Dorset County Museum. It will be taken up at once and laid in the institution.

The Royal Academy Students' Club will hold a smoking concert at the Suffolk Street Galleries on December 8th. Sir Lawrence Alma-Tadema has consented to occupy the chair. Tickets can be obtained from Mr. A. R. Jemmett, of 21 Great College Street, Westminster, S.W.

Guildford Town Hall: A Correction.—On page 310 of our last issue we stated, on the authority of a trustworthy correspondent, that Guildford Town Hall was to be pulled down. We now learn, however, that it is Godalming Town Hall which is to be demolished. We regret the error.

The Musselburgh New Municipal Buildings Competition.—The Town Council have awarded, on the recommendation of Mr. George Simpson, F.S.I., of Leith, the assessor, the first premium of £25 to Mr. William Constable, of Musselburgh, and the second of £15 to Messrs. Findlay and Roques, of Edinburgh and London.

For the New Infirmary, Bristol, the following have been selected to compete:—Messrs. Crisp and Oatley, W. L. Bernard, W. L. Gough, W. S. Shurmer Williams, Frank Wills, and F. Bligh Bond, all of Bristol; C. W. Bevis, of Portsmouth; Arthur Marshall, of Nottingham; and A. and C. Harston, H. Percy Adams, Giles, Gough and Trollope, and Newman and Newman, all of London. The infirmary is to accommodate 1,000 of the sick poor of the City and County of Bristol.

A Meeting of the Architectural Association was held last Friday, Mr. W. H. Seth-Smith, president, in the chair. The following gentlemen were elected members:—Messrs. R. P Jones, J. F. McIlwraith, P. W. Mulready, J. M. Pilkington and S. N. Simmons. Mr. A. T. Walmisley read a paper on "The Use of Rolled Steel Joists in Construction," which will be published in our next issue. The members of the Institution of Junior Engineers having been invited to attend the meeting, a long discussion took place.

A Sale of Works by William Blake took place last week at Messrs. Puttick and Simpson's rooms, Leicester Square, W.C. The two lots consisted of four rare and curious books by the poet and artist. The first lot consisted of "Europe a Prophecy," with seventeen designs coloured by the author, with two original water-colour drawings by Blake added, Lambeth, 1794—"The Song of Los," five designs, coloured, and one water-colour drawing, 1795, and "Visions of the Daughters of Albion," six leaves with coloured designs, 1793, all in one volume, half-bound. The bidding started at £10, and after a keen competition the lot was secured by Mr. Quaritch for £225. Blake's "The Book of Thel," eight leaves with coloured designs by the author, in wrappers, uncut, 1789, went for £46, also to Mr. Quaritch. The last copy of "Europe" alone sold by auction for £59: the "Daughters of Albion" for £20 5s. No copy of the "Song of Los" appears to have been previously offered.

New Companies.

Wallis and Stevens Auxiliary, Limited.

This company was registered on November 9th with a capital of £5,000 in £1 shares to acquire land on the Cliddesden Road, Basingstoke, to lay out such land for building purposes, to make roads, to build houses, shops and conveniences, to let or otherwise dispose of the same, &c. Registered office: North Hants Ironworks, Station Hill, Basingstoke, Hampshire.

J. and A. J. Brown, Limited.

This company was registered on November 8th with a capital of £5,000 in £1 shares to acquire the business carried on at West Hartlepool, Durham, as Brown Brothers and Co., and to carry on the business of cabinet makers, upholsterers, joiners, timber merchants, &c. The first directors (to number not less than three nor more than five) are J. Brown and A. J. Brown (managing directors), and others to be appointed by the subscribers.

R. Webb and Sons, Limited.

This company was registered on November 8th with a capital of £24,000 in 4,000 preference shares of £5 each and 4,000 ordinary shares of £1 each to acquire the business carried on at Chesham and elsewhere as R. Webb and Sons, and to carry on the business of brush and broom manufacturers, &c. H. G. and A. E. Webb are the managing directors; the other first directors are G. Webb and W. Webb.

Davies Brothers (Newport), Limited.

This company was registered on October 31st with a capital of £40,000 in £10 shares (2,000 preference) to acquire the business carried on in Newport and Barry Dock as Davies Brothers, and to carry on the business of builders' merchants, ironmongers, slate and cement merchants, timber importers and merchants, sawmill proprietors, founders, stone merchants, contractors, &c. The first directors (to number not less than two nor more than seven) are J. Davies and G. Davies (permanent governing directors, with £250 each per annum). Registered office: London Wharf, Newport, Monmouthshire.

COMING EVENTS.

Wednesday, November 28.

NORTHERN ARCHITECTURAL ASSOCIATION.—Mr. Frank Baker, C.E., F.G.S., on "The Armour and Costumes of Mediæval Times," 7.30 p.m.

CITY OF LONDON COLLEGE SCIENCE SOCIETY.—Mr. W. J. Tennant on "Wrinkles in Patent Law and Practice," 7.30 p.m.

ST. PAUL'S ECCLESIOLOGICAL SOCIETY.—Rev. T. Perkins on "Wells Cathedral," 7.30 p.m.

EDINBURGH ARCHITECTURAL ASSOCIATION.—Opening Meeting and Presidential Address on "A Visit to Melrose Abbey," by Henry F. Kerr, A.R.I.B.A., 8 p.m.

SANITARY INSTITUTE.—Lectures and Demonstrations for Sanitary Officers: Part II. Mr. E. Petronell Manby, B.A., M.D., D.P.H., on "The Laws, By-laws, and Regulations affecting the Inspection and Sale of Meat and Other Articles of Food, including their Preparation and Adulteration," 8 p.m.

INSTITUTION OF CIVIL ENGINEERS.—Students' Visit to the London and South-Western Railway Locomotive Works, Nine Elms, 2.30 p.m.

Thursday, November 29.

GLASGOW INSTITUTE OF ARCHITECTS.—General Meeting at 2 p.m.

LONDON INSTITUTION.—Mr. Frederick Lambert on "The Caves of Jenolan," 5 p.m.

INSTITUTION OF ELECTRICAL ENGINEERS.—Mr. W. Langdon on "The Supersession of the Steam by the Electric Locomotive."

Friday, November 30.

ARCHITECTURAL ASSOCIATION (DISCUSSION SECTION). Mr. F. G. W. Buss on "Is the Quantity Surveyor a Necessity?" 7 p.m.

ARCHITECTURAL ASSOCIATION OF IRELAND.—Technical Demonstration at the Works of Messrs Sharpe and Emery, 17 Great Brunswick Street, Dublin. Messrs. Edmund and A. P. Sharpe on "Building and Decorative Stones," 4.30 p.m.

INSTITUTION OF JUNIOR ENGINEERS.—Presidential Address by Sir Lothian Bell, Bart., F.A.I.

Saturday, December 1.

SANITARY INSPECTORS' ASSOCIATION.—Meeting at Carpenters' Hall, London Wall.

DUNDEE INSTITUTE OF ARCHITECTURE.—Mr. J. J. Henderson, A.M.I.C.E., on "Grammar of House Planning," 7 p.m.

BRITISH INSTITUTE OF CERTIFIED CARPENTERS.—Meeting at Carpenters' Hall, E.C., at 6 p.m.

Monday, December 3.

INSTITUTION OF ELECTRICAL ENGINEERS.—Dinner in the Grand Hall, Hotel Cecil, at 7.30 p.m.

LONDON INSTITUTION.—The Hon. John Collier on "Varying Ideals of Human Beauty," 5 p.m.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.—Business meeting at 8 p.m. to elect members and amend the "Form of Agreement and Schedule of Conditions for Building Contracts."

SOCIETY OF ENGINEERS.—Mr. Henry C. H. Shenton on "Recent Practice in Sewage Disposal." 7.30 p.m.

LIVERPOOL ARCHITECTURAL ASSOCIATION.—Mr. Alfred Darbyshire, F.S.A., on "Some English Cathedrals."

SURVEYORS' INSTITUTION.—Meeting of Finance Committee at 4 p.m.

SOCIETY OF ARTS (CANTOR LECTURE).—Professor John A. Fleming, M.A., D.Sc., F.R.S. on "Electric Oscillations and Electric Waves."—II., 8 p.m.

Tuesday, December 4.

GLASGOW ARCHITECTURAL ASSOCIATION.—Smoking Concert.

ARCHITECTURAL ASSOCIATION OF IRELAND.—Dr. Adeney on "The Purification of Sewage," 7.45 p.m.

Wednesday, December 5.

INSTITUTE OF SANITARY ENGINEERS.—Meetings of General Purposes and Finance Committee at 3.30 p.m., and Election Committee at 5 p.m.

GEOLOGICAL SOCIETY OF LONDON.—Meeting at 8 p.m.

SURVEYORS' INSTITUTION.—Meeting of Elections Committee at 4 p.m.

RUSKIN SOCIETY OF BIRMINGHAM.—The very Rev. G. W. Kitchin, D.D., on "Ruskin in the Old Oxford Days," 8 p.m.

NORTHERN ARCHITECTURAL ASSOCIATION.—Council meeting and Students' Evening.

EDINBURGH ARCHITECTURAL SOCIETY.—Mr. Thomas Hume, F.I.S.E., on "Effect of Heat and Cold on Plumber's Work, and how to Prevent Damage Therefrom."

SOCIETY OF ARTS.—Prof. H. S. He'e-Shaw, LL.D., F.R.S., on "Road Traction," 8 p.m.

BRITISH ARCHÆOLOGICAL ASSOCIATION.—Meeting at 8 p.m.

TENDERS.

Information from accredited sources should be sent to "The Editor." Results of tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the Work.

CALSTOCK, Cornwall.—For the erection of school buildings for the School Board. Mr. H. J. Snell, architect, The Crescent, Plymouth:—

Wm. Stephens	£1,650
Hobbs & Son, Liskeard, Cornwall *	1,550

* Provisionally accepted.

CROSS KEYS, Mon.—For additions to Waenfaur Schools, for the Risca School Board. Mr. Geo. Rosser, architect, Risca, Mon.:—

W. T. Sier	£2,196 10 0	Chas. H. Reed	£2,131 0 0
J. Pritchard, Pontymister *	2,140 0 0	* Accepted.	

LONDON.—For alterations to Nos. 41 and 42 High Street, Bloomsbury, W.C., for the Express Dairy Company, Limited. Messrs. Higgs & Rudkin, architects, 25 John Street, Bedford Row. Quantities by Mr. Joseph Rookwood, 25 Bedford Row, W.C.:—

Patman & Fothering-ham	£3,380	Wall & Co.	£3,119
Harris & Wardrop	3,211	Snewin Bros. & Co.	3,088
Roome & Co.	3,172	J. Milroy	3,050
		Macey & Sons *	2,998

* Accepted.

LONDON.—For the erection of the Belgrave Hospital for children in Clapham Road, Kennington. Mr. H. Percy Adams, architect, 28 Woburn Place, Russell Square, London, W.C. Quantities by Mr. S. G. Thacker:—

Holland & Hannen	£55,730	Bywaters & Sons	£52,868
Colls & Sons	55,317	Higgs & Hill	52,243
Wallis & Sons	53,371	Prestige & Co.	51,543
Kerridge & Shaw	53,337	Gough & Co.*	48,984

* Accepted.

LONDON.—For re-erecting three iron buildings and appurtenances (at present stacked at the Rosendale Road School) on a site in Hazelbank Road, for the London School Board. Mr. T. J. Bailey, architect:—

T. Cruwys	£1,560	Croggon & Co.	£1,325
Mitson & Co.	1,350	Hawkins & Co.*	1,250

* Accepted.

LONDON.—For relaying the soil drains and portions of surface-water drains and those receiving slop and lavatory wastes, with connections to existing fittings, and providing separate drainage from the Infirmary, at Highbury Grove Truant School, for the London School Board. Mr. T. J. Bailey, architect:—

Burn Bros.	£2,364 15 7	Johnson & Co.	£1,780 10 0
G. Neal	2,328 0 0	R. P. Beattie	1,771 10 5
Lawrance & Sons	1,993 0 0	Stevens Bros.	1,723 0 0
Williams & Son	1,930 0 0	L. H. & R. Roberts	1,697 0 0
Killingback & Co.	1,836 0 0	McCormick & Sons*	1,687 0 0
T. Cruwys	1,828 0 0		
F. Bull	1,789 0 0		

* Accepted.

LONDON.—For providing and fixing steam boiler, engine, shafting, rotary washer, hydro extractor, wringer, mangle and rinsing troughs, sets of four drying horses; laying on hot water to washing machines and to two spray baths, also providing cold-water main and valve, at Lyham Road Swimming Bath, for the London School Board. Mr. T. J. Bailey, architect:—

Boaz & Sons	£1,565 0	Wippell Bros. & Row	£1,290 0
Cannon & Sons	1,549 0	Fraser & Son	1,277 0
Oldroyd & Co., Ltd.	1,430 0	Williams & Sons (Cardiff), Ltd.	1,140 0
Brightside Foundry and Engineering Co., Ltd.	1,407 0	J. Esson	1,089 10
		J. & F. May*	1,000 0

* Accepted.

MARGATE.—For alterations and additions to No. 35 High Street, Margate, for Mr. E. Stokes. Mr. Robt. A. Harris, architect and surveyor, 3 Cecil Square, Margate:—

H. W. Bowchier	£465 0 0	J. E. Baker	£265 0 0
J. Wales	449 0 0	F. J. Doughty *	262 7 6
J. Brown & Son	277 0 0	* Accepted.	

[All of Margate.]

NETHERFIELD.—For the extension of lithographic works, Netherfield, Nottingham, for Messrs. Stafford & Co. Mr. Richard Whitbread, architect, Carlton, Nottingham:—

Main, Kendall & Main	£3,968	Browne & Son	£3,480
Lewin	3,748	Short	3,479
Tegerdine	3,648	Cooper & Co., Nottingham*	3,375
Harper	3,590		

* Accepted

PLYMOUTH.—For the erection of school buildings, Salisbury Road, Plymouth, for the Plymouth School Board. Mr. Henry J. Snell, architect, Plymouth:—

Wakeham Bros.	£39,790	Blackell & Son	£36,985
W. Trevena	38,859	T. May	36,658
Lethbridge & Son	38,100	J. P. Berry	35,898
Lapthorn & Co.	37,827	A. Andrews	33,470
A. N. Coles	37,489	Tozer & Son*	32,941

* Provisionally accepted. [All of Plymouth.]

RADLETT, Herts.—For the erection of a proposed residence. Mr. S. Doddimeade Edmunds, architect, St. Albans and London:—

J. Verdon, Radlett	£1,900 0 0
C. H. Taylor, Radlett	1,372 14 3
W. King, Watford	1,310 0 0
Boff Bros., Park Street, near St. Albans	1,230 0 0
G. Wiggs, Watford	1,140 0 0

RADLETT, Herts.—For the erection of a residence, corner of Aldenham Avenue and the Crosspath. Mr. S. Doddimeade, Edmunds, architect, St. Albans and London:—

J. A. Chose	£1,000	Boff Bros. Park Street	£758
Stevens & Sons	780	Goodchild & Sons*	695

* Accepted. [All of St. Albans.]

SOUTH SHIELDS.—For the erection of the Cyprus Hotel, Chichester Road, for the executors of the late Mr. J. Turnbull. Messrs. M. Hall & Son, architects, Albany Chambers, King Street, South Shields. Quantities by Mr. J. Eyra Miller, Sunderland:—

R. Brown	£5,200 12 8	S. Sheriff	£4,500 0 0
R. Allison	5,000 0 0	Atkin, Burrell & Co.	4,493 0 0
Thornton & Co.	4,954 8 2	F. B. Dobson	4,436 8 3
J. Young	4,783 16 10	Summerbell & Son, South Shields*	4,350 0 0
C. Henderson	4,654 7 10	P. Sheriff	4,278 1 4
J. C. Nichol	4,635 0 0		
J. Hutchinson	4,604 0 0		
W. Christie	4,561 5 2		

* Accepted.

CURRENT PRICES.

OILS AND PAINTS.

		£	s.	d.	£	s.	d.
Castor Oil, French	per cwt.	1	10	0	1	11	6
Colza Oil, English	do.	1	11	9	1	12	0
Copperas	per ton	2	0	0	—		
Lard Oil	per cwt.	1	19	0	—		
Lead, white, ground, carbonate	do.	1	4	10	—		
Do. red	do.	1	0	4½	—		
Linseed Oil, barrels	do.	1	11	6	—		
Petroleum, American	per gal.	0	0	5½	0	0	6
Do. Russian	do.	0	0	5⅝	0	0	5¾
Pitch	per barrel	0	8	6	—		
Shellac, orange	per cwt.	3	1	0	—		
Soda crystals	per ton	3	2	6	3	5	0
Tallow, Home Melt	per cwt.	1	5	0	1	5	6
Tar, Stockholm	per barrel	1	8	6	—		
Turpentine	per cwt.	1	10	6	—		

METALS.

Copper, sheet, strong	per ton	86	0	0	—		
Iron, Staffs., bar	do.	8	0	0	10	10	0
Do Galvanised Corrugated sheet	do.	12	7	6	12	10	0
Lead, pig, Spanish	do.	17	2	6	—		
Do. do. English common brands	do.	17	7	6	—		
Do. sheet, English, 3lb. per sq. ft. and upwards	do.	21	0	0	22	0	0
Do. pipe	do.	23	0	0	—		
Nails, cut clasp, 3in. to 6in.	do.	12	0	0	13	0	0
Do. floor brads	do.	11	15	0	12	15	0
Steel, Staffs., Girders and Angles	do.	8	0	0	8	5	0
Do. Mild Bars	do.	8	5	0	8	15	0
Tin, Foreign	do.	129	0	0	129	10	0
Do. English ingots	do.	133	0	0	—		
Zinc, sheets, Silesian	do.	22	10	0	—		
Do. do. Vieille Montaigne	do.	23	2	6	—		
Do. Spelter	do.	19	2	6	—		

TIMBER.

HARD WOODS

Ash, Quebec	per load	3	17	6	4	10	0
Birch, Quebec	do.	3	12	6	3	17	6
Box, Turkey	per ton	7	0	0	15	0	0
Cedar, 1in., Cuba	per ft. sup.	0	0	3	0	0	3½
Do. Honduras	do.	0	0	3 3/16	—		
Do. Tobasco	do.	0	0	3¼	—		
Elm, Quebec	per load	0	12	6	5	10	0
Mahogany, Average Price		£	s.	d.	£	s.	d.
for Cargo, Honduras	per ft. sup.	0	0	4 5/16	—		
Do. African	do.	0	0	3 3/16	—		
Do. St. Domingo	do.	0	0	6 7/16	—		
Do. Tobasco	do.	0	0	5½	—		
Do. Cuba	do.	0	0	4 3/16	—		
Oak, Dantzic and Memel	per load	3	15	0	5	7	6
Do. Quebec	do.	4	12	6	5	0	0
Teak, Rangoon, planks	do.	8	5	0	13	10	0
Wainscot, Riga (Baulk)	do.	3	15	0	5	15	0
Do. Odessa Crown	do.	3	15	0	5	15	0
Walnut, American	per cub. ft.	0	3	0	0	4	0

SOFT WOODS.

Fir, Dantzic and Memel	per load	3	0	0	4	0	0
Pine, Quebec Yellow	do.	4	7	6	6	0	0
Do. Pitch	do.	2	13	0	2	19	0
Laths, log, Dantzic	per fath.	4	10	0	5	10	0
Do. Petersburg	per bundle	0	0	9	0	0	10½
Deals, Archangel 2nd & 1st per P. Std.		8	15	0	12	15	0
Do. do. 4th & 3rd	do.	—			—		
Do. do. unsorted	do.	—			—		
Do. Riga	do.	6	15	0	8	10	0
Do. Petersburg 1st Yellow	do.	12	15	0	12	15	0
Do. do. 2nd „	do.	8	15	0	9	5	0
Do. do. Unsorted „	do.	5	5	0	13	0	0
Do. do. White	do.	9	10	0	11	5	0
Do. Swedish	do.	8	10	0	12	15	0
Do. White Sea	do.	11	15	0	18	0	0
Do. Quebec Pine, 1st	do.	19	5	0	—		
Do. do. 2nd	do.	18	15	0	—		
Do. do. 3rd &c.	do.	9	0	0	9	15	0
Do. Canadian Spruce, 1st	do.	10	10	0	11	15	0
Do. do. 3rd & 2nd	do.	8	15	0	9	0	0
Do. New Brunswick	do.	7	5	0	8	0	0
Battens, all kinds	do.	7	0	0	10	10	0
Flooring Boards, 1in. prepared, 1st	per square	0	10	6	0	11	6
Do. 2nd	do.	0	11	6	0	12	6
Do. 3rd &c.	do.	0	10	3	0	10	3

COMPLETE LIST OF CONTRACTS OPEN.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
	BUILDING.		
Nov. 30	Birnie, Scotland—Farmhouse		C. C. Doig, Architect, Elgin.
„ 30	Ponteland—Cottage Homes	Newcastle-on-Tyne Guardians	Oliver, Leeson & Wood, Mosley Street, Newcastle-on-Tyne.
„ 30	Port of Recife—Works	Federal Government	Commercial Department. Foreign Office, S.W.
„ 30	Salford—Car Depot and Workshops	Tramways Committee	Engineer, Town Hall, Salford.
„ 30	North Shields—Roof	Tynemouth Gas Company	Engineer, Gasworks, North Shields.
„ 30	Owston, Doncaster—Schools	School Board	J. Simmons, Bank Chambers, Doncaster.
Dec. 1	Devizes, Wilts—Dwellings		Messrs. Anstie. Market Place, Devizes.
„ 1	Peterculter, Scotland—House	School Board	R. G. Wilson, 181A Union Street, Aberdeen.
„ 1	Youghal, Ireland—Additions	Mrs. Meade	J. F. McMullen, 30 South Mall, Cork.
„ 3	Burston, Staffs—Footbridge	Stone Rural Parish Council	W. J. Farlow, High Street, Stone.
„ 3	Halifax—Closets	School Board	W. H. Ostler, 22 Union Street, Halifax.
„ 3	Illogan, Cornwall—School	School Board	S. Hill, Architect, Green Lane, Redruth.
„ 3	Letterkenny, Ireland—Houses	Urban District Council	J. G. Larkin, Town Clerk, Letterkenny.
„ 3	Basford, Notts.—Additions	Union	W. V. Betts, Radford Road, Old Basford.
„ 3	Stockport—Drill and Examination	Technical Instruction Committee	J. Atkinson, Borough Surveyor, &c., Petersgate, Stockport.
„ 4	Birkenhead—Stations	London and North-Western and Great-Western Railway Companies	Joint Engineer, Woodside Station, Birkenhead.
„ 4	Walthamstow—Schools	School Board	G. E. T. Lawrence, 22 Buckingham Street, London, W.C.
„ 4	London, W.—Board Room and Offices	Paddington Guardians	F. J. Smith, Parliament Mansions, Victoria Street, S.W.
„ 4	Gorleston, Gt. Yarmouth—Cookery and Laundry Centre	School Board	Bottle and Olley, Architects, Queen Street, Great Yarmouth.
„ 4	Kilkenny—Disinfecting Chamber	Urban District Council	W. K. Cleere, Executive Sanitary Officer, Kilkenny.
„ 5	East Stonehouse, Devon—Urinal	Urban District Council	A. W. Debnam, Town Hall, East Stonehouse.
„ 5	Hayle, Cornwall—Bungalow	Mrs. J. T. Mudge	S. Hill, Architect, Green Lane, Redruth.
„ 5	Oldham—Car Depot	Tramways Committee	S. A. Pickering, Town Hall, Oldham.
„ 6	London, S.W.—Enlarging	Metropolitan Asylums Board	Offices of Board, Embankment, E.C.
„ 6	Southend-on-Sea—Technical Schools	Corporation	Town Clerk, Southend-on-Sea.
„ 7	Holyhead—Post Office	H.M. Office of Works	Office of Works, Storey's Gate, S.W.
„ 7	Pembroke Dock—Barracks	War Department	Royal Engineer Office, London Road, Pembroke Dock.
„ 8	Cleator Moor, Cumberland—Bank Premises	Bank of Whitehaven, Limited.	A. Huddart, 22 Lowther Street, Whitehaven.
„ 8	Walker, Northumberland—Buildings	Urban District Council	Handcock and Dykes, 1 Victoria Street, London, S.W.
„ 10	Canterbury—Dispensary	Dispensary Committee	A. Bromley, Architect, Cathedral Yard, Canterbury.
„ 10	Denbigh—School Buildings		A. Foulkes-Roberts, Clerk, Denbigh.
„ 10	Glasgow—Shed	Trustees of Clyde Navigation	W. M. Alston, 16 Robertson Street, Glasgow.
„ 10	Basford, Notts.—Entrance Lodge	Rural District Council	W. V. Betts, Radford Road, Old Basford.
„ 10	Romford—School	School Board	W. Smith, 24 North Street, Romford.
„ 11	Southampton—Custom House	H.M. Office of Works	Collector of Customs, Custom House, Southampton.
	ENGINEERING.		
Nov. 30	Burley-in-Wharfedale—Heating	Managers of the Township Day School	C. Bailey, Peel Place, Burley-in-Wharfedale.
„ 30	Trieste—Harbour Works	Austro-Hungarian Marine Board	Commercial Department, Foreign Office, S.W.
Dec. 1	Urmston, Lancs.—Bridge	Moss Side Urban District Council	H. B. Longley, Council Offices, Moss Side, Lancs.
„ 3	London, S.E.—Arc Lamps	Vestry of St. Mary Magdalen, Bermondsey	Clerk, Town Hall, Spa Road, Bermondsey.
„ 4	Oldham—Gasholder	Gasworks Committee	A. Andrew, Gas Offices, Oldham.
„ 5	Bronant, Cardigan—Bridge	County Council	R. Lloyd, County Surveyor, Tregaron.
„ 6	Brighton—Tramways Materials	Town Council	T. B. Holliday, Town Hall, Brighton.
„ 10	Ilford—Pumping Station	Urban District Council	Taylor, Sons, and Crimp, 27 Great George Street, London, S.W
„ 10	Preston—Bridge	Lancs. County Council	County Bridgemaster, Preston.
„ 13	Withington, Lancs.—Boilers	Urban District Council	A. H. Mountain, Town Hall, Withington, near Manchester.
„ 13	Brighton—Tramroads	Town Council	F. J. C. May, Town Hall, Brighton.
„ 31	London, N.W.—Plant	Hendon Urban District Council	R. Hammond, 64 Victoria Street, London, S.W.
Jan. 2	Christiania—Transmission of Electric Power	Stavanger Corporation	E. Berentsen, British Vice Consul, Stavanger.
April 10	Rosario—Harbour Works	Argentine Government	Commercial Department, Foreign Office, S.W.
	IRON AND STEEL.		
Dec. 1	Eggleston, Durham—Fencing	Parish Council	Hill & Stoddart, Eggleston.
„ 3	Halifax—Hurdles	School Board	H. H. Ostler, 22 Union Street, Halifax.
„ 3	Wolverhampton—Iron and Steel	Tramways Committee	J. W. Bradley, Town Hall, Wolverhampton.
„ 4	London, E.C.—Rails	South Indian Railway, Travancore Branch	H. W. Notman, 55 Gracechurch Street, London, E.C.
„ 4	London, E.C.—Rails	South Indian Railways, Pamban Branch	H. W. Notman, 55 Gracechurch Street, London, E.C.
„ 5	Sheffield—Pipes	United Gaslight Company	J. W. Morrison, United Gaslight Company, Sheffield.
„ 5	Oldham—Iron and Steel Work	Tramways Committee	S. A. Pickering, Town Hall, Oldham.
„ 7	Margate—Materials	Corporation	Manager, Waterworks Office, Municipal Buildings, Margate.
„ 10	London, S.W.—Rails		Agent-General for Victoria, 15 Victoria Street, S.W.
„ 17	Wimbledon—Sewer Ventilating	Urban District Council	C. H. Cooper, Engineer and Surveyor, Wimbledon.
	PAINTING AND PLUMBING.		
Dec. 1	Grays, Essex—Painting, &c.	Metropolitan Asylums Board	Metropolitan Asylums Board Offices, Embankment, E.C.
„ 4	Sheffield—Plumbing and Glazing	School Board	Clerk, Board Offices, Sheffield.
	ROADS AND CARTAGE.		
Dec. 1	Dewsbury—Paving	Corporation	Borough Surveyor, Town Hall, Dewsbury.
„ 1	Harrogate—Road Works		S. Stead, 33 James Street, Harrogate.
„ 4	Handsworth, Staffs—Making-up	Urban District Council	Surveyor, Council House, Handsworth.
„ 5	Chiswick—Paved Footpath	Urban District Council	Surveyor, Council Offices, Sutton Court, Chiswick.
„ 11	Amble—Making-up	Urban District Council	W. Gibson, 31 Queen Street, Amble.
	SANITARY.		
Nov. 30	Bridgwater—Drainage Works		Samson and Cottam, Architects, Eastover, Bridgwater,
„ 30	Rotherham—Sewers	Rural District Council	B. Godfrey, 29B High Street, Rotherham.
„ 30	Brighton—Extending Sewer	Town Council	F. J. C. May, Town Hall, Brighton.
Dec. 1	Dunstable—Sewerage Works	Corporation	W. H. Radford, Albion Chambers, King Street, Nottingham.
„ 3	Hale, Cheshire—Scavenging	Urban District Council	J. G. Whyatt, Clerk, Albert Road, Hull.
„ 3	Hastings—Sewers	Corporation	P. H. Palmer, Town Hall, Hastings.
„ 4	Dover—Drains	Town Council	H. E. Stilgoe, Town Hall, Dover.
„ 5	Ottery St. Mary, Devon—Sewage Purification Works	Urban District Council	E. G. Warren, Architect, Commercial Chambers, Exeter.
„ 6	Walton-on-the-Naze, Essex—Sewerage Works	Urban District Council	Beesley, Son, and Nichols, 11 Victoria Street, Westminster, S.W
„ 10	Ilford—Sewers	Urban District Council	Taylor, Sons, and Crimp, 27 Great George Street, London, S.W.
„ 11	Dorking—Drainage Works, &c.	Rural District Council	W. Rapley, junr. Clovelly, Tower Hill, Dorking.
„ 13	Withington, Lancs.—Sewage Outfall Works	Urban District Council	Clerk, Town Hall, Withington, Lancs.
„ 15	Horwich, Lancs.—Sewer Extension	Urban District Council	Surveyor, Public Hall, Horwich.

COMPETITIONS OPEN.

DATE OF DELIVERY.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	BY WHOM ADVERTISED.
Dec. 1	Bridlington—Parade Extension	£36 6s., £15 15s.	A. E. Matthewman, Town Hall, Bridlington
„ 6	Fleetwood, Lancs.—Public Shelter	£15 15s.	E. Frobisher, Town Hall, Fleetwood. Lancs.
„ 14	Swansea—Harbour Offices	£100, £50	T. Strick, Harbour Offices, Swansea.
„ 31	Malling, Kent—Steam and Hot Water Scheme	£25	J. F. Allison, West Malling, Kent.
„ 31	South Shields—Municipal Buildings	£200, £100, £50	J. M. Hayton, Town Clerk, Court Buildings, South Shields.
Feb. 14	Ballarat, Australia—Statue		J. W. Nedwell, Hon. Sec. Soldiers' Statue Fund, Ballarat, Australia.
March 25	Basford—Sewerage Scheme		C. J. Spencer, Clerk, Public Offices, Basford.

The Acomb Wesleyan Chapel, Hexham, has just been re-opened after having been thoroughly renovated and re-seated with pitch-pine seats from designs by T. Leslie Anderson, M.S.A., of 11, Royal Arcade, Newcastle-on-Tyne.

Carshalton New Hospital.—The Metropolitan Asylums Board have adopted the recommendation of the Works Committee, that the revised estimate of the proposed cost of erecting, fitting up, and furnishing a new hospital at Carshalton, to be called the Southern Hospital, be approved and accepted, and that the Local Government Board be asked to issue an order authorising the managers to expend and borrow a sum of £284,312 for the purpose.

New Asylum for Surrey.—The Surrey County Council at Kingston-on-Thames have decided to build a new lunatic asylum on the Netherne Estate, in the eastern part of the county, at an estimated cost of £300,000. The present asylum at Brookwood has long been overcrowded. The proposed new asylum will take 960 patients. Separate provision is being made for possibly curable cases, for idiot and imbecile children, for working patients, and for the general class of lunatics.

CONTRACTS OPEN.

THE URBAN DISTRICT COUNCIL of WALKER invite TENDERS for the ERECTION, complete, of the BUILDINGS, FLUES, and CHIMNEY for a 2-unit Refuse Destructor, which will subsequently be erected under another contract.

The whole of the works to be in strict accordance with the specifications prepared by the Engineers. The specifications are in two parts:—

1. Chimney and External Flues. 2. Buildings comprising Destructor House.

The contract to be entered into will be subject to the approval of the Local Government Board. Firms desirous of tendering must send in their names to the Engineers, Messrs. HANDCOCK & DYKES, 1 Victoria Street, Westminster, London, S.W., together with the sum of Two Guineas (returnable on receipt of a bonâ-fide Tender). The Engineers will then forward a copy of the specifications and quantities, and on production of same the plans may be inspected at the Council Chambers, Church Street, Walker.

Tenders, under cover, marked "Buildings," must be delivered to the undersigned on or before DECEMBER 8th, 1900.

T. M. STURGESS,
Clerk to the Walker Urban District Council.

November, 1900.

HEADINGTON RURAL DISTRICT COUNCIL.
HOLTON BRIDGE.

The above Council are desirous of receiving TENDERS for the TAKING-DOWN and RE-BUILDING of the SOUTHERN PORTION of this BRIDGE, as indicated on plans; also for the CONSTRUCTION and MAINTENANCE of a TEMPORARY BRIDGE so as to divert the traffic during the progress of the works. Such plans and specifications can be seen at my office, No. 126 High Street, Oxford. Further information can be obtained of, and the Bridge can be viewed by appointment with, Mr. LEE TURNER, Surveyor to the Council, of Hartfield Cottage, New Headington, Oxon.

Tenders, endorsed "Holton Bridge," must be received at my Office above mentioned not later than TUESDAY, the 18th day of DECEMBER, 1900.

The Council do not bind themselves to accept the lowest or any Tender.

By order of the Council,
THOMAS W. MALLAM,
Clerk.

No. 126 High Street, Oxford,
November, 1900.

TO BUILDERS and OTHERS.

The Metropolitan Asylums Board are prepared to receive TENDERS for the EXECUTION of certain STRUCTURAL ALTERATIONS, PAINTING, and other Works, at Rochester House, Little Ealing, W., in accordance with specification and plans prepared by the Surveyor to the Board, and to be seen upon application at the Office of the Board.

Printed Forms, upon which alone Tenders will be received, together with copies of the bills of quantities, may be obtained at the Office of the Board, Embankment, E.C. (corner of Carmelite Street), upon payment of a deposit of £2 2s., returnable upon the receipt of a bonâ-fide Tender.

Tenders, sealed and endorsed "Tender for Structural Alterations, &c., Rochester House," are to be returned to the undersigned, together with the priced bills of quantities, before TEN a.m. on WEDNESDAY, DECEMBER 5th, 1900.

The Managers do not bind themselves to accept the lowest or any Tender.

By order,
T. DUNCOMBE MANN,
Clerk to the Board.

November, 1900.

ROMFORD SCHOOL BOARD.
TO BUILDERS AND CONTRACTORS.

The above Board are prepared to receive TENDERS for the ERECTION of an INFANT SCHOOL to accommodate 290 children.

Plans, specification, and conditions may be seen at the Albert Road School, Romford, between the hours of TWELVE and FOUR p.m., except on SATURDAYS.

Bills of quantities can be obtained at my Office on payment of Two Guineas, which will be returned on receipt of a bonâ-fide Tender.

Tenders, under seal, endorsed "Tender for Infants' School," must be delivered at my Office not later than TWELVE noon on MONDAY, the 10th day of DECEMBER next.

The person whose Tender is accepted must enter into a bond, with two responsible parties as sureties, in the sum of Five Hundred Pounds for the due performance of the contract.

The Board do not bind themselves to accept the lowest or any Tender.

By order,
WILLIAM SMITH,
Clerk.

No. 24 North Street, Romford,
November 1900.

FLOORING BLOCKS.



Per 100 Blocks out of sizes.	YELLOW		PITCH PINE
	At Wharf.	ex Ship within one month.	At Wharf.
17½×3×3	13 8	12 9	20 0
17½×3×2	8 11	8 2	14 6
17½×3×1½	6 10	6 3	10 9



PRIME DRY OAK & PITCH PINE FLOORING,
With Special Joint to conceal Nails—
1¼×4¼ Oak, 56/9 Pitch Pine, 29/- per square
1 ×4¼ „ 45/6 „ 25/6 „
These prices include desiccation.

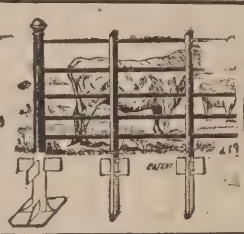
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MEDAL FOR THE "CLENCHER" WASH-DOWN PEDESTAL CLOSET.
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THE BUILDERS' JOURNAL & ARCHITECTURAL RECORD

DECEMBER 5, 1900. No. CCCIV.

EFFINGHAM HOUSE, ARUNDEL STREET, STRAND, W.C.

An Architectural Causerie.

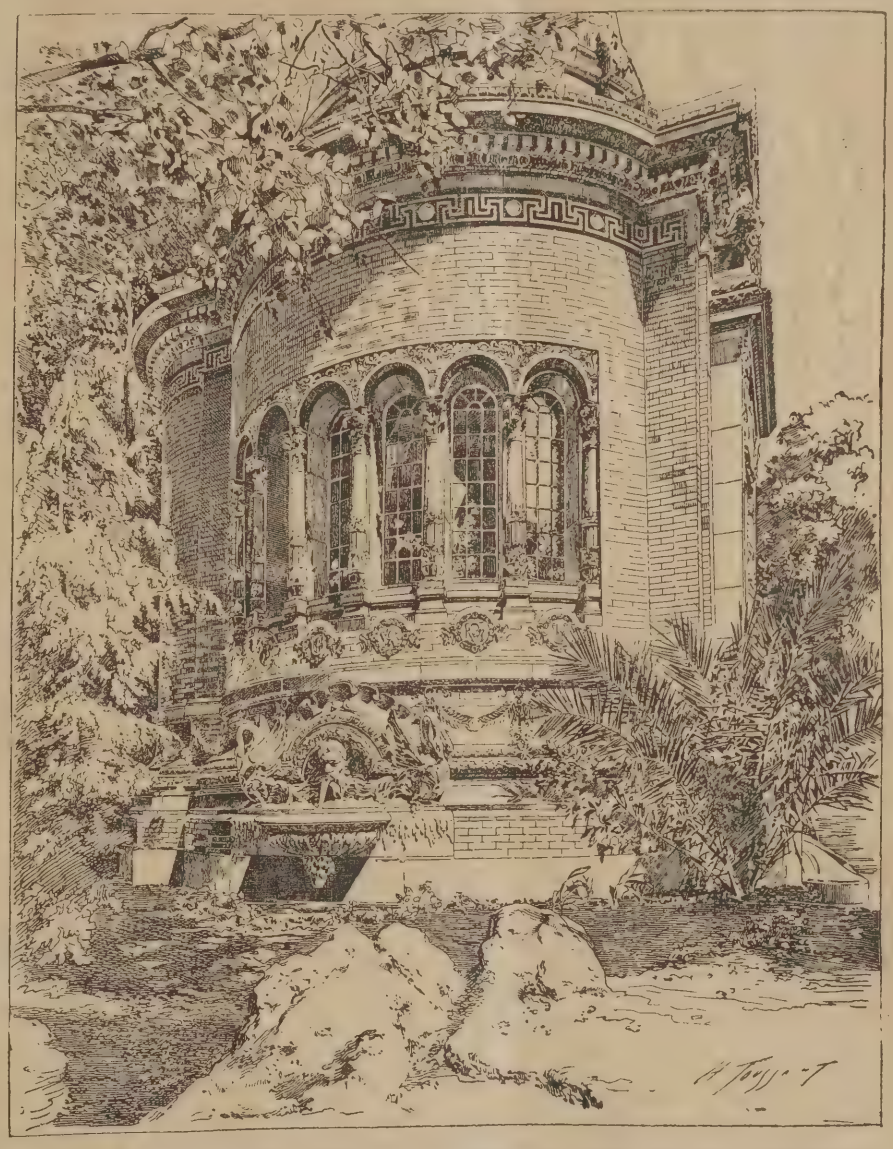
Eighteenth-Century Architects in France.

LADY DILKE'S book has drawn attention to a subject which can never cease to be of value, the architects and sculptors of France in the last century. Their influence is less no doubt than it once was; the Gothic revival, the more careful study of the past which sprang from it, the modern attempt to create a new style, and finally the lapse of a hundred years, have all tended to diminish it. In style—in mere style—we shall not again, perhaps, see their works taken as models; but the magnificent central part of Paris owes more to them than is generally known; if the late Emperor and Baron Haussmann rebuilt on a great scale, they had to take the creations of their predecessors as starting points; for the late seventeenth and the whole of the eighteenth century were occupied in the construction of public works. The names of the French architects of that period are known but they do not linger much in the public mind. How many educated Englishmen in crossing the Place de la Concorde know that the two buildings which form the entrance to the Rue Royale are the work of Gabriel? Yet how simple, stately, and appropriate they are, and what would that splendid square be without them? To him, also, the lesser Trianon is due; and it might be described as an English country house in the park of a French palace. The great front of S. Sulpice, with its two towers, was the work of Servandoni, a man who was for some time a scene-painter in London, an occupation which is certainly favourable to the artist and architect and calculated to promote boldness and breadth of treatment.

The Madeline, though completed by Vignon early in the present century, was begun in the last by Constant d'Ivry, and continued by Conture. The magnificent triumphal arch called the Arc de l'Etoile was designed by Chalgrin in 1806, but its style is that of the preceding century. The portico of the Chamber of Deputies, with its twelve Corinthian columns, approached by wide stairs and surmounted by a large pediment enclosing sculpture, is by Royet. The Pantheon is the work of Soufflot. These are but a few of the men who adorned Paris in the last century or the very earliest years of the present. The great provincial cities of France owe much to the eighteenth-century architects. Nancy, the old capital of Lorraine, is a remarkable instance of a city grandly and spaciously designed; its Place Stanislas and other works are monumental. Bordeaux and Lyons, both very stately cities, laid the foundations of their splendour in the late seventeenth century, and their development went on during the eighteenth, preparing the way for the great rebuilding of our own day. To harmonise the old and the new, to preserve what is best in the works of the past, to design new streets and open spaces so as to produce a grand total effect, is the problem presented to modern builders, but nowhere has it been so satisfactorily solved as in France, for the eighteenth-century men gave a clear lead which their pupils and successors faithfully followed. Of the sculptors of the time the same may be said, for nothing is more remarkable than the manner in which they played into the hands of the architects throughout the century.

Trafalgar Square.

IT is stated that alterations are to be made to the fountains in Trafalgar Square. The notion has often been conceived that some greenery should be introduced into the present expanse of granite and asphalt, but no attempt worth mentioning has been made to effect such a change. Water never looks so well as when it is surrounded by verdure, and the idea to obtain such an effect in London's great square is worthy of consideration. The whole of the space around the fountains and pedestals which now looks so cold and barren might be covered with turf up to the row of pillars on the south side, a pathway being left at each side to afford communication with the steps. Such a treatment would enhance the appearance of the square and would form an elegant foreground to the National Gallery. At present the space is mostly frequented by the unemployed. By enclosing it, and laying down grass in the manner suggested, the only persons seriously inconvenienced would be those who have chosen the spot as a rendezvous for the discussion of grievances.



PAVILION OF THE TOURING CLUB, PARIS EXHIBITION, 1900. M. RIVES, ARCHITECT

St. Martin's Steps.

NOTWITHSTANDING all the hostile criticism of the proposal to alter the steps of St. Martin's Church, the Improvements Committee of the London County Council remain obdurate. When the recommendation was considered a few weeks ago Mr. Shaw-Lefevre managed to defer it by a resolution that the Council should take expert architectural advice before coming to a decision. This advice was sought of the Institute who, we think, have not made a sufficiently strong protest against this ill-conceived scheme. The Institute agree that the removal of the landing would be very detrimental to the appearance of the church, but they give the Committee a handle by suggesting that if such a removal were an actual necessity (which, however, they do not admit), the landing might be removed on the west side and allowed to remain on the south side. This arrangement would be of little help in preserving "somewhat of a symmetrical appearance to the base of the portico," because the length of the landing on the south side is only about a fifth of that on the west side. Such a semblance of acquiescence on the part of the Institute is sufficient to keep the Improvements Committee's spirit alive, despite the fact that their recommendation was rejected at last meeting of the Council, and their precedent may still be followed by the Westminster Council. The alteration would add a meagre width of 2ft. 6in. to the pavement, but it would spoil the western setting of this fine church. After this inadequate show of opposition to the scheme, the Institute branch off and suggest that the cast-iron railings now fixed between the columns should be removed, a proposal which the Improvements Committee think most undesirable. But this is a side issue which there was no need to raise while the main question was unsettled.

DECORATION OF ST. JAMES'S CHURCH, BERMONDSEY.

BY H. K. D.

THE Church of St. James, Spa Road, Bermondsey, S.E., has recently undergone renovation and redecoration, and was reopened last month. The church is comparatively a modern one, as the first stone was laid on May 21st, 1827, the building being consecrated just two years later. It was designed by James Savage—the well-known architect of the church of St. Luke, Chelsea, and of numerous additions and reconstructions in the Middle Temple—and G. Allen. The church is Classic in style ("Grecian" we are told in the contemporary accounts in "John Bull" and the "Gentleman's Magazine"), and is remarkable for its well-proportioned interior; it is altogether superior to the majority of the very poor buildings erected about that time in the name of architecture. The contract for its erection amounted to £21,412 19s. 5d., we are told, and the church accommodates about 2,000 persons. There appears to have been some considerable difficulty in finding a secure foundation in the marshy soil. The body of the church is of brick, with stone columns and dressings and a stone spire.

When the present renovation and decoration was undertaken, the building was in an extremely dirty and shabby condition, and the present vicar, the Rev. E. N. Coulthard, M.A., is to be commended for his energetic action in having this regrettable state of affairs remedied; he can now congratulate himself upon having obtained a very fine example of architectural decoration, the work of Mr. Arthur H. Ryan-Tenison, A.R.I.B.A., who has personally superintended the work.

With regard to the exterior, the stonework has been thoroughly repaired, not replaced, and much of the pointing of the brickwork renewed. The portico has been renovated and the iron frames of the windows repaired, repainted, and furnished with new ventilators. The heating apparatus has been much enlarged. The heating pipes should have been, if possible, hidden from sight under the old raised floor on which the benches are placed. Electric light has been installed, and the drop pendants, rococo in feeling, are light and undemonstrative. In the sanctuary incandescent lamps have been placed in grooves at the sides of the chancel arch, thus casting the light forward on the east end, without throwing the glare in the eyes of the congregation. This arrangement is shown in one of the illustrations. But it is the interior which has undergone the great transformation. It is now light and brightly impressive. The walls have been painted and treated simply with bands of stencilling, the order of their vertical arrangement being shown upon the reproduction given of Mr. Tenison's original first design. These stencils have very fitly been designed in no spirit of archæological pedantry, but are quite modern in feeling, the designs being natural enough to be clearly understood by inhabitants of that dingy neighbourhood—Bermondsey—yet sufficiently conventionalised to be decoratively suitable. The choice of the flower kingdom for the subjects of design is a happy one, when it is remembered that many of the poorer denizens of Bermondsey seldom, or never, see the green fields. It is, however, to be regretted that expense and the fear of giving the impression of a straining after higher ritual should have barred the introduction of the human form into the decoration, considering that there is a large painting at the east end, shown in one of the accompanying illustrations, filled with figures, and that the human body is a higher manifestation than the flower kingdom already used. Ornament must, of course, be conventional, but it need not be geometrical, and it is a great relief to the eye attuned to the perception of natural beauties – the basis of our artistic emotions—to see this very able attempt to break away from the *mélange* of our architect's stock-in-trade, so well known and so displeasing. Mr. Tenison has been most successful in his attempt to make the details interesting intrinsically as well as in their general bearing.



ST. JAMES'S CHURCH, BERMONDSEY:
GENERAL VIEW LOOKING TOWARDS SANCTUARY.

The general colour scheme is a harmony in green, given a piquancy by the cream-tinted Ionic columns, by touches of bright colour and by the design of the details, and as the caps of the columns are also whitened, a simplicity of line is obtained which the Ionic volute if made forcible would render less effective. The greens advance in a gentle gradation, beginning with a rich olive green in the dado of the nave walls, diminishing in strength until the clerestory is reached (where pale greenish buff is used), and merging into the roof, which is shaded in varying tints of greens and brown-greys, with the mouldings emphasised to give needed relief. This roof, on account of its light colouring, does not in any part give a feeling of oppression, but stands clear and high, materially aiding the general effect. The bands of stencilling are of various Biblical flowers and fruits, the band in the nave under the gallery showing the rose; in the gallery, first a band of the lily, and above it the apple; higher up, below the clerestory, tulips have been used as a motive for the frieze, and conventionally treated with the idea of suggesting mosaic rather than stencilling; and in the clerestory there is a pomegranate band, broken through by pilasters, whose constructive lines have of course been emphasised, with panels of the Tree of Life.

These stencil bands on the walls have been cut rather awkwardly by the openings, and it would have been better if the designs had been modified to fit in where necessary. The rose band on the nave wall has wavy curves dividing it into two halves, the lower one dark and the upper light—if anything slightly too light. The bands also have their lower lines cut objectionally by the doorways in the gallery. Just under the caps of the piers a necking band of stencilling is carried round, representing the daisy and grass of the field, emblematical of lowliness and humility of spirit, to illustrate the beatitude, "Blessed are the meek." These bands we suggest should have been omitted, weakened, or the ground made slightly darker. The curved front of the gallery, representing daffodils, is treated in deep rich yellows and brown greens, with a deep blue on the lower half. This blue needs to be gradated darker towards the bottom, for although not seen from the ground floor it is at once noticeable from the gallery. The stems of the daffodils running down through this blue well emphasize the fact, when viewed from an angle, that the front is curved. The text, one of the old landmarks, retained by special request we understand, is the least satisfactory feature in the scheme, but we are informed by the architect that he has the improving of this work already under consideration. The nave piers are a brown buff, with an oak-panelled base. The spandrels over the chancel arch are filled with a treatment of the poppy, the emblem of rest, encircling the Alpha and Omega in gold. The poppy is somewhat forcible, but time will, no doubt, soften its slight harshness. The treatment most suitable would have been to have filled the spandrels with draped figures, and the writer would suggest that James, the dedicatory saint of the church, and John, should be taken as the subjects for mosaics or paintings. The

west end is restfully painted a darker green than the general colour tone of the church.

Within the sanctuary the panels of the roof are treated with the olive branch and the passion flower, encircling the I.H.C. and the Greek X.P.C., and the sacred monogram, with the Tree of Life on either side of the picture and the daisy at its crown. The flanking walls have been panelled with stencils of the vine and corn, symbolical of the Sacrament, shown in the illustrations. Beneath the picture is a simple framework of oak panelling, almost entirely made from the book boards of the old seats once occupying the nave. The panelling should no doubt be returned on the flanking walls, but mural tablets which could not be moved prevented this being done. It also unfortunately had to enclose the Creed, the Lord's Prayer and the Commandments, which are surrounded by a conventionally-treated stencil, somewhat suggestive of Jesus' crown of thorns. The old picture at the east end is most destructive to an effective artistic treatment, dominating everything and looking like a hole in the wall, to say nothing of its intrinsic defects. It ought to be removed, but at all events the gaudy gold frame should be toned down to a green bronze. The floor is partially paved with mosaic having a neat fleur-de-lis design, unattractive of attention, as it should be. The dossal, a reredos it might almost be called, is of dark green stained oak, contrasting well with the lighter polished oak panelling behind. It has pewter tracery, a novel idea. The sanctuary railing is an old one, the original gates having been taken off; this, however, has left an unfinished ending for which the architect has designed a special-made thick banister not yet in place.

A choir has been formed in the body of the church, enclosed by oak screens and a dwarf-stone wall across the nave. The screens have clear leaded glazing, and on the north, as shown in the accompanying illustration, are arranged to form a morning chapel, as it might be called, for use at week-day services and classes, by drawing curtains across. A word should here be said as to the hangings. There are two small dull brown-green curtains to the choir stalls, and the curtains of the four small upper galleries or rooms, now disused, at the east and west ends of the gallery, and of the morning chapel, are of a pleasing red colour, all harmonising excellently with the scheme. The new oak choir stalls are the gift of Lord Llangattock of the Hendré—the new oak benches in the nave being a condition to his gift. The old benches still remain in the gallery, but those at the west end have been toned down to a mellow brownish red, and it now remains to complete the work round the sides. The pulpit has been made out of the oak from two old ones which used to stand on either side of the church, and stands on a stone pedestal. The staircase to it is from one of the old pulpits and will shortly have new turned balusters, the present ones being too frail in appearance. The carved panels of the choir stalls and pulpit are somewhat too conventional, but the funds in hand, we understand, only permitted of a very simple treatment.

The vestibule is also simply decorated, the wall up the staircase being coloured yellowish red, with a dark green band of stencilling, and a yellowish green above.

In offering the foregoing criticisms of the work it must not be presumed that the architect is at fault; rather must it be concluded that it is the restrictions which have been imposed upon him, many needlessly, to meet the views of the low-church congregation that have been incompatible with a perfect result. It is to be hoped that opportunity will be given him to effect the alterations which have been suggested. There are also several other changes that require to be made, chief among which is that the harsh gilded organ-pipes require to be toned down, and the organ case remodelled. The tablets on the east wall and another on a pier on the south side are most staring and should be removed, barring as they do any reasonable architectural treatment. The east wall is somewhat bare and a marginal line might have been marked below the chancel arch, but the tablets forbid the use of panels, the most obvious treatment. The old eagle lectern is a bad piece of work and should be rejected, but even a new one should be placed to one side, not centered to attract attention. The external doors are at present grained and varnished, and should be cleaned down and the wood left bare.

Mr. Ryan-Tenison has been particularly fortunate in obtaining the services of Mr. H. J. Pullen, of Brixton, as the contractor for the decoration and exterior work, for he has entered into the spirit of the work, taking personal charge of it. The workmen themselves appear to have made every effort. The following firms have carried out the other work:—Mr. Nathaniel Hitch, of 60 Harleyford Road, Vauxhall, the choir stalls, pulpit and sanctuary, and reframing of the altar in oak, and the wood carving; the Educational Supply Association, the nave seating and choir screens; the Italian Tile Company, the mosaic; Mr. A. Sclater, of 182 Oxford Street, W., the electric-lighting; and Messrs. Colbourne and Company, of Regent Street, W., all the hangings. The total outlay has been about £2,300, of this sum £850 being spent on the decoration.

THE ROOFING OF FARM BUILDINGS.*

BY ARTHUR T. WALMISLEY, M.INST.C.E.

THE paper does not pretend to arrive at any definite conclusions so far as the arrangement of farm buildings is concerned, but to touch upon a few considerations of details of structures. Farming practice differs so much that buildings which would be really needed in one district or upon an individual farm might be entirely out of place in another. Farmyard buildings are indispensable aids to farming practice, but in the midst of the present financial difficulties which embarrass agricultural interests, it is questionable how far the erection of very substantial farm buildings is now justified, as it is impossible to foresee what changes of occupation may take place in the future, which would render them more or less useless. Elaborate and expensive structures do not add, except in a minor degree, to the actual productive capacity of a farm. As regards implements, arable farms of a given acreage require more storage for implements than pastoral farms of the same extent.

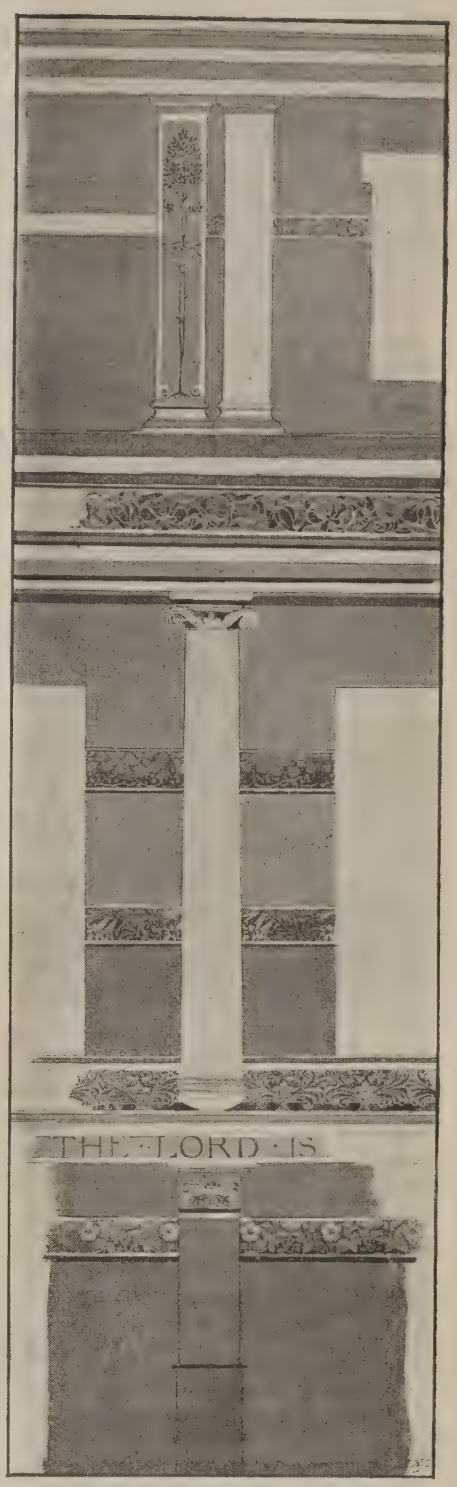
Arrangement of Farm Buildings.

The design or shape of any building or structure for farm requirements may assume almost any form, depending not only upon the stability of the structure, but mainly on its situation and requirements, so that very little of a general nature can be said on this point. Many farmers advocate an open yard with sheds round it for storing cattle, as they consider that although there is a small waste in the manure, the cattle thrive better and are more healthy when they are turned out in the open as much as possible. Other more up-to-date farmers insist that the animals kept under cover, free from draught, and in a shed amply ventilated and built over a non-absorbent floor, are fatted quicker and at less cost than those exposed to weather. The manure made is also of greater value, as it is not exposed to the rain, which washes a large proportion of the valuable manurial constituents away. In open yards a suitable covering for a manure pit would consist of a rectangular enclosure surrounded by a wall 3 ft. or 4 ft. high (except in the centre at one end) and surmounted by a painted corrugated-iron roof, supported on H-section stanchions standing 10 ft. high from ground to eaves, so as to leave the upper portions of the ends and sides over this wall open; and provided with all necessary wrought-iron tie-rods, gutters, down-pipes, and fastenings. Exclusive of foundations and brickwork, the price, delivered ready for erection, is about 1*s.* 5*d.* per foot super. of area covered. The

Most Suitable Materials

for farm buildings depend upon local circumstances, but too much stress can scarcely be laid upon the proper location of manure pits and also upon the efficient drainage arrangements of all sheds. It is of primary importance to ascertain the various materials most accessible and the best that can be obtained in the district of the proposed structures, whether bricks, stone, cement, slates, tiles, timber, concrete, or iron, having regard also to the distance and convenience of carriage and the selection of the time most agreeable to the tenant, if, as is generally the case, he is to do the transport. Where bricks are reasonable in price and of near carriage, 9-in. brick walls upon proper footings, with piers 14in. wide under the principals, are well adapted for single-storey buildings. Concrete walls are very suitable in some parts, care being taken that the gravel or sand mixed with the cement is free from loam or clayey material. In a stone country a good rough rubble wall with drafted stone quoins, if the stone can be easily dressed, or otherwise with brick quoins, may be recom-

* A paper read before the Surveyors' Institution on November 26th, 1900.



FIRST SKETCH DESIGN FOR DECORATION OF ONE BAY OF NAVE, ST. JAMES'S CHURCH, BERMONDSEY.

mended, or where neither suitable stone nor brick are procurable, concrete may be used, either placed *in situ* in a plastic condition between timber sheeting and subsequently rendered in cement for sake of appearance upon the removal of the boards, or the concrete may be cast in blocks and these blocks built up like ashlar. For floors of any outbuilding concrete is more suitable than flagstone, as joints in flags frequently become washed out. Flagstones crack, and the cavities so formed become depositories for filth which no broom can clear.

Weather-Boarded Buildings

well tarred, upon brick bases, carried about 2ft. above the ground, are inexpensive in some places, and make satisfactory enclosures. (A sketch was shown of an outside covering resting upon four courses of brickwork, namely, a bottom course of 18in. width, the next course 14in. wide, both below the ground level, and a double course of 9-in. work above the ground level.)

In the case of a corrugated iron covering at the sides of the building, a galvanised iron flashing-piece is indicated to be fixed around the bottom timber plate, which flashing runs up about 2in. behind the iron sheets and returns over the top 9-in. brick course. A damp course can also be added by a layer of felt placed between the timber plate and brickwork below the floor level. Air-bricks can also be built at suitable intervals in the upper portion of the footings. A cheaper plan is to carry the building upon iron base pillars properly bedded, placed at 9ft. centres, and to omit the brickwork footings. By carrying these pillars up to a height clear of the ground a store can be built with a strong floor, vermin-proof. The price for a shed 25ft. by 15ft., suitable for a grain store, 8ft. to eaves and 12ft. to apex of roof, constructed on vermin-proof pillars, would be about 2s. 6d. per square foot of area covered.

Corrugated Iron Structures.

For corrugated iron work, self-supporting structures are, for the sake of economy, introduced. Trusses are dispensed with in curved roofs up to 30ft. span, the sheets alone with light bracing being sufficient. Its form gives it strength, and allows it to be fixed in a minimum time. Up to 20ft. span a single tie-rod, slung up at the centre, is generally employed, the sheets being curved to the required radius or maintained in position simply by tie and king rods spaced about 10ft. apart. In spans of 20 to 24ft. the single vertical central rod is removed and angle-iron struts with their ends bent round for connection are substituted. Comparatively heavier gauge sheets are introduced, and wall plates added along the eaves to carry the sheets. In spans of 24 to 30ft. the vertical central sling rod is added, thus forming a kind of halfway design between an ordinary principal roof and the curved self-supporting roof described above. Above this span principals and purlin bars need to be introduced so as to form a complete framework on which to secure the sheets. A curved roof of timber trusses for 50ft. span can be easily erected on the following lines:—Rise, 7ft.; depth of truss at centre, 5ft.; curved roof boarding, 36ft. 6½in. radius; radius of curve to tie-beam, 46ft. 10in.; rafter of tie-beam, composed of battens 7in. by 1¼in. and 6ft. long, fixed side by side, but joints made by two battens occurring in the centre of the adjoining batten; diagonal bracing, 2½in. by 1¼in., with packing pieces at intersections; two vertical struts, spaced equidistant, composed of 5in. by ¾in. battens; purlins, 3in. by 2in., and 3ft. apart (centres); roof boarding, ⅝in. thick; V gutter, 9in. by 9in. by 1in.; wall plate, 9in. by 3in.; principals at 7ft. 6in. centres, supported on wood standards with intermediate bracing.

The Cheapest Shed

that can be erected consists of timber framing to both the sides and ends carrying a self-supporting covering. Where timber rafters are introduced, with longitudinal battens fairly close together from rafter to rafter, the usual bolt connections in the side laps are frequently dispensed with, the corrugated iron as a weather covering being simply nailed to the battens and a ridge capping added. The cost of the necessary timber framing for such roofs, with rafters 5in. by 3in. having collar braces and spaced 2ft. 6in. apart, with wall plates 4½in. by 4½in., the battens being 3in. by 1½in., would be about 6d. per square foot of area covered.

A comparison between a slated and a zinc roof and a corrugated iron self-supporting roof, each covering an area of 100ft. by 25ft., would be—the slate roof costing about 1s. 1d., the zinc roof 10½d., and the corrugated iron roof 7¼d. per square foot of area covered.

To cover an area of 100ft. by 25ft. with a slate roof provided with principals and collars 9in. by 2½in., rafters 4½in. by 2½in., purlins 9in. by 3in., ridge 12in. by 2in., and plates 4½in. by 4½in., would cost as follows (fixed complete):—

	£	s.	d.
386ft. cube fir in plates, rafters, &c. @ 3s.	57	18	0
3,000 sq. ft. best Bangor slating @ 31s. 6d.	47	5	0
3,000 sq. ft. rough boarding @ 14s.	21	0	0
100ft. rim slate ridge roll @ 1s.	5	0	0
Lead flashing (5lbs.), 2c., 3q., 21bs. @ 24s.	3	6	6
Iron bolts, &c.	1	5	0
	£135	14	6

or 1·08s. per sq. ft.

To cover the same area with a zinc roof provided with principals and collars 7in. by 2in., rolls for zinc 3in. by 1½in., purlins 6in. by 2in., ridge 9in. by 2in., and plates 4in. by 3in., would cost as follows (fixed complete):—

	£	s.	d.
230ft. cube in plates, rafters, &c. @ 3s.	34	10	0
2,700ft. super. Italian zinc (Braby's) roofing, including ridging and flashing, No. 15 gauge @ 15s.	74	5	0
Iron bolts, &c.	1	5	0
	£110	0	0

or 0·88s. per sq ft.

These prices are of course subject to market fluctuations, but serve for purposes of comparison.

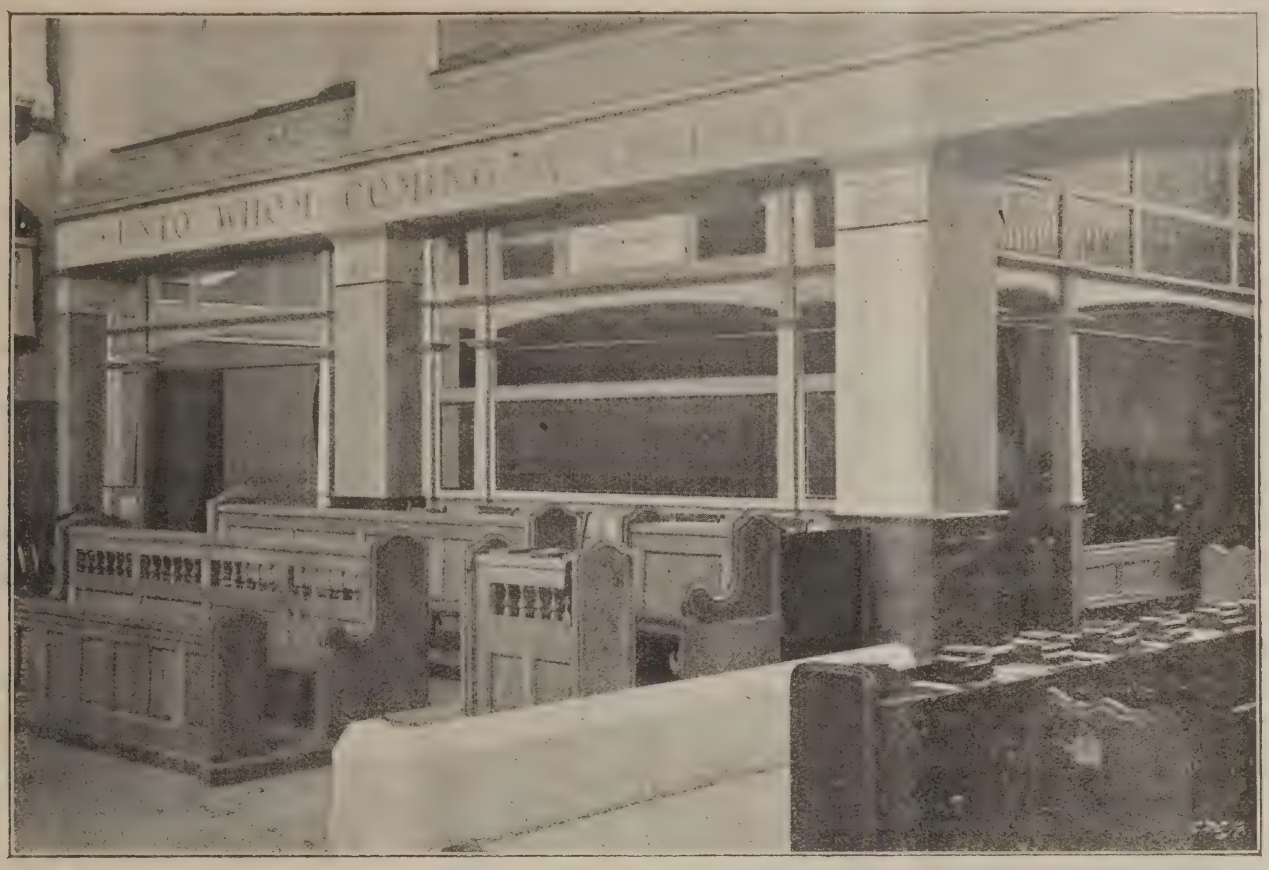
Where zinc is employed it is of great importance that it should be pure. Ordinary corrugated zinc cannot be recommended. For roofs of a permanent character either No. 14, No. 15 or No. 16 gauge should be used in the case of zinc, and either 18 B.W.G., 20 B.W.G., or 22 B.W.G. in the case of corrugated iron. Good iron well galvanised, or preferably ungalvanised and painted if near the sea, will last longer than thicker sheets of corrugated iron of inferior quality, and with regard to thin sheets of zinc or of iron it must be remembered that a surface crack allows the commencement of deterioration.

Lasting Qualities of Iron Buildings.

It is an erroneous idea that iron buildings do not last for any length of time. With proper treatment and periodical coats of paint, say every three years, these structures can be preserved for 30 to 40 years. Where exposed to acid or alkaline fumes, such as is occasionally



ST. JAMES'S CHURCH, BERMONDSEY: SOUTH FLANKING WALL OF SANCTUARY, SHOWING STENCILS AND INCANDESCENT LIGHTS IN GROOVE.



ST. JAMES'S CHURCH, BERMONDSEY: CHOIR STALLS, DWARF WALL AND SCREENS ON SOUTH SIDE.

the case in the immediate neighbourhood of covers to foal yards or dung steads, the galvanising may quickly deteriorate, and when once the galvanising is broken through, all the sheets quickly become perforated, whatever the thickness of gauge may be. A covering of copper sheets in such situations is preferable. The best protection under such circumstances for corrugated iron is to coat the sheets with good red lead paint or even a composition of pitch and tar a month or two after they have been erected, and to repeat this coating as may prove necessary—probably every three or five years. The reason for delaying the application of this covering until after the erection is completed is to allow such sheets to become tarnished upon the surface, since they will then allow the paint to adhere more firmly than when it is applied to a fresh metallic surface, and the whole area becomes covered without risk of further openings being made for connections.

When, for the sake of economy, galvanised sheets are used, it must be remembered that while the galvanising process protects the iron from corrosion it also tends to render the iron brittle. Notwithstanding this fact, the author is acquainted with a corrugated galvanised iron covering which stood over a large area of the Borough Market, Southwark, for thirty years, when it was found to be completely riddled in holes, and taken down as being likely to prove dangerous owing to the vibrations communicated from the railway viaducts which carried the roof framework. The value of the galvanised sheets employed for coverings mainly depends upon the quality of the iron. Although a certain excellence of quality is essential to allow the rolling of comparatively thin sheets which shall be able to endure the corrugation required without risk of damage, yet it will be found upon examination that large quantities of inferior sheets are sold in the market which have minute cracks or a blistered surface. Sheets of this character will not hold the spelter properly, or if ungalvanised and painted, the smallest flaw in the continuity of covering gives an entrance for the weather, with a serious result. Rust from the exposed spot spreads laterally under the covering and when the rust separates from the iron, the paint comes off with it. Charcoal sheets sold by manufacturers at extra prices for galvanising are not an ordinary article of commerce. The sheets sold by manufacturers at extra prices for galvanising and other purposes under the name of "charcoal sheets" are generally made of steel.

A Hay Shed.

(Reference was here made to a hay shed with a corrugated iron roof 20 ft. wide constructed in 15 ft. bays). The shed is 14 ft. high at the eaves, and the curved roof has a rise of 4 ft. 6 in. The intermediate framing of the roof is formed of angle-iron rafters with flat iron tie-bars. They are partly riveted together at the maker's yard and are provided with a necessary shoe and splicing plates. The roof is carried on H steel columns, spaced at 15ft. centres, and special attention needs to be paid to the connections between the column heads and the roof framing. This form of stanchion is the best to adopt, where the columns are liable to be knocked against by carts or the like. Where possible, they should be let in from 1 ft. to 2 ft. into solid concrete blocks bedded in the ground, and spur stones added. In the case under review the columns have angle bases riveted on to their feet, for anchorage into the concrete foundation. In each bay, between the heads of the columns, there is a light lattice girder formed of angle-iron eaves bar, and spandrel with flat iron bracings, all riveted together, including the necessary splicing plates on the columns. The end frames are formed of angle-iron rafters, tie-bar and uprights, with the necessary shoe and splicing plates, and have a stay of angle-iron from the tie-bar to the crown of the roof. The roof in this case is covered with Braby's No. 22 W. G. best "Empress" brand, galvanised corrugated sheets, laid with 6 in. end laps and one corrugation side lap, fixed to the eaves bar with clips and to the crown bar with hook bolts, and bolted to each other by means of sheet bolts, all provided with galvanised material and lead washers. Angle-iron crown purlins extend from end to end of the roof, secured to the crown of the gables by means of splicing plates; galvanised half-round wrought-iron eaves gutter is fixed along each side with gutter hooks spaced every 3ft.; and galvanised wrought-iron down-pipes secured to the stanchions by galvanised iron clips are added, but their ends are left free to avoid connections to the underground drains. The ends of the shed can be clad with vertical corrugated sheets similar to the roof. Gutters and down-pipes should always be of ample size to facilitate clearance, and the top of a down-pipe should be provided with guards to prevent choking by leaves and dirt. When not galvanised, they are usually formed in cast-iron, since this material, as a rule, will better resist corrosion because of the greater body of thickness in a casting compared with thin wrought-iron or steel gutters and down-pipes. An open shed as described above could be erected for about 1s. 5d. per square foot of ground covered. If side sheeting is necessary, the price to include covering the sides down to a depth of 4ft. below the eaves with its necessary framework would be an addition of about 2s. 3½d. per foot run of covering.

With hay and corn sheds, head room is a consideration; hence the adoption of trusses with a raised tie-beam. But in many cases they are braced and covered with corrugated iron, carried at the eaves on a wall plate which may be of timber or of iron. For hay sheds it is always advisable to have the framework entirely of iron or steel, as in case of fire the damage done will not be so considerable as if part of the framing were of timber.

(Attention was here drawn to a simple arrangement for a coach-house and stable, 40ft. by 13ft., costing £95 fixed, or 3s. 8d per square foot of ground space.)

Lighting and Ventilation of Sheds.

Where possible, all lighting to a shed should be obtained from the sides or ends of the building enclosed at the sides and ends, because roof lights, besides being somewhat costly, are apt to leak during wet and stormy weather.

Ventilation may generally be arranged mainly under the level of the eaves, only a limited amount (if any) being required in the roof itself. Nothing can be worse for a stock-yard than a draught, especially a cross draught induced by too large openings in the ends and at the sides of a building. Ventilation is needed above and not across a yard. The usual louvre ventilators seen in the roofs of railway stations admit snow in winter. By raising the covering at its junction over an intermediate purlin in wide sheds and adding a pile plate or ridge piece above an upper purlin, effective ventilation may be evenly distributed along the whole length of the roof in lieu of the ordinary louvre-board arrangement. A system which can be

recommended in truss roofs consists of a ventilating ridge provided by the introduction of 4in. by 2 in. woodwork, perforated and running the whole length of the ridge both sides; but there are very few roofs of farm buildings that provide a double roof to permit this means of ventilation, and with self-supporting roofs it would be only practical and safe to provide a number of small ventilators at prescribed intervals along the ridge. Of course, with ridged framed roofs any amount of ridge ventilation can be given, either continuously, or by means of small independent ventilators at intervals.

Continued progress is being made in the application of iron and steel to building purposes, and the demand for structures of these materials increases. This is not surprising when we consider the advantages which iron and steel possess in allowing a building to be sent to the place of erection complete and ready for fixing, in the small extent of ground surface taken up by walls and partitions, in their imperviousness to moisture, and the practicability of rendering a building fire-resisting though not fireproof, and also in the ease with which a complete and thorough ventilation of a building can be arranged, and in the facility of removal and comparatively small cost of reconstruction in any other part of the farm.

Wind Pressure.

Strong winds or gales should be specially taken into account in all buildings standing exposed to their action, and extra precautions adopted to prevent the force of such gales getting under the roof, since the majority of accidents to light self-supporting roofs are due to the lifting tendency of wind having free play underneath them, without being able to escape. In designing roofs it is sufficient for ordinary purposes to assume that there may be a lateral wind-pressure of 28 lbs. per square foot and a weight of snow equal to 5 lbs. per square foot. These, added to the weight of the structure, give the total load to be sustained, and the working strain upon the material employed under such circumstances should be about one-fourth, and should never exceed one-third of the calculated breaking strain. Wrought iron of 20 to 22 tons per square inch ultimate breaking strain is a fair assumption. To specify a higher unit breaking strain is to invite a manufacturer to deliver mild steel.

Rectangular buildings may be covered with roofs having gabled ends, or the ends may be hipped. The hipped portion is, however, more expensive than the ordinary parts of a roof, the framework requiring more labour, and the covering is greatly cut to waste. As an approximate rule, one-third should be added to the general price per square of 100 superficial feet for that portion of the area which is covered by the hip. Against this extra, however, we have to consider the saving effected in the material that would be needed if gables were used. By simplicity of construction expense may be saved. Smith's work should be reduced to a minimum, and welding both at the joints and other parts avoided as much as possible. So far as the site will permit, a roof should be arranged to contain a repetition of parts, as upon the extent to which this is effected the cost so much depends. A building divided into equal spaces, and in which the principals occur at regular intervals, is the cheapest that can be adopted.

Cheap Construction.

It is evident that expense may be saved by preserving as far as possible all existing buildings and making use of the existing walls, also by roofing in considerable areas in a block so as to subdivide the interior by light and inexpensive partitions with a view to facilitate subsequent alterations and save the cost of numerous outside walls. The use of expanded metal in concrete may be advantageously introduced in wide spans of roofing or partition. The continuity of buildings affords opportunities for an advantageous disposition of material in unbraced structures, as it admits of introducing the nave and transept principle by placing the direction of one portion of the covering at right angles to the remainder.

While the limited amount of framework needed for corrugated iron recommends it for rapidity of erection at moderate cost, it is sometimes objected to as a covering because it does not moderate the extremes of heat and cold, and the interior of such buildings is consequently easily affected by changes of temperature. A double roof is undoubtedly the best means of retaining warmth and of excluding external heat, but in ordinary sheds an inner lining of boarding, leaving an air space of about 9in., would be too expensive, so the difficulty has been surmounted by running some light wires parallel with the purlins of a roof, and about 12in. apart, upon which a thin layer of straw is laid. The comfort of a thatched roof is to some extent attained in this way.

Thatched and Tiled Roofs.

Thatching possesses some advantages over other methods. It is light, impervious to moisture, and of good weathering quality when skilfully laid. Wheat straw is the best to employ, being a good non-conductor and more durable than oat straw. For coverings in isolated positions it is very suitable, but it needs to be particularly secured at the eaves to avoid lifting under the influence of high winds. In some farms galvanised rick-covers are used, fastened by strand wire looped both ends in an approved manner, and are advantageous.

Tile roofs are seldom watertight. Pantiles are common and cheap. Plain tiles are expensive. They are smaller than pantiles, but requiring more lap they are heavier per square. They can be laid to any slope from 25deg. to 60deg. Slates need an angle of about 2 to 1 or 25½deg. to 30deg., but zinc, lead, and corrugated iron can be laid at a slope of 4 deg. Pantiles are mostly used for barns and sheds. They need strong roof timbers. Their size is about 13½in. by 9½in. by ½in., weighing 5½lbs. each. Plain tiles are 10½in. by 6½in. by ½in., weighing 2½lbs. each, and 11in. by 7in. by ⅝in., weighing about 3lbs. each. A square of roofing requires 800 plain tiles laid to a 3-in. gauge, 700 tiles to a 3½-in. gauge, and 600 to a 4-in. gauge. They need to be fastened with a galvanised iron nail for security to fir laths attached to rafters, no boarding being necessary. Pantiles hold the moisture a long time and are inferior to plain tiles.

Other Forms of Roofing.

Roofs covered with felt should have a slope of at least 1 in 5, indeed 1 in 2 would not be too much. Croggon's asphalt roofing felt is specially coated with an admixture of bitumen, and is considered impervious to rain, snow, or frost. It is sold at 1d. per square foot, subject to discount.

Willesden paper has frequently been employed for roofing purposes. The 4-ply at 9d. per yard run, 19 in. wide, sold also at 2s. 6d. per yard run, 60in. wide, can be laid directly on rafters or partition studding without boards. In the case of roofs for exterior service it is held in position by outside battens 2½in. by 1in. firmly nailed through the overlapping roofing. To suit the width of the paper, rafters 19in. from centre to centre are required. At the eaves it is usually turned round a feather-edged board for security. It is found to be durable, but for permanent work should be painted every three years. In exposed situations it needs protection from wilful destruction, as it is easily damaged by mischievous boys throwing stones. When properly fixed at the outset, with ample overlap at the ends, Willesden paper proves itself capable of resisting gales and of withstanding the weather, but its sagging in wet weather is unsightly and inconvenient. It answers very well as a covering to keep dry, but is too free a conductor of heat and cold for covering cattle sheds. It, however, makes a first-class underslating.

A substantial form of continuous timber roofing consists of timber verticals 7ft. 1½in. apart longitudinally and 18ft. span, weather-boarded to be covered with zinc, corrugated iron, felt or other covering. Windows, doors and sideboarding can be fixed as required, and the whole forms a class of covering suitable for a sheltered position that can be easily erected.

TABLE A.

Proportions of rise to span.	Angle.	Slope.
¼ ..	18° 25′ ..	3 to 1
⅓ ..	26° 35′ ..	2 to 1
⅜ ..	33° 42′ ..	1½ to 1
½ ..	45° 0′ ..	1 to 1
⅝ ..	53° 00′ ..	⅝ to 1
¾ ..	56° 20′ ..	¾ to 1
1 ..	63° 30′ ..	½ to 1

TABLE B.

LOADS ON ROOFS EXCLUSIVE OF FRAMING SNOW, AND WIND.

Description of Covering.	Weight in cwts. per square of 100 super ft. measured on plan.	Minimum Slope.
Slates	7½ to 9	25½° to 30°
⅞″ Boarding	2½	25°
1½″ Boarding	5	—
Timber Framing for slated roofs ..	5 to 6	—

TABLE C.

WEIGHT AND SIZES OF ROOF SLATES.

Name of Slates.	Size in Inches.	Weight in cwts. per sq of 100 super ft. (First quality Welsh).
Viscountess ..	18×10	6
Countesses ..	21×10	5⅞
Marchioness ..	22×12	6
Duchesses ..	24×12	6
Princesses ..	24×14	6⅓
Empresses ..	26×6	6⅓

GEORGIAN ARCHITECTURE IN DUBLIN.

THIS was the title of a paper recently read before the Architectural Association of Ireland by Mr. T. E. Hudman. It dealt chiefly with the period between 1714 and 1830, which, the lecturer said, may be called the "Golden Age" of Dublin, as far as its buildings are concerned. Previous to this many of its men had world-wide reputations, but, architecturally speaking, with the exception of Christchurch and St. Patrick's Cathedrals, Dublin was practically a dead city. During the reign of the Georges the population of Dublin increased from 8,000 to 169,500, and the city expanded from what was little better than a small mediæval town, with narrow streets and a congested population, into a metropolis with wide streets and many noble buildings, mainly due to the efforts of "The Wide Street Commission," appointed by Act of Parliament in 1757. This Commission, composed of men of parts and enlightened views, devoted their energies to making what was really a new city, and their first instructions were "to open an avenue from his Majesty's Royal Palace to Essex Bridge." Subsequent acts empowered them to carry out other great public works, and in course of time the fine squares and streets both on the north and south sides of the Liffey came into existence. History repeats itself, and these schemes of improvement were not carried through without opposition, and it became necessary to employ an army of men to strip the roofs from the houses in some localities before the inhabitants could be persuaded to give up possession. Many of the oldest houses, now rapidly disappearing, are undoubtedly of Dutch origin, but the buildings of the later period, both public and private—as, for example, the Custom House, Trinity College, the Bank of Ireland, the Four Courts, the City Hall, Rotunda, the King's Inns, St. George's Church, Aldborough House, Drogheda House, Charlemont House, Belvidere House, Blessington House, and numerous smaller houses, designed by such master hands as Sir William Chambers, Gandon, Cassels, Thomas Cooley, Sproule, and Eason, &c.—are still with us, and many of them have been well cared for. The striking feature of Dublin is its wide line of streets and squares, and the effect of its public buildings so judiciously placed—the line from College Green to Rutland Square would be hard to beat, not to mention Merrion Square, Fitzwilliam Square and St. Stephen's Green, and the surrounding network of streets. The line of quays starting from the Custom House and finishing with the Phœnix Park was a magnificent conception. Unfortunately the controlling influence over some of the buildings *en route* appears to have relaxed, and the decadent period set in before the scheme was completed, but even now under certain conditions of sky and atmosphere the view looking westward from Carlisle Bridge is superb, both for colour and architectural effect.

Current Periodicals.

The Antiquary.—In the December number an illustration is given of Hurstmonceaux Castle, in the county of Sussex, two leagues from the spot where William the Conqueror landed. It was built by Sir Roger de Fienes in the fifteenth century at a cost of £3,800, Flemish workmen being employed.

The Art Journal.—To Part VIII. of "The Paris Exhibition" (special series of this journal) Mr. Claude Phillips contributes an article on the Spanish Pavilion, which was considered by some to be the most imaginative and charming piece of architecture in the Exhibition. The remainder of the number and the frontispiece are devoted to reproductions of scenes in the "Village Suisse" and to detailed descriptions of works in bronze, glass, wood, tin, and porcelain. There are altogether 77 illustrations in the number.

Carpentry and Building (New York).—It seems probable that an Architects' Registration Bill will be introduced during the coming session of the Legislature of New York State. The proposal is being fostered by the Architectural League, and is being supported by leading architects. There appears to be the same complaint across the water, as here, about the non-recognition of architects as professional men, and about the impostors who practise. Among the articles in the December issue of this publication is an interesting one on leaded-glass work and another on caissons for foundations.

The British Clayworker for November includes articles on the brick-earth of the Bicester district, the South Staffordshire Brickmasters' Association, brick drying, and the setting and burning of a Hoffmann kiln. A reprint from a local paper states that the Birmingham brick manufacturing industry is passing through a period of unprecedented depression which almost threatens its extinction; this is alleged to be due to ruinous competition of other brick manufacturers, the building trade slump, the excessive cost of fuel, and the unfair system of rating the manufactories.

R.I.B.A. Journal.—In the issue for November 10th it is stated that instead of the paper on "The Work of Sir Charles Barry," announced on the sessional programme to be read before the Institute on April 22nd next, one on "The Work of Inigo Jones" will be given. The issue for November 24th contains Professor Lanciani's paper on the Forum excavations (with illustrations). Mr. Arthur Cates, who has already done so much in the matter of architectural education, gives full particulars of the Cornell University in America, where the architectural curriculum has recently been reorganised in order that so much of the Beaux-Arts ideal as appeared suitable and possible might be incorporated.

Pall Mall Magazine.—Vol. XXII. comes to an end with the December number, as do also Mr. G. S. Street's notes "From a London Attic." An article on "Royal Tapestry at Windsor" is accompanied by some excellent illustrations of the magnificent Gobelins. The article is a most interesting one, and concludes with the remarks that at the Gobelins factory a weaver now possesses a choice of more than 14,000 tones of colour, and can only make about 9 sq. yds. of tapestry in a year, the retail value of which is about £350. The looms and tools used are of the simplest description, but it takes at least fifteen years to produce a weaver possessing an artist's eye and a workman's hand. In the January number of this magazine there will be an illustrated article on the great French sculptor, Rodin.

The Genealogical Magazine.—At Hexham, about the year 660, Wilfrid built his church, of which the crypt is now the sole remaining portion. In 1881 certain excavations were made beneath the floor of the slype (or long porch) near the entrance door, and an interesting memorial tablet was unearthed. An illustration of it is given in the December issue of this magazine. The slab represents a Roman standard-bearer carrying the "Eagles," a nude Ancient Briton crouching beneath his horse. Antiquaries place its date at about the second century, and a classical scholar has translated the inscription as follows:—"To the Gods, the Shades. Flavinus, knight of the Petriana Cavalry, standard of the squadron of Candidus, aged 25. Time of service, 7 years. (Here lies.)"

Magazine of Art.—The Chinese have a god of architecture who is worshipped when a new house is built, but he is ignored until the time comes for the builders to commence work. The Rev. W. Hopkyn Rees says, in the December issue of this magazine, that there is no Society to safeguard the interests of architects in China, as professional architects do not exist; each man settles his plan *verbally* with the builder. There is little fear of dissatisfaction, however, as no break in the "style" has occurred for centuries. Comparatively few of the buildings have any architectural beauty. Kiln-made bricks cost 10s. a thousand, sun-dried bricks about 2s. 6d. a thousand, while the windows of the houses are made of wooden gratings covered with oiled paper. Some of the pagodas (of which there must be at least two thousand in the empire) are elegant—like that, for example, in the Summer Palace at Pekin—and it is remarkable how long they remain standing. There is one not far from Shanghai, 170ft. high, which was built in the twelfth century. The White Pagoda in Peking was built in 1100 A.D. But looked at by Western eyes Chinese architecture is a poor thing: it is not comparable with the great Indian buildings.

The Engineering Times.—Writing in the November number on the subject of electric street traction in England, Mr. J. Clifton Robinson plainly shows that he has little sympathy for æsthetic considerations in connection with electrical tramways. He assures us that "many an English street has been vastly improved by the artistic street standards which now ornament its public ways"—perhaps those which have been erected on the Uxbridge Road by the London United Tramways (of which Mr. Robinson is managing director and engineer). There can be no doubt that as regards simplicity in construction and economy in working the overhead system is far ahead of the conduit system, but it is sadly deficient in appearance. There is a great dearth of engineers with a feeling for fitness and beauty, and consequently we have bridges and street standards which are spoiled by their vapid ornamentation. An article on "Machine-Driving by Separate Motors" deals with the increasing application of electric motors for driving individual machines, and the writer asserts "that in a few years' time the lathe, drilling machine, printing press, and such machinery will be very generally driven in this country by independent motors."

The Architectural Record (New York).—With the October number this interesting magazine begins its tenth year. We are all familiar with the famous Farnese Palace, but hidden away in the fair Ciminian hill country is a gem of the Renaissance which is unknown and unvisited by the omnipresent traveller. This is the Villa Farnese at Caprarola, the splendid work of Vignola. It is pentagonal on plan (making it almost unique among Italy's Renaissance palaces), and on entering the vast stone hall one feels as if he were inside the palace of the "Sleeping Beauty," leading an enchanted life behind these sixteenth-century portals which shut out the outer world so completely. The building, which is now inhabited for the greater part of the year by a family of Viterbese nobles, has some fine architectural features—the circular courtyard, the "Scala Regia," and the many beautiful halls, such as the "Hall of the Farnese," the "Council Chamber," the "Hall of the Aurora," the "Chamber of Judges," the "Chamber of Dreams," the "Chamber of Angels"; and in the garden stands Michael Angelo's "Seahorse Fountain," an additional beauty to the building. In the issue under review Professor Hamlin deals very ably with modern French architecture. The Roman revival in France, which began with the Pantheon and culminated under the First Empire in the Madeleine and the Bourse at Paris and the Grand Theatre at Bordeaux, produced a number of stately façades but it effected little change in the interior design and decoration of buildings. It was Duc, Duban, and Labrouste who were the pioneers of the new movement which resulted in a thorough architectural awakening under Napoleon III. and the *coup d'état* of December, 1852. The Neo-Grec movement led above all to a refinement in profiles and mouldings, which has ever since—or until recent years—been a marked characteristic of French work. The October number also contains an article on M. Emile Wauters, the Belgian painter of architecture, and on the Tiffany House, New York; the latter was entirely designed by Mr. Louis C. Tiffany, and, though possessing the merit of originality, shows in many parts a straining after effect—the superabundance of small objects, such as vases and plates, also detracts greatly from the appearance of the rooms.

Scientific American (Building Edition).—Illustrations are given in the November number of the Castle of Lauenstein, situated in one of the most romantic portions of the Thuringian Forest. The original castle was built in the tenth century, but the present building is a restoration. Other illustrations show the new Public Library at Providence, R.I. (Stone, Carpenter and Willson, architects). This is a good example of a Renaissance building treated with restraint. It has fine proportions and good detail, but is marred by a length of railing at the eaves.

Stone (New York).—A writer in the October number deals with the causes of failure in connection with new quarries. A man during an idle wandering discovers a deposit of stone, dresses it, and finds it is undeniably beautiful. Then he satisfies himself that there is enough of it, acquires the land, and begins working. The stone is all right, but the public does not want it; and so ends this cart-before-the-horse method of introducing a new stone. Another writer in this issue suggests that the time is ripe for the introduction of American paving stone in this country, while a paper is given on quarrying by the helicoidal wire, by which cuts about 41ft. long and of equal depth can be made in rocks of slight hardness. The helicoidal wire is a wire-cord formed of three hard steel wires twisted together with a very slow pitch.

Architecture (New York).—The November issue of this publication is less interesting than usual. Among the illustrations is one of the new town hall at Lynton (Read and MacDonald, architects). It is stated that an exhibition will be held at Washington, during the annual convention of the American Institute of Architects, of the drawings for Government work made by private practitioners under the authority of the Tarnsey Act, the competitive drawings for the University of California, and the American architectural exhibit at the Paris Exposition. This will be the first attempt in America where a special effort has been made to publicly exhibit drawings of Government work done outside the sacred precincts of the Supervising Architect's office. Architectural clubs are rapidly increasing in number in the United States.

The American Architect.—A protest is made in the issue for November 3rd against the present scheme of alteration to the White House at Washington. It is proposed to build two wings at right angles to the present structure, connected by what are called "curved corridors"; these are not only curved, but splayed and bent in the most extraordinary manner, and our contemporary states that the design is artistically ridiculous. Mr. Gilbert's statue of Lord Pembroke, recently erected at Wilton, near Salisbury, is truly set on a stupid pedestal, designed by "the amateur artists of the family," who conceived the idea of a home-made design. Such an act is grossly unfair to the sculptor. The plates with this number include one of the Walker Art Gallery, Bowdoin College, Brunswick, Me. (McKim, Mead and White, architects), and three of lunette decorations by Abbott H. Thayer, Kenyon Cox, and Elihu Vedder. This is a fine Renaissance building, showing much restraint in design. The issue for November 10th includes plates of Mr. John Tweed's statue of Mr. Cecil Rhodes and two of the panels at the base.

Masters and Men.

The Strike of Plumbers at Stockton has ended, the men being given an advance of ¼d. per hour, with the promise of another ¼d.

The Sutton Coldfield Master Builders' Association held its annual meeting and dinner last week. The president, Mr. J. R. Jones, occupied the chair.

The Penrhyn Quarries will be reopened to-day, and the old hands are invited by Mr. Young, the chief manager, to make applications afresh for their ordinary monthly bargains.

The Belfast Carpenters' and Joiners' Dispute.—Last Tuesday the strike entered on its thirty-first week, and the prospects of a settlement seem further off to-day than at the commencement of the dispute.

The Bradford Building Trade.—There is trouble looming ahead in connection with the Bradford building trade, and it is probable that a strike will take place next May. On account of depression the local branch of the Master Joiners' Association have asked the men to accept a reduction of one penny per hour. The necessary six months' notices of reduction has been given, and they will expire next May. The men have replied with a demand for an increase of one penny per hour, and their notices will expire in May. Last year there was a local strike, and the men were eventually given a half-penny per hour increase, making the wages 9d. per hour. The masters now want to reduce them to 8d., and the men want 10d.

The Leeds Masons.—Considerable unrest exists in the building trade in Leeds, but for the present no developments of any important nature are likely to take place. In Leeds the masons have made application for an advance of ½d. per hour, bringing their wages up to 9½d.; but as, under the arrangement between the men's Union and the Master Builders' Association, a six months' notice has to be given of any change, nothing is likely to be done in the matter for some time, the demand only having been made at the beginning of the present month. As the building trade in Leeds is in a flourishing condition at present, and as the wages paid to the masons are substantially less than those paid in many other towns, it is probable that the employers will grant the advance asked for. A similar advance was recently granted to the bricklayers.

Newcastle Building Trade Dispute.—A meeting of the Northern Counties Federation of Master Builders and Bricklayers was held in Newcastle recently to consider the men's demand for an advance in wages of 1d. an hour from 10½d. The employers insisted on referring the claim to arbitration, or giving a guarantee that wages should be unaltered for the next two years. Owing to the decision of the men in Newcastle and Gateshead to reject the proposal of the employers, the practical lock-out of all bricklayers in the Northern Counties began to take effect from midday on Saturday week. The Northern Counties embrace Northumberland, Durham, part of Cumberland, and part of Yorkshire, including the important town of Leeds. The total number affected will be several thousands, and this will be greatly increased in the course of a very short time, owing to other trades engaged in building operations being brought to a standstill by the cessation of work of the bricklayers. The outlook during the forthcoming winter is of a very gloomy character.

The Architectural Association of Ireland.—The first of the series of technical demonstrations inaugurated by this society was held last week at Messrs. H. and J. Martin's yard, Grand Canal Street. There was a large attendance, over forty members being present, who listened with much interest to Mr. J. Martin's remarks upon bricks, sand, cements, mortars, &c. Many new members are joining the Association in order to avail themselves of these demonstrations, which are announced in our "Coming Events" column.

Engineering Notes.

New Bridge at Runcorn.—The Runcorn Urban District Council have decided to invest £10,000 in the Widnes and Runcorn Transporter Bridge Company. The bridge is estimated to cost £100,000.

The Cottage Hospital, Hinckley, is being warmed and ventilated by means of Shorland's patent Manchester stoves, with descending smoke flues, supplied by Messrs. E. H. Shorland and Brother, of Manchester.

An Extensive Scheme.—Application is to be made to Parliament for leave to construct a very extensive system of electric tramways in Surrey and Middlesex. There are in all twenty separate tramways set out in the scheme.

New Landing-place at Pembroke Dock.—The War Department has decided to construct a new landing-place between the Hobbs' Point and railway piers at Pembroke Dock, and an initial expenditure of £10,000 will be provided for in the Army Estimates for the financial year 1901-1902.

Folkestone Tramways.—By a poll declared last week the Folkestone owners and ratepayers have reversed the decision of a Common Hall to authorise the Corporation to proceed for a Bill sanctioning an expenditure of £100,000 on municipal tramways. The Corporation will now probably promote a smaller scheme, and apply for a provisional order.

Smoke Combustion.—The Western Smoke Consumer and Fuel Economiser, Limited, of 8 Shute End, Wokingham, manufacture a fire-bridge for boilers which forms the back of the furnace as a hollow chamber, into which cold air is admitted, heated, and passed into the fire. It is claimed that there is an economy in fuel, that the flues are kept free from soot, and that no tapping or drilling of the boiler is required when fixing the device in position.

Vauxhall Bridge.—The new Vauxhall bridge is making progress; but the completion of the first contract, which is to bring the structure up to the water level, is not yet within measurable distance. One of the old piers has been cleared out of the way, but there are three others yet to be attacked. The abutment on the north side has made considerable advance, and the Lambeth abutment is well in hand, the difficulties with the sewers, which constituted a very awkward part of the work, having been effectually disposed of. When plans were first made, it was calculated that the temporary bridge which it was proposed to put up would have to serve for about ten years, during which time it would take first of all the traffic of old Vauxhall bridge, and after that it would serve similarly for the old suspension bridge at Lambeth. According to the present rate of progress, it looks as though Vauxhall will take the whole ten years.

Electric Tramways in South Lancashire.—The South Lancashire Tramways Act, passed last session, authorised the construction of an extensive system of electric tramways for the transport of passengers and goods in the populous district lying between Manchester and Liverpool. The scheme, which is the largest ever embraced in a private Act, extends to 84 miles of tramway lines, all the principal towns of South Lancashire being touched en route. From Bolton there is a further project to be submitted to Parliament in the ensuing session for extending the system northwards to Darwen and thence to Blackburn; while on the southern side of the county there is a contemplated extension to Warrington by means of a line branching off from Earlestown.

Lambeth Bridge.—The Bridges Committee of the London County Council have determined to recommend the Council to undertake at the earliest period the rebuilding of Lambeth Bridge. In March 1887 attention was directed to the critical condition of the abutment anchorages of the bridge. Sir Benjamin Baker advised that, unless the authorities were prepared to accept the gravest responsibility, there was no alternative but to increase the stability of the bridge. Upon this advice certain repairs were effected. Iron gates have been provided at each extremity of the bridge to close it on emergency, and the Council has considered it necessary for it to be watched day and night. It is often necessary to close the bridge, and the Bridges Committee is of opinion that no main thoroughfare should be in such an unsatisfactory condition that it requires to be closed at short notice. When the suggested improvements at Millbank Street, Westminster, were under consideration, much discussion took place as to the necessity of rebuilding Lambeth Bridge, and an opinion was expressed that the bridge should be rebuilt at the earliest possible moment. These, among other considerations, have led the Committee to recommend the Council to rebuild. Four designs have been prepared—(1) a suspension bridge, (2) a braced-arched bridge, (3) a steel five-arched bridge, and (4) a granite-faced concrete five-arched bridge. The Committee recommend the Council to adopt No. 4. The chosen type is the same as that of the bridge now being erected at Vauxhall. The total approximate cost, including maintenance and painting when required, is £308,000. The clear span in the centre will be 158ft., and the headway given will be 20ft. above Trinity high-water mark.

The Widening of London Bridge.—Referring to the proposed widening of the footways of London Bridge from 9ft. to 14ft. at a cost of £100,000, Mr. Robert Greening suggests that before so large a sum of money is expended in affording merely a temporary relief to the pedestrian traffic, the question of the necessity of widening the roadway should also be taken into consideration. In his opinion the roadway ought to be made half as wide again, so as to allow six rows of vehicles to pass abreast. The most effectual method of relieving the congested traffic, short of building a new bridge, would be, he says, to bodily widen the entire bridge on its eastward side, to double its present width, and to pull down the dozen or so mean-looking shops and offices in King William Street on the same side, between Adelaide Place and Eastcheap. It may be mentioned in connection with the widening of London Bridge that there has long been a project of constructing a replica of Waterloo Bridge across the river near the eastern end of Somerset House. The widening of London Bridge, conditionally upon the consent of Parliament, was decided upon at a meeting of the Court of Common Council held last Thursday. We gave in our last issue a section showing in detail the construction to be adopted. This has been designed by Mr. Andrew Murray, F.R.I.B.A., surveyor to the Court of Common Council, Mr. E. Cruttwell, M.Inst.C.E., collaborating as engineer.

The Glasgow and West of Scotland Technical College Architectural Craftsmen's Society held a meeting on November 23rd, when a paper entitled, "The Duties of a Clerk of Works," was read by Mr. W. U. Muir. In the course of his remarks the lecturer strongly recommended the regular reporting to the architect each week on the progress of the work by means of written statements framed on lines such as: Number of men in respective trades employed each day, with number of hours of each; state of weather and amount of work accomplished each day; drawings received and drawings required. The taking of notes of extras or modifications on the work was also considered to be essential, these being of great assistance at completion in the checking of accounts, &c.



HOLBORN TO STRAND THOROUGHFARE: PLAN OF DESIGN NO. 29.

Builders' Notes.

The Newcastle, Gateshead and District Building Trades Exchange held its annual dinner last week. Mr. J. G. Walker, chairman, presided, and Mr. W. Lister Newcombe was in the vice-chair.

Messrs. Young and Company, stable and cow-house specialists, have removed their offices and showrooms from No. 12 Victoria Street to much more extensive premises at No. 161 Victoria Street, the same side as the Army and Navy Stores, and close to Victoria Station.

Unprotected Machinery.—Messrs. J. Garrett and Son, builders, Balham Hill, were fined £20 last week at the South-Western Police-Court for neglecting to fence a surface planing machine, owing to the absence of a guard from which a workman had had three of his fingers cut off.

Huts for Soldiers in South Africa.—Mr. George Jamieson, builder, Woodside, Aberdeen, is making steady progress in carrying out his contract for the provision of huts designed for the accommodation of the forces in South Africa. Eighteen of the huts were transferred to the War Office authorities for shipment on Novem- 30th. Each of the 18 huts contains accommodation for twelve men, and to each of the men separate apartments are assigned, these apartments, provided with door and window, being 10ft. long and 8ft. broad. The huts now being prepared by Mr. Jamieson are intended for officers' servants, and they have received the approval of the War Office officials.

Partnerships Dissolved.—The partnership heretofore subsisting between Messrs. Fred Briggs and Sutcliffe Ingham, carrying on business as builders and contractors, at Lidget Green, in the city of Bradford, under the style or firm of Briggs and Ingham, has been dissolved by mutual consent as and from November 8th, 1900. All debts due to and owing by the late firm will be received and paid by Messrs. Fred Briggs and Sutcliffe Ingham, or either of them.—The partnership heretofore subsisting between Messrs. Willian Wray and Michael O'Flynn carrying on business as builders and contractors, in the city of Bradford, under the style or firm of Samuel Wray and Co., has been dissolved by mutual consent as and from June 1st, 1900. All debts due to and owing by the late firm will be received and paid by Michael O'Flynn.

Enquiries Answered.

The services of a large staff of experts, including all those engaged on "Specification," are at the disposal of readers who require information on architectural, constructional, or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Design of Small Houses.

LONDON, S.W.—L. A. H. writes: "Kindly state in which numbers of your Journal a series of articles on small house design appeared."

A series of articles on the "Planning of Small Houses," by H. V. Lanchester, appeared in our issues for February 10th and 17th, March 10th, April 21st, May 19th, and June 23rd, 1897. A series on "Design and Detail of Domestic Building," by John E. Newberry, appeared in our issues for March 23rd, May 25th, and July 6th, 1898, and January 4th, 1899.

Supporting Stone Head.

QUESTIONER writes: "If a large opening is spanned by a stone head vertically jointed at intervals, how is it supported, when from the outer face it appears to have no other support than the jambs forming the sides of the aperture?"

The support is usually obtained from a hidden rolled steel joist. R. W. C.

Pupils' Articles.

LONGTON, STAFFS.—PUZZLED PUPIL writes: "There is a clause in my articles to the effect that I shall not practice within a certain radius of the office for a period of five years. I shall be glad to learn whether it is customary in such cases, when the articles are completed, for the architect to retain them for that period, or can I receive them by making another agreement containing the five years' clause? I shall also be glad to learn what the above clause strictly means. Does it refer to the client, the building, or the office?"

The answer to these queries depends so largely upon the exact wording of the articles and the ages of the parties thereto at the time when they were signed, that a local solicitor should be consulted, who could obtain a copy, and consider it at his leisure. The principles of common law may be involved.

G. A. T. M.

Diagrams of Constructive Masonry.

BIRMINGHAM.—STUDENT, R.I.B.A., writes: "I should be glad to know which book supplies the best information for the sheet of drawings required for the R.I.B.A. final examination: One sheet of diagrams of constructive masonry, such as arches, groined vaults, with the projection of arch and vault stones."

Much the best thing to do is to submit a measured drawing of a groined vault, giving both transverse and diagonal sections as well as plans, showing the joints both of ribs and fillings. The best book to consult is Willis's "Vaulting," which however is old and rare.

G. A. T. M.

Arch or Rolled Joists.

PECKHAM, S.E.—F. B. writes: "Would a semi-elliptic arch, 8ft. span and 1ft. rise, of two 4½in. rings of stocks, built in cement mortar, relieve the thrust on the piers better than an ordinary two 4½in. ringed arch with 1in. camber to the foot? Would it be better to make it 9in. on face instead of having two 4½in. rings? Would it be stronger and cheaper to use light r. s. joist instead of having arches? These questions relate to a small warehouse with 18in. walls."

The rolled joists would probably be more suitable for this case, owing to the thrust produced by the arches, say four $4 \times 1\frac{3}{4} \times 5$lbs. rolled steel joists to each opening, with distance pieces bolted between them, and 6in. bearing each end.

HENRY ADAMS.

Colouring Plans on Tracing Cloth.

CROMER.—G. H. writes: "Which is the best way to colour plans on tracing cloth so as to put on the colour evenly over a large space, and to prevent the cloth from being wrinkled?"

Tracings are almost always coloured on the back or opposite side to that upon which the ink drawings are made. In order that the colour may lie evenly, the cloth should first be sprinkled with powdered chalk, which should be well rubbed in with a cloth or piece of blotting paper, any surplus being whisked off. Wrinkles can only be prevented by pinning the edges well down at several places before colouring, not removing the pins till the cloth is thoroughly dry again. Ordinary water colours are used; opaque and earthy colours, such as vermilion, should be avoided. G. A. T. M.

Surveying.

QUESTIONER writes: "How could I learn to read the staff through the level? Are there any books on this subject?"

Obtain Middleton's "Surveying and Surveying Instruments."

Prevention of Writing on Walls

LONDON, W.C.—W. E. H. writes: "Is there any effectual method of preventing writing or scribbling on wooden partitions forming divisions between factory W.C.'s? The usual method is, I believe, to sand the woodwork before painting; but the great objection to this seems to be that it leaves a rough surface which does not clean well. As far as I can ascertain there is no material which is proof against writing and cutting except possibly glazed brick partitions, which are costly and occupy considerable space."

This is a question often put, but there is only one answer at all satisfactory, *i.e.*, glazed bricks. Everything else is subject to pencil or knife. Possibly ½-in. rough plate glass in iron frames might answer if space is an object, and there are no cross lights. HENRY ADAMS.

Registration of Architects' Bill.

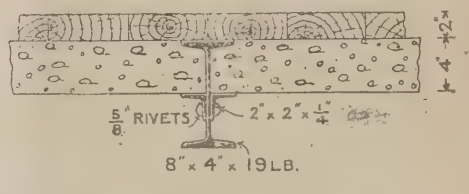
PLEASINGTON, NEAR BLACKBURN.—NORTH LANCASHIRE writes: "If the above Bill is passed, how will it fare with anyone who has served his articles and has been a paid assistant for two years, but has never practised on his own account and has never passed any examinations except elementary ones in building construction, &c.? Will this person be prevented from practising or from calling himself an architect until he has passed some examination, or will he be a registered architect through having served his articles before the Bill was passed?"

Section 1, Clause 19, of the Bill for the Registration of Architects says: "Any person who was actually practising architecture prior to January 1st, 1899, *or who has served as apprentice, assistant, or practitioner in architecture*, all or either, for seven years in the aggregate, after having attained the age of fifteen years prior to the passing of this Act, shall, on payment of certain fees and signing a declaration, be entitled to be registered."

Sizes of Rolled Joists.

GRIMSBY.—C. E. T. writes: "I shall be glad to know how to calculate the sizes of the rolled joists in a fireproof floor formed of coke-breeze, concrete and rolled steel joists. For example, take a room 30ft. by 15ft., with joists at 2ft. centres and the floor to finish say 8in. thick with wood blocks on top. I should like to know how to calculate the sizes of joists for various spans."

Dwelling-house floors should be strong enough to carry 1¼ cwt. per foot super. and floors of public buildings 1½ cwt. in addition to their own weight. Assuming the floor itself to weigh ½ cwt. per foot super., this will make a total of 2 cwt. per foot super. The joists need not be closer than 3ft. centre to centre, making $15 \times 3 \times 2 = 90$ cwts. on each. For 15ft. span a rolled joist should not be less than 8in. deep, and a steel joist $8 \times 4 \times 19$ lbs. per foot run would carry the load with a factor of safety of 4. The



SIZES OF ROLLED JOISTS.

concrete should be not less than 4in. thick, of 1 Portland cement to 4 coke breeze, arranged as shown in accompanying illustration. Some authorities would make the floor of 6in. concrete with $3\frac{1}{2} \times 1\frac{1}{2} \times 6$ lbs., r.s.j.'s every 18in. level with underside, and estimate the floor as capable of carrying the load with a factor of safety of 6, but the writer prefers not less than 1-24 span for the depth of joist.

By formula $W = \frac{10\,ad}{L}$.

W = breaking weight in tons in centre,
a = area of flange + 1-6 web in sq. ins.,
d = total depth in inches,
L = length of span in feet.

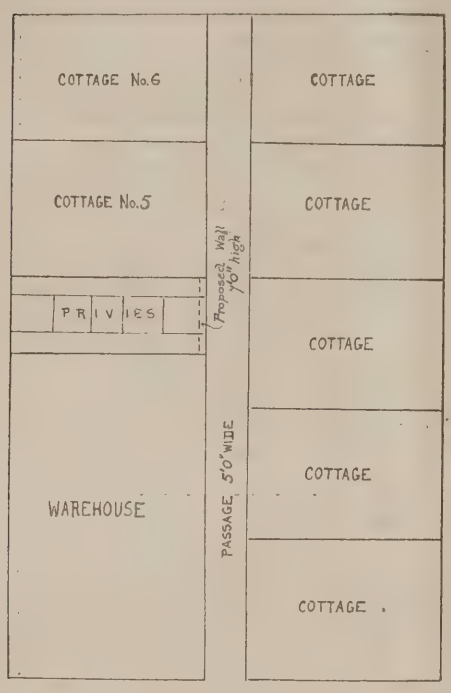
$W = \frac{10 \times 2 \times 8}{15} = 10.67$ tons in centre, or $10.67 \times 2 = 21.33$ tons breaking weight distributed. Factor of safety 4½, safe load distributed $\frac{21.33}{4.5} = 4.74$ tons.

HENRY ADAMS.

Right to Convert Cottages into Warehouse.

SCARBOROUGH.—ENQUIRER writes: "If A buys the block of old property as shown by sketch, would he be able to pull down cottages Nos. 5 and 6 and build a small warehouse not exceeding the present height of cottages, connected with the present warehouse by covering in the space between (where some privies are now built) and putting a wall 7ft. high at the end? If this would not be allowed, could the old cottages be used by clearing out some of the inside fixtures and connecting to the front warehouse as before?"

So far as can be gathered from the information given, the warehouse could be built as proposed by enclosing the space now occupied



CONVERTING COTTAGES INTO WAREHOUSE.

by privies with proper walls, as required under the by-laws for warehouse buildings, and roofing it in, and by uniting each warehouse to the said space by means of proper doors. The querist cannot lawfully convert cottages into a warehouse unless he brings the buildings so converted into conformity with the rules for the construction of warehouses. G. H. B.

Quarry Notes.

The Granite Quarries of Foxdale, Isle of Man, are being opened up, and will be considerably extended. At the present time there are about thirty skilled workmen employed. The Barrule slate quarries have also been recently re-opened, and a party of Welshmen are busily engaged preparing the slate for the market. Trade in the village of Foxdale is now in a fairly good state.

A French Monument from Aberdeen.—Aberdeen granite seems to have taken a firm hold in France, judging from the fact that a large number of orders have been despatched from that country within the last few years. A monument for France, which will be executed in polished Peterhead granite, has been put in hand at the establishment of Messrs. A. Macdonald & Co. The base will measure 12ft. 6in. by 7ft. 4in., while the total height, including the bronze portrait bust with which it will be surmounted, will be 25ft. The carved enrichment will be of an elaborate character, consisting of fruits, flowers and foliage. The base, plinth, cornice and "attique" storey will be richly moulded, and immediately under the bronze bust will be a large bronze shield suspended by floral festoons of the same metal.

Stones for Macadamising.—It is curious that our surveyors and engineers ignore the principle Mr. Macadam laid down with regard to size of stones for paving streets. Macadam directed the public attention to the important fact that angular fragments of hard materials, sufficiently reduced in size, will coalesce or bind, without other mixture, into a compacted mass of stone, nearly impervious to water, which, being laid almost flat, so as to allow of carriages passing freely upon all parts of the road, will wear evenly throughout. "Every piece of stone put into a road which exceeds an inch in any of its dimensions is mischievous," is Macadam's first principle, which, however, is regularly ignored. The disgraceful state of the Victoria Embankment emphasises the point; the engineers of the London County Council have adopted a $2\frac{1}{2}$-in. gauge and even that is not insisted upon. Consequently, binding material in the form of gravel has to be used, forming the road of two substances—one yielding, the other rigid—which gives the irregular surface we are familiar with.

A Church for £12.—It is seldom that one hears of a church being sold, and for so small a sum as £12; but such an incident has taken place at Norton (Malton). The church is that of St. Nicholas, and the purchasers are the Norton Urban Council, who are about to pull down the edifice and use the stones in the construction of an open-air swimming-bath for the town. It is said that there is a lot of old oak pews and other woodwork in the building which will doubtless be valuable for purposes other than those connected with the new swimming-bath, so that the Council may be congratulated on having got "a bargain." The church is not an old one, and its fate, after an existence of something like eighty-five years only, is anything but a compliment to its architect and builders. Judging from its plain, weather-beaten exterior, its dilapidated roof, and its generally neglected appearance, one would think the church had stood for centuries. It was built at one of the worst epochs of church architecture in this district, and when church affairs were at a dead level in Norton. The parish church of Norton which has taken the place of the one just sold is not yet finished, although it has been used for worship since 1894. The complete scheme represents a cost of £12,000. Seating accommodation has already been provided for 420 persons, and when the tower and other additions are made there will be room for 650 worshippers.

New Patents.

These patents are open to opposition until January 7th

1899.—Theodolites.—21,889. W. P. THOMPSON, 332 High Holborn, London, W.C. (communicated by R. Rech, Wetzlar, Germany). This invention transfers images of the azimuth and altitude scales into the plane of vision of the telescope in such a way that the images and the object can be observed at the same time. The apparatus consists of microscopes with micrometric scales, the images of the scales being brought into the plane of vision through the horizontal axis of the trunnions of the telescope by means of glass prisms and convex lenses to the eye tube, where they are clearly visible at any position of the eye-piece.

Valve Water-closets.—22,605. H. L. DOULTON, Lambeth Sanitary Engineering Works, London, S.E. The opening of the supply and discharge valves is effected in one operation by means of a press-down or other valve. The discharge valve is closed simultaneously with the supply valve by a force wholly or partly communicated from the supply valve.

Plumbers' Shave-hooks.—22,631. W. J. WAYLAN, 284 High Street, Sutton, Surrey. The hook consists of a handle, a shank with a fixed blade at the end, and an adjustable gauge. The tool can be used in awkward situations, and affords absolute accuracy in working.

Hollow Bricks.—25,214. J. C. SELLARS, 68 Bridge Street, Birkenhead. Refuse-destructor material is ground and mixed with a small quantity of lime, cement and water, and in a semi-dry condition is pressed into a mould having a stationary perforated core and a perforated base to allow air to escape and dirt to be removed. The blocks are afterwards treated with silicate of soda and dried.

1900.—Fireproof Floors.—1,803. W. J. CHANT, 98 Drayton Gardens, South Kensington, S.W. The ceiling is composed of cast sheets of plaster (having a stiffening of wire) attached to iron bearers that stretch between the joists. The wooden centering used has wooden or iron ribs bearing on the lower flanges of the joists. It is claimed that this construction is simple, reliable and expeditious.

Paint Removers.—14,114. A. KLEE, Viernheim, Hessen, Germany. This paint remover consists of water, 50 parts; linseed oil, 10 parts; Venice turpentine, 20 parts; soda, 5 parts; spirits of wine, 15 parts.

The following specifications were published on Saturday last, and are open to opposition until January 14th. A summary of the more important of them will be given next week. The names in italics within parentheses are those of communicators of inventions.

1899.—22,173, PEAKE, hot-water boiler. 22,205, TWEEDIE, trap and overflow fittings for lavatory basins, sinks and baths. 23,003, BLAIR, BLAIR AND BAILLIE, evaporators for producing fresh water from salt or impure water. 23,088, WILSON, regulators for gas burners. 23,660, WILSON-SMITH, methods of decorating the surface of paper, &c., in imitation of mosaic or veining. 23,794, CO-OPERATIVE PADLOCK SOCIETY, LTD., AND LAWTON, lever locks. 24,096, SNELL, burners used for incandescent gas lighting. 24,124, WISE (*Kitson*), lighting and heating apparatus. 24,375, HUSON, chemical chimney cleansers. 24,489, SHAW, drawing and other pins. 24,612, SELLARS, manufacture of building tiles and blocks. 24,840, FORD, hatchets, picks, hammers, &c. 25,250, BREWER, BREWER AND SPONDER, sashes and frames. 25,392, LACEY, apparatus for lifting sewage and other liquids. 25,526, RITTMAN (*Soc. Josz et Fils et Cie.*), coverings for walls and ceilings. 25,723, DEAN, extension ladders.

1900.—164, STEAD & CARR, electric incandescent lamps. 426, FISHBURN, apparatus for elevating or lowering building materials. 1,958, WINTERFLOOD, water heaters and automatic valve attachments for them. 2,647, KILLON, apparatus for the automatic intermittent discharge of sewage from filter beds. 2,756, MORGAN, method of fixing handles to files and other tools. 5,706, HALKES, guards for circular saws. 6,533, MARCHANT, chimney pots. 6,816, STANLEY, drying conveyors. 7,018, FLETCHER, lift apparatus. 7,019, FLETCHER, lift apparatus. 8,074, MÖBUS, mould-making machines. 12,862, LAKE (*Jewell Export Filter Co.*), production of reagents specially designed for purifying water. 13,128, BRUNS, moulding and stamping table for concrete roofing tiles. 13,491, GÜSSOW, manufacture of artificial stone. 13,694, SYKES, drawing scales. 13,761, BOULT (*Marsden*), perforated plates for building and other purposes. 13,802, KUHNERT, apparatus for separating stones from loam and clay. 14,034, MEISSNER, apparatus for the production of acetylene gas. 14,571, HANNA, sand-screening machines. 14,938, WERNICKE, apparatus for filling moulds with cement, artificial stone, &c. 14,954, LAKE (*H. B. Smith Machine Co.*), sandpapering machines. 15,594, JOHANSSON, door latch. 15,780, SIMON, roofs of buildings. 16,220, WILD & RIGBY, apparatus for the purification of smoke. 17,033, LUKOWSKY, device for use in enlarging or reducing maps, plans, &c. 17,432, BAUKE, lifts. 17,470, GALLOWAYS, LTD., & BAYLISS, compound safety and low-water valves. 17,684, WANGELIN, float valves for water cisterns.

Zion Church, Rhigar, has had three new stained-glass windows introduced, the work of Messrs. Heaton, Butler and Bayne, of London

THE USE OF ROLLED JOISTS IN CONSTRUCTION.

By A. T. WALMISLEY.

THIS was the title of a paper read at a joint meeting of the Architectural Association and the Institution of Junior Engineers on Friday, November 23rd.

Mr. A. T. Walmisley, in introducing his paper, referred briefly to the theory of iron joist construction. When a girder had to be dealt with, he said, the first thing to understand was the moment of resistance, and the consideration of the moment of inertia had to be entered into. When a cantilever was loaded the upper portion became in tension and the lower in compression. For a beam the argument was the same. If the upper fibre was in tension and the lower in compression there was an intermediate point upon which there was no stress: this was called the neutral axis. Supposing we did not employ the ordinary formula but divided the beam, say of 12in. by 6in. section, into two horizontal layers the bearing area would be deduced from the distance of its centre from the neutral axis, which would give in the beam of typical section 648; dividing it into four layers the result would be 810; the more layers the section was divided into the nearer the true result, 864, was approached. He then continued as follows:—

If S = safe stress per sq. inch in the outside fibre of a beam and x = its distance from the neutral axis and b = breadth and t = thickness of layers in section, then bt = area = a, and if y or y' = distance of centres of area from the neutral axis, moment of resistance of outside plate or layer = $(a \times y)\frac{y}{x}S = f(a \times y)$, because the strain being zero at the neutral axis and a maximum at a distance x from it, it will at a distance y from the neutral axis have a unit value of $\frac{y}{x}S$, which multiplied by the area, gives the total strain in the layer acting at a distance y from the neutral axis.

$(a \times y)\frac{y}{x}S$. Now x and S in this equation being constant for every area in the section, they can be eliminated and applied after summation. The formula then gives what is called the moment of inertia = $I = Ay^2$ and $\frac{I \times S}{x}$ = moment of resistance.

Typical Section, 12*in.* × 6*in.*—Calculated by the formula $\frac{bd^3}{12}$ (Molesworth) we find

$$I = \frac{6 \times 1728}{12_2} = 864$$

and dividing the section into 2, 4, 6, 8, 10, or 12 equal layers, and calculating from the distance of the centres of the areas of the upper ones from the neutral axis

$$I = 36 \times 3^2 = 324 \times 2 = 648$$
$$I = 18(4\cdot5^2 + 1\cdot5^2) = 405 \times 2 = 810$$
$$I = 12(5^2 + 3^2 + 1^2) = 420 \times 2 = 840$$
$$I = 9(5\cdot25^2 + 3\cdot75^2 + 2\cdot25^2 + \cdot75^2) = 425\cdot25 \times 2 = 850\cdot5.$$
$$I = 7\cdot2(5\cdot4^2 + 4\cdot2^2 + 3\cdot0^2 + 1\cdot8^2 + \cdot6^2) = 427\cdot68 \times 2 = 855\cdot36.$$
$$I = 6(5\cdot5^2 + 4\cdot5^2 + 3\cdot5^2 + 2\cdot5^2 + 1\cdot5^2 + \cdot5^2) = 429 \times 2 = 858.$$

The above trials show that in proportion to the number of horizontal sections taken, the nearer to the truth will be the result.

The Chemistry of Steel.

The late Sir William Siemens, addressing the Iron and Steel Institute in 1877, stated that the use of steel for structural purposes could only be said to date from the year of the Great Exhibition of 1851. Its manufacture is now well understood. It is found to be a complex structure, and not the homogenous mass it is often supposed to be. Addressing the Iron and Steel Institute this year (1900) Sir William Roberts-Austen stated that "in 1,000 parts of steel, 997 parts, more or less, may be iron and the rest carbon," but that the result of the union is a metal that is more widely used and has more varied attributes than any other ial.

The interdependence of small percentages of matter on the larger masses in which such minute contributions are hidden is one of the chief studies of metallurgists of the present day, and the chemistry of steel shows the effects produced by the existence of phosphorus, silicon, manganese, and sulphur in the material, rendering some kinds of steel comparatively soft, while others were extremely hard. The mode adopted for either rapid or slow cooling was seen to have an influence. The committee appointed by the Board of Trade to inquire into the loss of strength in steel rails through use on railways, consequent on the St. Neots accident of December 10th, 1895, after four years' labour, in their report issued this year state that, as regards chemical composition, they do not think it desirable to insist upon too high a proportion of carbon, manganese, or silicon in the steel, having regard to the ordinary contingencies of manufacture and the greater susceptibility of high carbon steel to thermal influences, but beyond giving tabular results of investigation of individual specimens, the committee, while establishing the conclusion that the evidence is not sufficient to justify a decisive verdict respecting percentages, nevertheless insist on the importance of securing as low a proportion as possible of phosphorus, sulphur, and silicon in steel which is to be manufactured into rails, and these precautions would apply in a similar way to rolled joists.

The St. Neots rail was a Bessemer steel (80lbs. per yard) bull-headed rail, laid in 1873 on the Great Northern Railway up line, and transferred to the down line after thirteen years' service on the up line during repairs at some date not recorded. Its failure may have been due to local stresses unavoidable at the joints and independent of the chemical composition of the steel, but which joints need constant inspection.

Although iron does not combine with carbon at ordinary temperatures, yet the union may be effected when brought into contact at a red heat. Mild steel containing a proper percentage of carbon is produced by the Bessemer as well as by the open hearth processes both with either acid or with basic lining to the convertor or hearth. The open hearth process is more under control, and gives more time to adjust the composition than the Bessemer converter, and hence is generally preferred. In the Bessemer or pneumatic process molten pig-iron is blown through, the carbon and other elements burned out, and then the desired proportions of carbon and manganese are added, and the whole process is over in, say, twenty minutes. Hematite pig-iron is used in connection with acid linings. With silicious linings such as ordinary firebrick, basic slag would combine with it and eat it away. Calcined magnesian limestone is generally used for a basic lining, and hence the process is called basic. We have the treatment of pig-iron with certain classes of iron ores without the addition of scrap, according to the direct open-hearth process of the late Sir William Siemens, and the fusion of a mixture of pig and scrap iron or scrap steel in the open-hearth process of Messrs. Siemens-Martin, in which the steel is dead melted and the process allows time to draw samples for testing and time to doctor up the mixture as required. Pig irons containing but little carbon or silicon are preferable for the open-hearth process. Phosphorus aids cold shortness, *i.e.*, breakage cold and unexpectedly, while sulphur aids red shortness. A deficiency of silicon results in inferior metal. Only the purer kinds of pig-iron can be operated upon in silicious or acid-lined furnaces, while with basic linings more impure phosphoric pig-irons can be used, and the slag of the basic process contains from 10 to 18 per cent. of phosphoric acid, which is ground up for use as a fertiliser. The higher the carbon the higher the tensile strain. This can be regulated in the open-hearth process without expense. For thin material the carbon is kept low, and for thick material it is kept high. The operation of rolling hardens it. The sulphur and phosphorus should be below ·06 per cent. The lower the steel in phosphorus the less susceptible it is to crystallisation when punched. Experience shows that the lower the phosphorus, the other elements being the same, the less is the steel affected by cold working. The connexions in all steel work is preferably made in holes carefully drilled.

Messrs. Dorman, Long and Company (Middlesbrough) adopt a proportion of between 0·16 and 0·25 per cent. carbon in their steel by the Siemens-Martin process. Owing to the supplies of the best hematite ores becoming scarce, the quality of this kind of ore is inferior to what it was a few years ago, and it is very difficult to keep the sulphur and phosphorus below expedient limits. This is one of the reasons which has led Messrs. Dorman, Long and Co. to adopt the manufacture of steel from Cleveland iron, the phosphorus being eliminated by lime and the sulphur by calcium chloride. They find that they are able to obtain better results than they could with the old hematite iron, and by keeping records of frequent analyses, and having meanwhile the furnace under control, they supply the sections which give satisfaction.

At the Earl of Dudley's Round Oak Iron and Steel Works, Brierley Hill, they adopt the basic open hearth process, and can produce anything from ·1 to ·3 carbon that punches cleanly and works satisfactorily. The Shelton Iron and Steel Company also adopt the basic open hearth process.

Shape of Joists.

A large number of joists used in construction are too shallow. The proportionate depth to the span should be $\frac{1}{15}$, but should never be less than $\frac{1}{20}$ of the span. There is considerable advantage of depth over width. In the common form of placing one stock section over another, the flanges which are united in the centre do not materially assist the moment of inertia of the section. Hence the tendency to deflection obviated by the use of two joists, one on the other, could be better provided for by the adoption of a made-up girder with angle-irons and plates in which the metal of the double centre could be transferred to the top and bottom flanges. When girders have to carry a floor to which a plastered ceiling is to be suspended, comparative stiffness is indispensable to prevent sagging and the consequent cracking of the plaster, and should be designed under such circumstances so that the deflection does not exceed $\frac{1}{30}$in. per foot of span, but this ratio might even be reduced with advantage. Makers' catalogues show the sizes and weight of joists kept in stock, and in some cases add the safe distributed loads over various spans for each joist, but do not state the breaking strain assumed, or if they do give this they do not add the factor of safety taken to arrive at the amount of stress per square inch. Hence it is not generally fair to say that because one list gives higher loads than another list that the joists are superior. In each case the designer must determine the safe working load for himself, and see that both the flanges and the web are each capable of sustaining their due proportion of strain.

The joists sometimes come in from the mills not as true as one could wish, the flanges not being parallel. This is more noticeable in the wider sections, the 8in. by 6in. especially. Such wide sections, also 9in. by 7in., are more suitable for stanchions than girders. When a wide dimension is needed for girder work, for the support of a wall or other purposes, two rolled joists are introduced side by side, top and bottom flange plates being added to form the connection. As a rule, in single joists the width of the flange should be sufficient to resist flexure in a horizontal, plane, or lateral bending. When the boom is of insufficient width the girder will fail by the lateral deflection of the top bay or boom rather than vertical buckling.

Resistance to Lateral Flexure.

Professor Rankine has deduced the following formulæ for the ultimate strength of the top booms of small girders as regards resistance to lateral flexure:—

$$t = \frac{f}{1 + ar^2}$$

where t = the ultimate average thrust per square inch upon the flange area; r = the ratio of length of flange to width; f = 16 tons per square inch or such other value to suit the

material in use; a = a constant which equals $\frac{1}{5000}$ for a flat boom.

When more than a single girder is employed, if the circumstances are such as to admit of the flanges being braced horizontally together like a horizontal lattice girder, not only material may be saved, but the advantage of the inside surfaces of the girders that are so connected is secured for inspection and for facility of forming the connections.

Generally speaking, the width of the upper flange of a girder, when not stiffened laterally by additional connections, should be $\frac{1}{30}$ to $\frac{1}{40}$ of the span, so that if the depth is assumed as $\frac{1}{12}$ of the span, the width would be $\frac{2}{5}$ of the span, showing that if the usual stock sizes be taken of 10in. by 5in., or 12in. by 6in., the proportion of half the depth for the width of flange is ample. The width of the lower flange needs to be such as will give a proper bearing on the piers, or if the beam is suspended from the top flange, a sectional area to resist the tension produced by the loads. It is useful to remember that in long girders the web of a joist is more likely to fail near the points of support than in the centre, not only on account of the action of shearing strain, but on account of the conditions of rolling. Hence at the works it is found well to crop off the ends after rolling long lengths so as to obtain a more uniform strength of section throughout.

In connecting rolled joists at right angles to one another, when one is "machine special notched," a good distributing bearing for the transverse joist upon the lower flange of the longitudinal joist is secured at the connection.

In considering bearings, girders should rest on a wall, and not merely upon a pier attached to a wall. The writer has seen girders resting upon what appeared like a pier in plan, but which had simply been brickwork corbelled out.

The higher the wall the less the pressure from the girder upon the ground.

Where joists rest on timber, masonry, or brickwork, bearing plates are invariably introduced to distribute the weight, and such plates should be thick enough to countersink the rivets of attachment to the joists on the under side of the bearing plates. When such plates are set back from the front edge of the wall or stone on which they are placed they exercise the same effect as chamfering the edge of the template.

Size of Joists.

In the Paris Exhibition of 1867 a rolled beam was exhibited measuring 1 metre (39⅜in.) in depth, 10 metres (33ft.) in length, and weighed 2½ tons. This beam, instead of being rolled in the usual way, was subjected to the pressure of four rollers, by which process the quality of the iron in the flanges was preserved as well as that of the web.

The Carnegie Steel Company roll a beam 24in. by 7in. to 80lbs. per foot and moment of inertia = 2,087. Their joists generally present a good finish, free from surface imperfections and straight. The American joists seem to contain a slightly larger amount of phosphorus in their composition than the British manufacture. They give, for example, a test of 0·08. Ours is about 0·06. The Americans have, however, practically discontinued manufacturing acid open hearth steel, and now make only basic steel, which they assert to be purer chemically. The American joists are at present cheaper than the English, but this, of course, is only peculiar to the moment.

French joists to a reasonable specification are fairly satisfactory, but are not much cheaper than our own when the cost of carriage is added. They adopt the Siemens-Martin basic system. There is nothing fixed for the percentage of carbon, phosphorus, silicon, manganese, or sulphur. Tests are applied by the engineer during use to test hardness and other requirements. They specify 32 kilogrammes per square millimetre, with an elongation 8 per cent. for iron and 42 kilogrammes per square millimetre (26·6 tons per square inch) for steel.

The first national work in this country in which foreign iron was employed was the Natural History Museum, South Kensington, about the year 1869. The term "Belgian joist" is a generic term, as joists are made in France and Germany as well as in Belgium, and sold as foreign joists.

Results of 1,200 *Tests of Foreign Steel Joists.*

Limit of elasticity	Maximum	69·0%.
	Average	64·1%.
	Minimum	60·0%.
Ultimate stress in tons per square inch	Maximum	29·1 tons
	Average	28·08 ,,
	Minimum	27·2 ,,
Elongation per cent. in 8in.	Maximum	28·0%.
	Average	24·39%.
	Minimum	20·5%.
Reduction of area per cent.	Maximum	60 2%.
	Average	50·53%.
	Minimum	42·4%.

The above were German manufacture. Observe how even are the results recorded, due probably to the fact that the Germans are good chemists.

As to British, German, Belgian, and American make, all these countries have manufacturers whose output is thoroughly good and reliable. There is no difficulty in obtaining foreign material that will stand the required tests, and the result of foreign competition has been that many of the British rolling mills who roll joists are now better equipped than formerly. At the same time, the foreign ordinary commercial joist delivered into this country, from Belgium in particular, is not a good joist, and frequently in some foreign joists the web is thickened to obtain the weight at the expense of a minimum flange. It must be remembered that wrought-iron does not flow like cast-iron, and it is difficult to get the material pushed up in rolls where the flanges are wide compared with the depth of joists. Iron joists are generally of greater sectional area than steel. They are the same depth and width, but weigh more per foot run on account of sectional area. Thus iron joists weighing respectively, 56, 35, and 13lbs. for 12in. by 6in., 10in. by 5in., 5in. by 3in. weigh in steel 44, 30, and 11lbs. per foot run.

Railway companies, for patriotic reasons, and more particularly for the benefit of their traders, usually insert a clause in their contracts that all materials provided by a contractor are to be obtained from traders who give their traffic to the company, and conveyed over the railways and canals (if any) belonging to the company. The manufacture depends mainly on the specification, and therefore both British and foreign steel may or may not be good, as the material known as mild steel may have almost any strength between that of hard steel and that of wrought iron.

A Safe Co-efficient.

The committee on the use of steel in railway structures appointed by the Board of Trade to consider the practicability of assigning a safe co-efficient, reported in 1877 that the steel employed should be cast steel, or steel made by some process of fusion, subsequently rolled or hammered, and that it should be of a quality possessing considerable toughness and ductility, and that a certificate to the effect that the steel is of this description and quality should be forwarded to the Board of Trade by the engineer responsible for the structure. Also that the greatest load that can be brought upon the bridge or structure, added to the weight of the superstructure, should not produce a greater strain in any part than 6½ tons per square inch.

As in the use of mild steel, the extension per ton per square inch is practically equal to the compression, it follows that the neutral axis of a section of steel strained transversely will be in the centre of gravity of its section; but as in wrought and in cast-iron sections the unit stresses, particularly in the latter, vary in the case of tension and compression, the moment of inertia must be calculated from a neutral axis not coincident with the centre of gravity.

The qualities required in a steel or iron structure being chiefly of a mechanical nature, it is reasonable that the test should be mechanical, and, provided these tests are satisfied, the beginner does not trouble himself about the chemical constituents. Tests are provided to detect brittleness and to secure toughness, combined with ductility and malleability, and the result of experiments show that the tensile resistance and limit of elasticity are the main objects of inquiry.

Tensile strength 27 tons to 31 tons per square inch ultimate with elongation of 20 per cent. in 8in. lengthways and crossways of the same.

Specification for mild steel plates and sheets as adopted by the Great Western Railway Company:—

1. All plates to be of British manufacture.
2. All plates and sheets to be of the exact dimensions ordered, and to be uniformly throughout of the thickness specified.
3. All plates and sheets to be flat and free from blisters, scale, laminations, buckles, and all other defects.
4. All plates and sheets to be of such quality as to weld perfectly.

Strips cut lengthwise and crosswise to be capable of standing the following tests:—

Tensile Test.—Ultimate tensile strength to be not less than 24 tons nor more than 28 tons per square inch, with an elongation of at least 22 per cent. when the thickness of the sample is more than $\frac{5}{16}$ of an inch, and with an elongation of at least 20 per cent. when the thickness is $\frac{5}{16}$ or less; elongation in each case to be measured over a length of 10in.

Temper Bending Test.—Strips 1½in. wide, heated uniformly to a low cherry red and cooled in water of a temperature of about 80 deg. Fahrenheit, to stand bending in a press to a curve the inner radius of which is equal to the thickness of the plate.

Cold Bending Test.—Strips 1½in. wide to stand bending cold in a press to a curve the inner radius of which is equal to the thickness of the plate.

Punching Test.—The material to be tested for ductility by punching cold a group of holes ⅝in. to ¾in. diameter, the edges of which shall not be more than $\frac{3}{16}$in. apart.

All mild steel rivet, channel, angle, T, and other bars to be of such quality as to weld perfectly, and to have an ultimate tensile strength of not less than 24 tons, nor more than 28 tons per square inch, with an elongation of at least 25 per cent., measured over a length of 10in.

All rivet bars to be rolled exactly round to gauges to be supplied by the railway company.

The material to be tested for ductility by being bent cold under a steam hammer; also by punching cold a group of holes ⅝in. to ¾in. diameter, the edges of which shall not be more than $\frac{3}{16}$in. apart.

Rivet bars, in addition to the tensile tests, must stand bending double, both hot and cold. The head heated to redness must stand flattening until its diameter is three times the diameter of the bar without cracking at the edge.

All wrought-iron plates, sheets, and bars to be of British manufacture, tough, fibrous, and of the highest smithing quality.

All plates, sheets, and bars to be of the exact dimensions ordered, and to be uniformly throughout of the thickness or section specified.

All plates, sheets, and bars to be free from blisters, scales, laminations, buckles, twists, and all other defects. All plates and sheets to be flat.

All plates, sheets, and bars to be of such quality as to have an ultimate tensile strength of:—

	Tons per sq in.	Elongation.
Round and square bars and flat bars less than 6in. wide	23	with 20 p.c. in 10in.
Angle, tee, channel, and H bars and flat bars over 6in. wide	22	with 12 p.c. in 10in.
Plates with the fibre	22	with 10 p.c. in 10in.
Do. across the fibre	18	with 3 p.c. in 10in.

and to admit of bending round a radius equal to the thickness when hot through an angle of 125 deg. with the grain, and 100 deg. across the grain, and when cold as follows:—

Thickness of plates .. .. .. in.	1 and ⅛	⅝ and ⅛	⅝	⅞	1	1⅛	1¼	1⅜	1½	1⅝	1¾	1⅞	2	2⅛	2¼
With the grain, through an angle of .. deg.	15	20	22½	25	27½	30	35	42½	50	60	70	75	85	95	100
Across the grain, through an angle of .. deg.	5	7½	10	10	12½	12½	15	17½	20	25	30	30	40	50	50

The whole of the iron to be inspected and tested before leaving the manufacturers' works.

The Carnegie Steel Company, of America, specify for structural steel an ultimate strength of 60,000 lbs. to 70,000 lbs. (26 78 to 31 24 tons) per square inch.

Elastic limit, not less than one-half the ultimate strength. Elongation, 22 per cent.

Bending test, 180 deg. to a diameter equal to thickness of piece tested without fracture on outside of bent portion. The elongation shall be measured on an original length of 8in., except when the thickness of the finished material is $\frac{5}{16}$in. or less, in which case the elongation shall be measured in a length equal to sixteen times the thickness; and except in rounds of $\frac{5}{8}$in. or less diameter, in which case the elongation shall be measured in a length equal to eight times the diameter of section tested.

The London and North-Western Railway Company specify that all steel shall be of British manufacture, produced by the Siemens-Martin open hearth process, and of such quality as to withstand the following tests:—

Ultimate tensile strain not less than 28 tons per square inch, contraction of area at fracture for same not less than 40 per cent., extension in a length of 10in. not less than 20 per cent.

Some authorities prefer to take the elastic limit rather than the ultimate strength of the material, but as they then employ a proportionately smaller factor of safety, the result is practically the same.

Stanchions.

It requires no long description to prove that a long and slender column always gives way by bending, but the reasons are not clear until we consider the question in a negative form and inquire why it should not bend. A slender rod with rounded or hinged ends will bend like a bow, and the lateral resistances opposed to such bending will be similar to the vertical resistances offered by a rod supported at both ends over a free span when laid as a beam and loaded. In the latter case we know that the deflection is proportional to the amount and disposition of the load, so that to produce a great deflection we have to introduce a proportionally great load, the elastic resistance of the beam bearing a definite ratio to its deflection. In a solid block, viewed as a short column free from flexure, the element of compressive stress only prevails, and in a long column fixed at the ends, the reasoning is again modified by the points of contra-flexure that have to be considered. In every material the strength diminishes rapidly as we advance from short to long columns, but the reduction is more conspicuous in the cast-iron and the strong steel than it is in the softer metals. In the case of free ends cast-iron is only economical up to 3½ diameters and for ends fixed up to 7 diameters, while for heights exceeding this ratio mild steel is preferable to the use of either cast- or wrought-iron. In further considering the question of flexure in an upright column, there being no apparent transverse force to produce the bending, the result can only be caused by the ends tending to approach one another, and the condition of things resembles the action of a bow in which the ends are united by a member in tension, so that if we can determine the tension produced in the member uniting the ends, we shall have found the resistance that the bent column opposes to the load on its head. This evidently must depend more upon the elastic stiffness of the material and the dimensions of the columns than upon the crushing strength of the material. The form of the section is important, and a rolled joist section is preferable to the channel  or  section sometimes employed with its web or back placed against a wall, because the compressive stress is more equally distributed over its section. An open or  section also has this advantage for use as a stanchion, compared with a round hollow column, that the whole surface can be seen and its thickness checked without the need of drilled holes to prove that the thickness is uniform.

A slender column is naturally a very weak one, and in order to obtain a satisfactory adoption of its introduction in a structure we must provide against the action of flexure, which is the source of its weakness. This may be effected by the same means as in a girder namely, by removing the metal from the centre and placing it as far away from the axis of the stanchion as possible. The value of the development of material as in a girder, also applies to a stanchion, so that by the adoption of four separate legs braced together like a lattice-girder we may so develop the material in a filamentary form as to considerably increase its efficiency. In a stanchion of any section the resilient force R is proportional to the modulus of elasticity, but is independent of the ultimate strength of the material. Thus a long stanchion of the strongest steel would vary little from a similar stanchion of wrought iron, because the modulus of elasticity is nearly the same in both these materials. However great the ultimate resistance of the steel may be, the crushing stress will inevitably be reached at some period of the increasing bending strain if only the load is sufficient to overcome the resilient force of the bow and to set up the ever-increasing deflection. When this deflection begins to act, the stanchion may be considered as having failed for all practical purposes, no matter what may afterwards happen to it during the course of the buckling process. A steel stanchion would theoretically take a greater ultimate deflection than the wrought-iron stanchion before it became actually crushed or crippled on the concave side, but the breaking weight would be nearly the same for both materials. When struts of different sections are ranged together according to the radius of gyration, the results of experiments agree together as closely as could be expected; but if struts of equal diameter and of different patterns of cross-section are ranged together their strengths vary. In short stanchions the superior strength of the steel will come into play, and in a stanchion of unequal elasticity it will come into play to some extent at all ratios of length to diameter.

Professor T. Claxton Fidler, in his treatise on "Bridge Construction," states that there can be no doubt that amongst the different sections of rolled iron bars or *built struts* the radius of gyration should be taken rather than the outside diameter as the true measure of stiffness.

I = moment of inertia = sectional area of beam or stanchion × the square of the radius of gyration $(r)^2$.

Therefore, dividing the force R by the sectional area in square inches, we have the resilient force in pounds per square inch of the section of the strut expressed by—

$$p = \frac{R}{A} = \pi^2 E \frac{r^2}{l^2},$$

and this denotes the theoretic breaking weight of long stanchions in pounds per square inch, or the load which is sufficient to overcome the resilience (or the act of springing back, popularly known as "rebounding") of the bow, and to produce indefinite deflection.

Stanchions.	Ends Fixed.	Ends Free.
Cast-iron (solid) rectangular	$P = \frac{35}{1 + (\cdot0037)\,H^2}$	$P = \frac{35}{1 + (\cdot0148)\,H^2}$
Wrought-iron (solid) rectangular	$P = \frac{16}{1 + (\cdot0005)\,H^2}$	$P = \frac{16}{1 + (\cdot002)\,H^2}$
Wrought-iron (solid) angle	$P = \frac{19}{1 + (\cdot0011)\,H^2}$	$P = \frac{19}{1 + (\cdot0044)\,H^2}$
Mild steel (solid) round	$P = \frac{30}{1 + \left(\frac{1}{1400}\right)H^2}$	$P = \frac{30}{1 + \left(\frac{1}{350}\right)H^2}$
Mild steel (solid) rectangular	$P = \frac{30}{1 + \frac{1}{2480}H^2}$	$P = \frac{30}{1 + \left(\frac{1}{620}\right)H^2}$

Note: P = Crippling stress per square inch in tons. $H = \frac{L}{D}$ = ratio of length to width in direction of plane of flexure. P × area = breaking stress of given section.

THE DISCUSSION.

Prof. Henry Adams, in proposing a vote of thanks, said that Mr. Walmisley had suggested that the depth should be one-twelfth the span; but that would hardly be suitable to architects, and, as a matter of fact, they made a span in feet equal to twice the depth in inches, though in a fireproof floor of iron and concrete there was a still greater ratio of span to depth.

Mr. Percival Marshall, President of the Institution of Junior Engineers, seconded the vote of thanks.

Mr. B. Blount thought that architects and engineers who were troubled at times by failures not readily explicable should remember that a mere specification of the mechanical properties of steel, and even its chemical composition, was not everything; they must also take note of the microscopical character of the metal.

Mr. R. J. Gifford Read having spoken, Mr. P. J. Waldram warned architects to be careful to ascertain the market price when specifying riveted work, it being sometimes more expensive to put less material in the joists than more material of a certain character, and it was well in extensive work to get an estimate before deciding on riveted-up work. In order to develop the full strength of the plates in such work the rivets should be designed, not guessed at.

Messrs. H. Lovegrove, W. H. Shephard, H. Satchell, H. Young, junior, and W. H. Seth-Smith also spoke, and the vote of thanks having been recorded, Mr. A. T. Walmisley, in reply, said it never did to have a cast-iron beam fixed at both ends, because it was not made to take tension and compression in the same flange. Engineers, although they recognised some advantage in a stanchion or girder fixed at both ends, preferred, where possible, to have them free at both ends, because the stresses were then more definite.

Surveying and Sanitary Notes.

The death of Mr. James Lovegrove, A.M.I.C.E, is announced. Deceased was until June of last year the chief surveyor to the late Hackney Vestry.

The Widening of Leadenhall Street, E.C., is proposed to be carried out. No step can be taken for the moment in the direction of acquiring the property, and as yet the London County Council have not endorsed the proposal. At the same time, the letter presented to the Court of Common Council stating that the fullest consideration will be given to every application made for a grant when a favourable opportunity presents itself for acquiring properties shows that the authorities at Spring Gardens realise the importance of the improvement, and are ready to render financial assistance. The street is already too congested, and when the rebuilding of the Crutched Friars area is completed and the northern approach to the Tower Bridge is finally constructed, there will be a yet further augmentation of traffic. The outlay is estimated at £637,000.

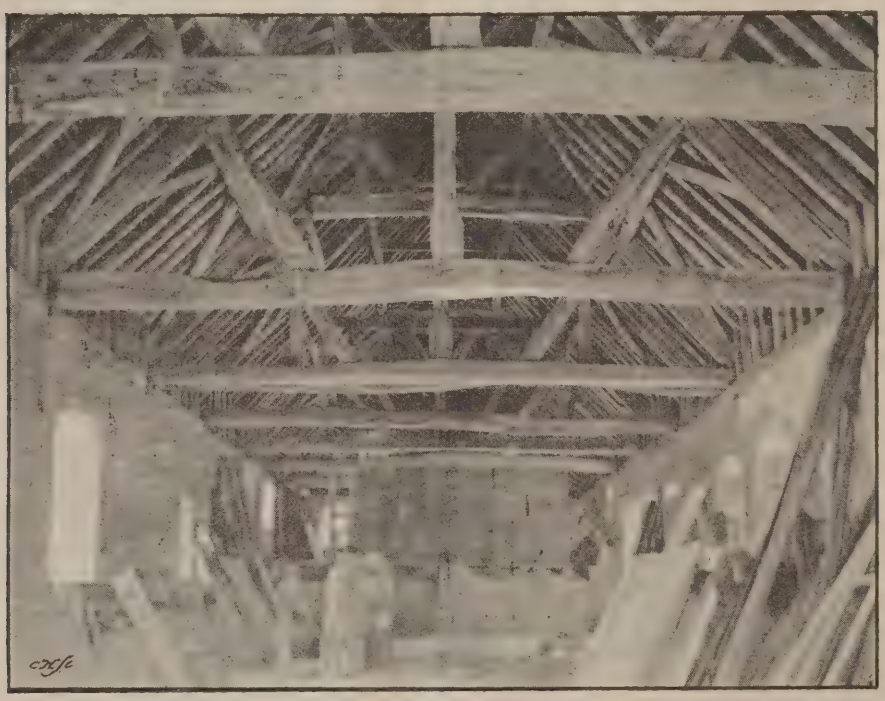
The Plumbers' Company held its annual dinner in Fishmongers' Hall last week. About 170 gentlemen were present. The Master (Mr. Charles Hudson) took the chair, supported by the Warden (Alderman R. Hind), the Renter Warden (Sir J. Knill), Sir J. Monckton, Mr. J. Skirrow (president of the Master Plumbers Association), Mr. H. Hamilton (president of the Operative Plumbers' Association), and other gentlemen. The Warden urged that the Plumbers' Registration Bill, hitherto promoted by the Company, should be taken up by the Government, because its principle had been approved in three sessions of Parliament and by two Ministries, and because experience had proved that a private member could not carry it in the face of the twelve o'clock rule. Mr. R. Crawford (Glasgow) complimented the company on having done something to form a confederation of local authorities who would, he trusted, think less of the ancient claims of property and more of the modern claims of life and health.

Bricks and Mortar.

APHORISM FOR THE WEEK.

"*We have seen in modern times the power of Ptah developed in a separate way, which no Greek or Egyptian could have conceived. It is the character of pure and eyeless manual labour to conceivee everything as subjected to it; and, in reality, to disgrace and diminish all that is so subjected; aggrandising itself, and the thought of itself, at the expense of all noble things.*"—RUSKIN.

Our Plates. CONTINUING our series of London street studies, we publish this week a drawing by Mr. Sydney Newcombe of No. 63 Sloane Street. This is an old house which has been remodelled from designs by Mr. Fairfax B. Wade, architect. The old stock-brick facing remains, and the bay window, window dressings and entrance have been carried out in Monk's Park stone. The contrast between the stock brick and stone dressings is very slight, and produces a quiet effect which is particularly pleasing and appropriate in a private residence. The design by Mr. H. Wilson for the new staircase, hall, and entrance to the library and print gallery at Welbeck Abbey was exhibited at the Royal Academy of 1897. We give this week Mr. Leonard Stokes' designs for buildings in connection with the new street from Holborn to the Strand; a criticism will be found in our issue for October 31st last. We have now reproduced the whole eight designs sent in.



TIMBER ROOF AT BEAULIEU ABBEY, HANTS.

Ruskin and Morris. A WRITER in the "Review of the Week," in dealing with the principles of architecture, says that the one thing essential to remember, the one thing we are, alas! most readily disposed to forget, is that we are northerners, and, therefore, whatever else our architecture may be, this much at least it must be, of the north, northern, neither Indian, nor Grecian, nor Italian. Whatsoever beauties or appropriateness each one of these styles can boast in its own native place and clime, all are alike unsuited to the exigencies of our climate and the genius of our people. The two greatest prophets of art in our days, John Ruskin and William Morris, gave utterance to these primary principles with no vague or faltering language; Ruskin on ethical, Morris on scientific grounds. And, whereas, for all his eloquence, Ruskin failed to persuade the modern Englishman to abjure a particular mode which he assured him was corrupt and Pagan, Morris, on the other hand, appealed to a wide circle in emphasising the structural limitations of the Classic styles at a period when either was pure and distinct, and the sham construction of the combined Græco-Roman. Morris was never weary of insisting that, of all known forms of architecture, Gothic was the only one that possessed and exhibited a truly organic life and continuity of growth. Notwithstanding, both Morris and his master Ruskin were inconsistent in their practice. The latter arbitrarily fixed the perfection of Gothic as somewhere in the thirteenth century, and that preferably in Venice. Morris himself would have fixed the fourteenth century as the culminating period of English Gothic. So dismayed altogether was he by the deplorable manifestations of the "Gothic revival" that he came to accept a most pessimistic view of the prospects of architecture.

The Council and the Institute. THE Council of the Royal Institute of British Architects are of opinion that the suggested removal of the landing which now divides the flight of steps leading up to the portico of St. Martin's Church would be very detrimental to the appearance of the west front of the building. They say that "owing to the fall in the ground from north to south, the lower steps are of necessity broken off where they merge in the ground line. An unsymmetrical base of this kind to a symmetrical portico would have a distinctly bad architectural effect, but by the ingenious device of dividing the flight of steps in the middle, a perfectly symmetrical base of seven unbroken steps is provided for the colonnade, while the lower steps, which must terminate unsymmetrically, are separated from the design of the building, and do not form part of it." The Council feel, therefore, that nothing short of actual necessity could justify the removal of the landing or platform, while from the personal observation of its members and reliable information received, they are fully assured that no such necessity exists. In the event of the widening of the public footpath ever becoming necessary, they have no doubt the suggested setting back of the western steps is the least objectionable means of effecting the purpose. But even if, on account of such necessity, the landing be omitted from the steps in front of the portico, they strongly recommend that it should still be retained on the south side, where it would be useful in helping to preserve somewhat of a symmetrical appearance to the base of the portico. While considering the question of the appearance of this portico, they beg leave to suggest whether it would not be possible to remove the cast-iron railings now fixed at the top of the steps and between the columns, "as they constitute a serious disfigurement to the building."

Ancient Buildings in the Levant. A CORRESPONDENT of the "Times," writing from Jerusalem, complains of the wholesale destruction of historical monuments which is permitted by the Turkish Government. He says that two years ago a singularly interesting historical treasure was found in Jerusalem, the Cufic inscription at the entrance of the small mosque of Omar, once standing within the arcaded porch of Constantine's Basilica of the Holy Sepulchre, and dating from the seventh century. It was cut on a stone of the original Roman building and therefore *in situ*. On being found it was voted a mystery, because the small mosque of Omar was rebuilt on a quite different site after the Crusades, and this fact is unknown to modern natives of Jerusalem. However, to please various parties the old stone was torn from its position, and the inscription was sawn off and sent to Constantinople for better investigation. Its present fate is unknown. The interesting and well-preserved Church of St. Jeremiah, of the thirteenth century, at Abu Gosh, near Jerusalem, has been presented to the French Government, and a proposed "restoration" is now on foot. A friend, returning from a ride on the other side of Jordan, gave the "Times" correspondent a deplorable account of what is happening to the hitherto marvellously preserved cities of the Decapolis. The colonies recently planted in that region have selected the most famous cities for the purpose of turning them into stone quarries. Gerash (Gerasa) is filled with a Mahomedan colony which is provided with carts (a very modern innovation in the Levant), and the work of destruction is proceeding in a methodical manner. The famous "street of columns" is disappearing before the picks of the settlers and the columns are being broken up for building material. The curious circular colonnade at one end of the city is not yet touched. At Amman many of the well-preserved Roman monuments have disappeared during the past year. The great theatre is now nearly gone, and the carved stonework of the temples and other public buildings is being treated in the style of the unfortunate remains at Famagusta; it is being defaced, or rather refaced, with new dressing before being re-used to build the squalid huts of modern days. Cæsarea and Sebaste are examples of what has been done during the past ten years in the way of destruction, but the same system is now being carried out on a truly colossal scale all round the Levant. It would be difficult to enumerate the cities, towns, castles, and isolated monuments which are vanishing with the nineteenth century.

Timber Roof, Beaulieu Abbey. THE illustration on this page represents the timber roof at Beaulieu Abbey, in the New Forest, formerly a Cistercian monastery, pulled down in Henry the Eighth's time to build Hurst and Colshot Castles on the Solent. The roof is of solid oak beams. It is said that the room was intended for the working monks of the monastic colony, the best part being reserved for the guests. Now it is only a lumber-room, and the interior decorations, if any, have disappeared. The roof is a fine study for antiquarians and those interested in ancient architecture. We are indebted to Mr. G. K. Pearce for our illustration.

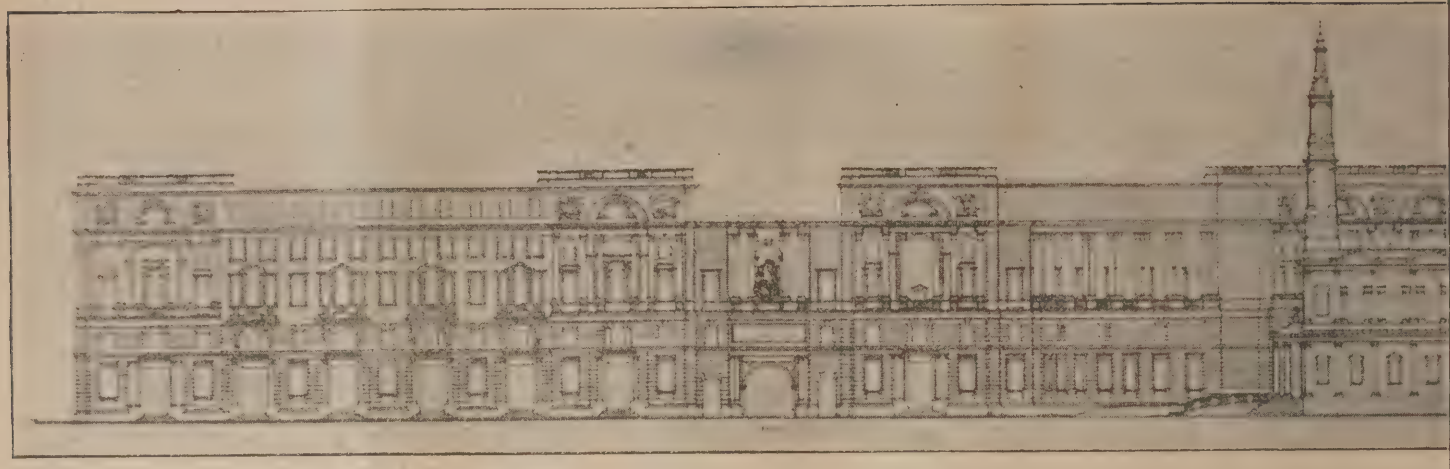
Italy's Art Treasures.—The second artistic law suit with regard to the sale of a bronze bust by Benvenuto Cellini to a firm of London art dealers has ended much in the same way as the recent suit with regard to the exportation of the Chigi Botticelli. Sanguinetti, who bought the bust from the Altoviti family, and the banker Pardo, who assisted him in selling it and smuggling it abroad, have been sentenced to pay a fine of £5,600 each and costs.

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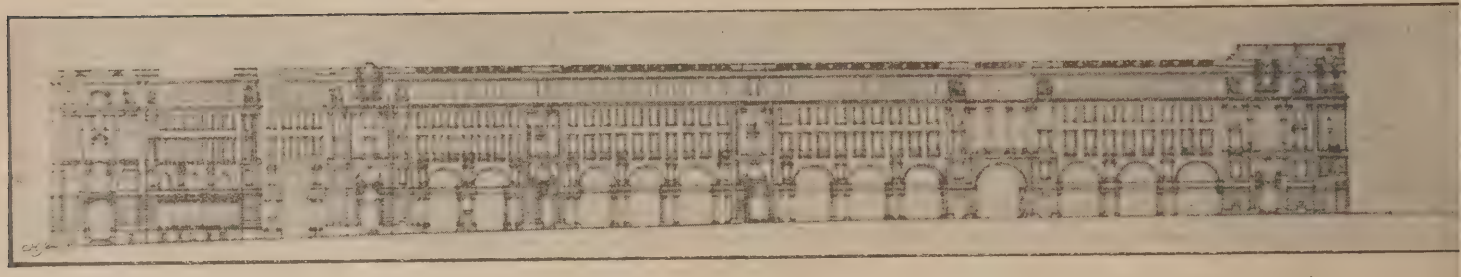
NEW STAIRCASE, HALL, AND ENTRANCE TO LIBRARY AND PRINT GALLERY, WELBECK ABBEY. H. WILSON, Architect.

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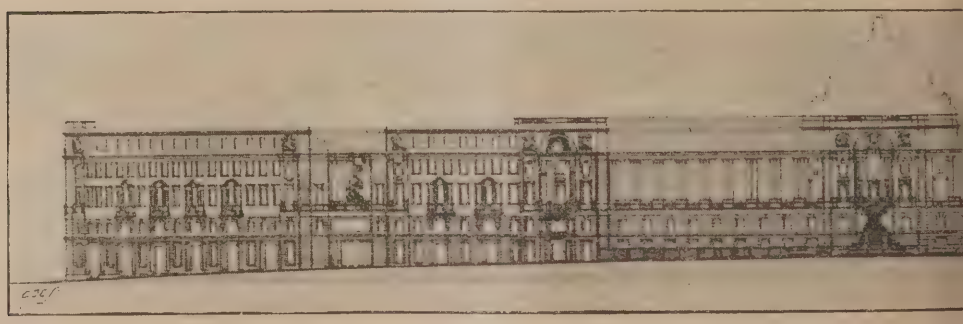


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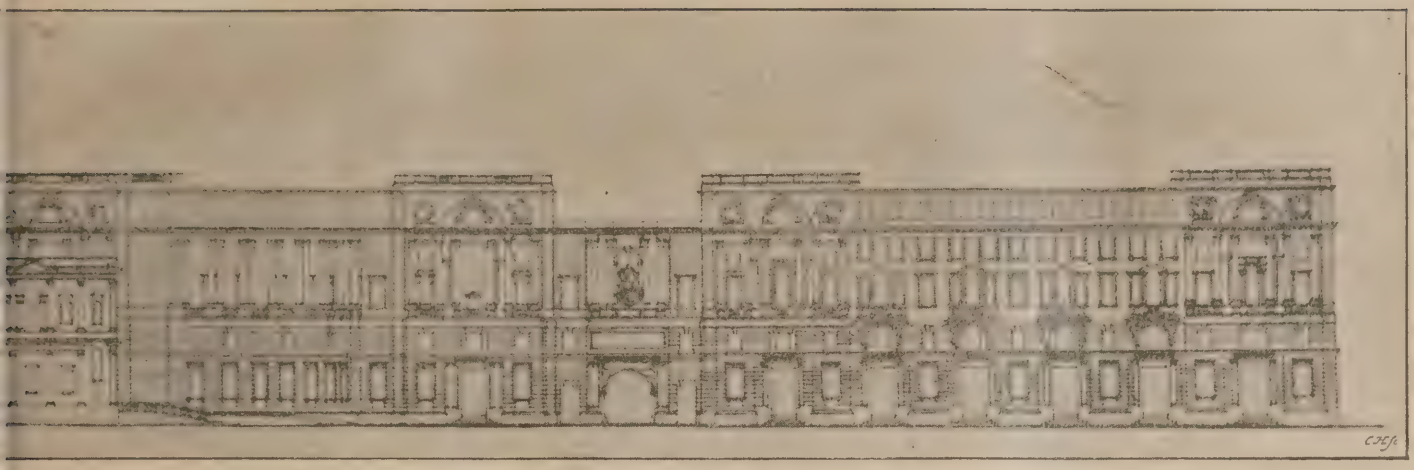


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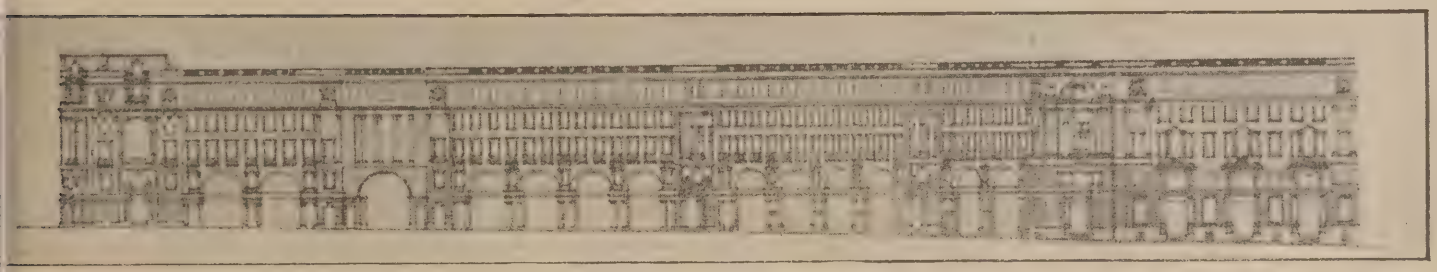
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THE HOLBORN TO STRAND THOROUGHFARE

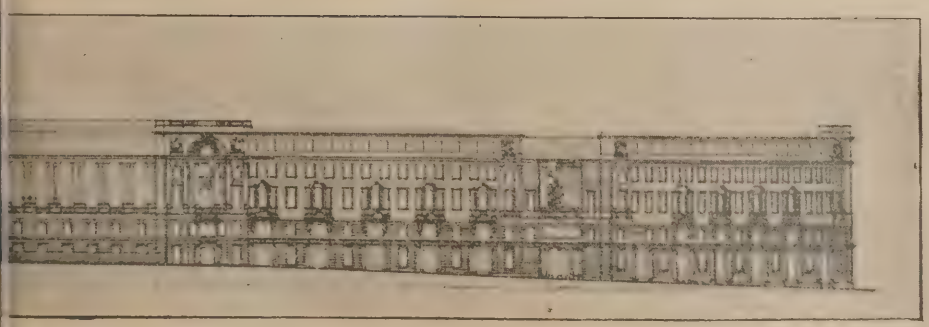


RAND.

E STRAND.



OF CURVED STREET.



F CURVED STREET.

DESIGN NO. 29. LEONARD STOKES, Architect.

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LONDON STREET ARCHITECTURE: No. 63 SLOANE STREET, S.W. FAIRFAX B. WADE, Architect. Drawn by SYDNEY NEWCOMBE.

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Law Cases.

Soft Bricks: A Successful Counterclaim.—The case of *Geall* v. *Docwra and Son* was recently heard before Judge Martineau at Chichester County Court. Mr. W. H. Geall, brickmaker, of Bersted, sued Messrs. Thomas Docwra and Son, contractors for the construction of the new reservoir for the Bognor Water Company, for £33 6s. 9d., balance of account due for bricks supplied on contract. Plaintiff's account was disputed on the ground that many of the bricks were not up to sample—some because they were soft and others because they were mis-shapen. Defendants on their part put in a counterclaim for £13 12s., made up as follows:—£3 12s. for extra labour in assorting and rejecting soft bricks, and £10 for dealing with mis-shapen bricks. Plaintiff's contention was that he had reasonably fulfilled the conditions of his contract, and had endeavoured to meet the defendants' objections in every possible way. Previous to the action coming into court the defendants had made a tender of £20 to the plaintiff, which was not accepted. The £20 had been paid into court. His Honour decided that the defendants had established their counterclaim, and gave judgment for the defendants with costs.

A Matter of Fixtures.—In the Court of Appeal last week the case of *Monti* v. *Barnes* was heard. This was an appeal of the plaintiff from a judgment of Mr. Justice Bigham, and raised the question whether certain articles at Long Walk House, Windsor, were fixtures, and passed with the house. It appeared that in 1890 Mr. P. St. L. Grenfell was the owner of Long Walk House, and he mortgaged it to Lady Ross. In 1893 the present defendant, Miss Barnes, became mortgagee in fee of the premises by a transfer to her by Lady Ross of the mortgage security of 1890. In 1893 Mr. Grenfell sold the equity of redemption to the plaintiff, Mr. P. Monti, and in March, 1898, the defendant foreclosed the mortgage, and became owner in fee of the premises. After the first mortgage was effected, and prior to its transfer to Miss Barnes, Mr. Grenfell had made great decorative improvements in the house, and it was with regard to certain articles then put on the premises that the original action was brought. They consisted of what is known as a "fitment" in one of the dressing-rooms, a large mirror in the drawing-room, and 11 dog-grates. These articles were claimed by the plaintiff on leaving the house, but the claim was resisted by the defendant on the ground that they were affixed to the freehold, and had become her property as mortgagee. Mr. Justice Bigham held that the articles were put into the house not for a mere temporary purpose but to improve the inheritance, and therefore became part of the house, and passed to the mortgagee. He consequently gave judgment for the defendant. Hence the present appeal. Their lordships were unanimously of opinion that the learned judge had come to a right conclusion, and they dismissed the appeal, with costs.

Penalty for Breaches of Building By-laws.—At Birkenhead Borough Police Court, Douglas L. Cleland recently attended to answer six summonses preferred against him by the Corporation for breaches of the building by-laws. The summonses were all in reference to a workshop and store being erected in New Chester Road, Birkenhead. The Corporation passed the plans for its erection on February 15th, 1900, but on July 15th a building inspector found several defects in the building. One wall was not built thick enough, being 4½in. thick instead of 14in. The drains were not ventilated sufficiently, and there were no damp-courses or footings to the walls. Summonses were also issued on account of the defendant having continued the offences when advised not to do so. Defendant's solicitor contended that as the Act applied to a manufactory or warehouse the case fell to the ground. The place was a joiner's workshop, and not a manufactory or anything else. His client was a very busy man, and had left the work to a foreman, which accounted for the negligence in some way. —The chairman said that the magistrates had given the case very careful consideration, and had borne in mind the fact that the building was a workshop and not a dwelling-house. If it had been a dwelling-house the penalty would have been greater. But they would like to point out that if every person carrying on building operations in Birkenhead were allowed to have concessions made to him, as had been done in this case, the surveyor's department would require a very much larger staff. The magistrates did not think that the defence offered was entirely satisfactory. The chairman then imposed fines in each of the cases, the total penalty amounting to £14 19s., or, in default, four months' imprisonment in all.

Builders on Councils: An Important Case.—The case of *Walsh* v. *Grimsley* was heard last Thursday before Mr. Justice Bigham in the Queen's Bench Division of the High Court of Justice. This was an action brought by Mr. John Gorden Walsh, a solicitor, of Bicester, against Mr. Thomas Grimsley, of the Causeway, Bicester, for an injunction restraining the defendant from acting and from continuing to act until April 15th, 1901, as chairman of and as a member of the Urban District Council of Bicester. It appeared that in June last, whilst the defendant was a member and chairman of the Council, the Council invited tenders for certain repairs to a house called the surveyor's house, and a tender by Mr. F. E. Grimsley and Mr. C. H. Grimsley, sons of the defendant, was accepted, and the work done in accordance with the tender. The defendant is a builder and general contractor for works, and the plaintiff's case was that, although the tender was made in the names of the sons (who occupied some clay, brick, tile, and pipe works at Bicester), the contract, even if the defendant's sons were the sole joint occupiers of the clay, brick, tile, and pipe works separately from the defendant, was carried out in such a manner and was so intermingled with the business of the defendant as to be for all purposes inseparable from his business, and that the defendant was necessarily concerned in the contract. The case for the defendant was that, although he did not dispute that he supplied his sons with the labour and materials at cost price, he made no profit and was not in any way interested in the contract. Mr. Justice Bigham, in giving judgment, said that he was of opinion that the plaintiff was interested in the matter and therefore entitled to the relief he claimed under section 46 of the Local Government Act, 1894, if the circumstances justified it. In April, 1898, the auditor of the district council surcharged the accounts of the council with an item in respect of work which had been done by the defendant for the council. Upon an appeal to the Local Government Board, they directed that the account should be paid upon the ground that the penalty was not that the contractor should have his account struck out and not paid, but that he should cease to be a member of the council. It was clear that upon that occasion the defendant did something which brought him within the provisions of this very salutary section. Because of that decision, and in order that work of that kind might at all events be secured to his family, the defendant and his two sons founded another firm. The defendant paid the rent and rates of the premises and the wages of the persons employed there. The two sons then started what they called a brickfield. They were not builders except in the sense that they made bricks. The father paid the rent, wages, rates and taxes, and the clerk who kept the one single book. In his opinion the business was the father's. He did not believe that the sons made any such payments to the defendant as they alleged. In his opinion the sons' firm was simply a blind or means to avoid the operation of the section. Further, in his opinion, the contract of June, 1900, was the father's, and he came within the meaning and mischief of the section. The defendant was not only concerned in the contract, but was the actual contractor, and he was therefore disqualified from remaining a member of the council. He wished to say that his experience showed that there were upon local boards far too many of this class of men—builders and persons who were likely to be interested in work required to be done for the local body. They were tempted to enter into contracts with which they ought to have nothing to do. He therefore made a declaration that the defendant was no longer entitled to sit as a member of the council.

LONDON COUNTY COUNCIL.

The Steps of St. Martin's—Land Registry Office—Electric Traction—Lighting the Embankment—County Hall—Housing—New Workhouse at Grove Park.

AT last week's meeting of the Council the Improvements Committee brought up a further report with reference to the proposed widening of St. Martin's Place by the alteration of the steps in front of St. Martin's Church. When the matter was before the Council on October 23rd on the recommendation that a contribution should be given towards the improvement, it was referred back to the Committee with instructions to take expert opinion as to the architectural effect of the proposed alteration. The opinion of the Royal Institute of British Architects was accordingly taken, and they reported that the alterations would be detrimental to the appearance of the west front of the church. If an improvement was urgently required they suggested certain modifications, and the Committee now recommended the Council to make a contribution of £270, one-third of the cost of the reconstruction of the steps in front of the church in such a way as to increase the width of the footway on the eastern side of St. Martin's Place to about 9ft., on condition that the council of the City of Westminster should agree to retain the platform on the steps on the southern side of the church, this being considered the least objectionable method of providing for a widening of the thoroughfare at this point. The Committee did not feel themselves able to advise the Council to arrange for the removal of the cast-iron railings from the top of the steps, as suggested by the Royal Institute. Mr. Shaw-Lefevre pointed out that the architects reported that the alteration would seriously affect the architectural effect of the church, and that nothing short of actual necessity could justify the removal of the landing or platform. They also stated that, should the widening of the footway ever become necessary, they had no doubt that the suggested setting back of the western steps was the least objectionable means of effecting the purpose, but they strongly recommended that the landing on the south side should be retained. That was the scheme adopted by the Committee, but in his opinion it was still objectionable and would interfere with the architectural features of the church. He thought that, as there was a strong professional feeling against the alteration, it would be better for the Council to take no part in it, and moved as an amendment that, in view of the report of the Royal Institute of British Architects, the Council was not prepared to take the responsibility of sanctioning the alteration by contributing any part of the cost. The Hon. W. Peel, M.P., said he would be no party to the mutilation of this beautiful church. It was wholly unnecessary for the Council to assist in damaging the church for the sake of merely adding 2ft. 6in. to the footway. When they asked the opinion of a body like the Royal Institute they should be led by its report. Mr Burns, M.P., was not prepared to help to make the Council a zereba behind which the Westminster Council could shelter itself from the artistic and æsthetic views which London architects would undoubtedly bring to bear upon it for tampering with this church. He suggested that one of the wealthy parishioners, such as Mr. Astor, should give the vicar of St. Martin's £10,000 with which to engage a competent architect under whose guidance they could underpin the whole church, including the portico, put it on a sliding gantry, remove it 40ft. back, and give it an alignment with Duncannon Street. In that way alone could the widening of St. Martin's Place be carried out without injuring the church. He asked the Council to preserve itself from a suggested act

of vandalism.—The amendment was carried by a large majority.

Mr. John Burns, M.P., asked whether it was true that the Government proposed to erect the Land Registry Office in Lincoln's Inn Fields 80ft. high, and projecting 12ft. in advance of the other buildings. Mr. Goddard Clarke said that was so. The Building Act Committee had sent a letter to the Office of Works, and a reply had been received that afternoon. It stated that the building was to be constructed in accordance with the expressed views of certain authorities, but Mr. Akers-Douglas shared to a great extent the views of the Council and would cause a further communication to be addressed to the Council on the subject. Mr. Radford asked whether it was not true that the Act authorising the construction of the building expressly exempted the structure from the operation of the London Building Act. Mr. Goddard Clarke said that was so.

Upon the recommendation of the Highways Committee, the Council approved the system of electrical traction devised by Dr. Kennedy for the tramways between Westminster and Tooting, Kennington Park Road and Blackfriars, and St. George's Circus and Waterloo Road. Mr. Benn, chairman of the committee, said that the cost was estimated at £15,000 a mile single track, and £30,000 double track.

The Council accepted the tender of the Gilbert Arc-Lamp Company for the supply of the arc lamps to be used for the lighting of the Embankment and Westminster Bridge.

The Special Committee on New Offices recommended the Council to pass the following resolution:—"That in the opinion of the Council it is not expedient that a site on the crescent island to be formed in connection with the Holborn to the Strand improvement should be reserved for the erection of new offices for the Council." Mr. Shaw-Lefevre moved the adoption of the recommendation, and pointed out that the Committee had arrived at their conclusion chiefly on the score of the cost of the site. If the residue of the crescent island after providing for the reinstatements were utilised for a new county hall, the cost of the site would be £2,400,000. That figure was four or five times as much as the estimated cost of the Westminster Aquarium site or a site on the Westminster improvement area. Besides, a site in the Strand was further removed from the public departments and the Houses of Parliament than would probably be found desirable. Mr. Goulding, M.P., moved to add to the recommendation, "but that the Committee bring up a report without delay as to what site they do recommend for the erection of a county hall and offices." Mr. Horniman seconded the amendment, which was adopted. The recommendation as amended was carried unanimously.

Mr. Waterlow presented the report of the Housing of the Working Classes Committee, which showed a nett deficiency of £1,157 on the year's working. There was a surplus of £505 on the Council's own buildings, and a loss of £1,663 in regard to those which they had been compelled to erect on the sites secured by the Metropolitan Board of Works. This deficiency was less than last year, when the total was £2,392. There was a serious loss on their cottages and small houses in South-East London. There was a deficiency on the Boundary Street Central Laundry of £1,074; indeed, it had been a terrible failure. The Council now had open fifty-four dwellings, with a provision for 10,686 persons, at a cost of £653,000. They also had nearly ready, at a cost of £303,000, dwellings to accommodate 5,666 persons. Other plans prepared would accommodate 14,853 persons, at a cost of £863 513. Altogether they would have accommodation for about 30,000 people, at a cost of £1,819,000. The report was received and adopted.

Upon the recommendation of the Finance Committee it was agreed to lend the Guardians of the Greenwich Union £150,000 on the annuity system for the erection, fitting, and furnishing of a new workhouse at Grove Park.

The Society for the Encouragement of the Fine Arts held its annual meeting last Friday. Messrs. Charles Keyser, Alfred Gilbert, G. C. Haité, and Dr. J. S. Phene were elected vice-presidents.

Keystones.

The Interior of Woburn Parish Church, Buckinghamshire, which dates from about 1200 A.D., has been extensively restored.

The Parish Church of Old Basford, Nottingham, was completely destroyed by fire last week. The church was an ancient one, and was undergoing restoration.

Hampton Court Palace is to be given another attraction by the re-erection of thirteen wrought-iron gates which formerly stood at intervals between the Palace private gardens and the river. The gates, which are fine specimens of wrought-iron work, have been exhibited in museums throughout the country.

Carpenters' Technical Schools.—Lord Reay, G.C.S.I., Chairman of the late School Board and President of University College, has consented to distribute the prizes won by students of the Carpenters' Technical Schools at Great Titchfield Street, and by students in the Company's classes at King's College, &c., on Thursday next, the 6th inst.

The Death is announced of Mr. Henry Currey at the age of 80 years. He was an Associate of the Institute of Civil Engineers, a Fellow of the Surveyors' Institution, and Fellow of the Royal Institute of British Architects. He was the architect of St. Thomas's Hospital, on the Albert Embankment, and the hotel at London Bridge railway terminus.

Glover's Island, which lies in the Thames at the foot of Richmond Hill, has been purchased by Mr. Max Waechter, Deputy-Lieutenant of the county of Surrey, and has been presented by him as a free gift to the Corporation of Richmond, subject to the present unsightly buildings being pulled down, and no others erected except a suitable keeper's lodge, to the banks being maintained, and to the island being planted.

Housing of the Working Classes.—The council of the Sanitary Institute have addressed a letter to the members of her Majesty's Government, in which they express a hope that the Government will find time to bring forward in Parliament without delay a satisfactory measure of reform on the lines indicated in the resolutions passed at a conference on the housing of the working classes convened by the Institute and reported on page 11 of our issue for August 8th.

A new Church Room at Petersham, has been erected on the Butehouse Estate, immediately below the Thompson Walk, in Richmond Park. On the estate a new church is also being built, which will be after the style of the first Canterbury Cathedral. The old parish church, which is of exceptional interest owing to its monuments of Vancouver and others, will still be retained and used. The public generally will derive benefit from these gifts, as it was proposed to turn the land into a building estate, which would have completely spoilt the view from Richmond Hill.

The Edinburgh Architectural Association held its inaugural meeting last week. Mr. Henry F. Kerr, A.R.I.B.A., gave a paper on "A Visit to Melrose Abbey," illustrated by lime-light views. He outlined the history of the Abbey from its foundation by David I. in 1136, when a colony of Cistercian monks was established on the silver banks of the Tweed from Rievaulx, in Yorkshire. Like all the Border abbeys and churches, its buildings suffered many devastations, most notably by Edward I., Edward II., Richard II., and the Earl of Hertford. But, though damaged and pillaged by the Kings of England, it was honoured and fostered by the Kings of Scotland. Founded by David I., gifted with fines and forfeited lands by Robert the Bruce, and further enriched by Alexander II., it reached the zenith of its fame in the thirteenth century. Mr. Kerr then described in detail the existing remains, and referred to its old-world associations, the wondrous rise to prosperity and worldly greatness, the terrible retribution of ruin for laxity and evil, all telling their own tale.

The Ancient Tower of Clare Parish Church, Suffolk, has been re-opened after restoration.

A new Hall and Recreation Rooms at Cambuslang is to be erected at a cost of £1,400. The architect is Mr. A. Lindsay-Miller, of Glasgow.

Devon and Exeter Architectural Society.—A paper on "The Architecture and Sculpture of Greece" was read before this society last week by Mr. C. J. Tait, A.R.I.B.A. (president).

94 Park Street, N.W.—In the paragraph accompanying the illustration of this shop front on page 329 of last week's issue the word "this" was erroneously printed for "tiles," in the sentence "and that this should be used below the shop front."

A Shakespearean Find.—In laying drains on the site of Shakespeare's last residence, at New Place, Stratford-on-Avon, some workmen a day or two ago came upon the old foundations. A wall 3ft. 6in. thick, and a very solidly-built well were the chief traces of the "Great House," as it was called, which dates from the reign of Henry VII.

The practice of the late Charles Henry Driver, F.R.I.B.A., A.I.C.E., of 17 Victoria Street, Westminster, is to be carried on by his eldest son, Mr. C. H. Driver, in conjunction with Mr. Stanley Barrett, architect, under the style or firm of Barrett and Driver. The practice will be transferred to Mr. Barrett's office, 53 Blomfield Road, Maida Vale, W.

A new Church at New Brighton, Liverpool has been opened. The building is of brick, and provides accommodation for 400 persons. The cost has been £4,600. The premises consecrated form only a portion of the complete design, but are considered to be sufficient for present needs. When the front portion of the church is erected additional accommodation will be provided for 500 persons.

Berths Wanted for C.I.V.'s.—The "Daily Express" offers to act as agent between unemployed C.I.V.'s and employers, and applications have been received from one who has had six years' experience in the office of an architect and surveyor, while another would like a situation as assistant to an architect. Any of our readers having such openings should communicate with the "Daily Express," Tudor Street, E.C.

Cardiff By-laws.—At a meeting of the public works committee of the Cardiff Corporation, amongst the plans brought forward were those of the proposed new Seamen's Hospital, to be erected near the shore at the docks end of the town. Mr. E. W. M. Corbett, the architect, sent a letter with the plans, and drew attention to the fact that in the plans he had designed there were several things that were breaches of the by-laws, but he hoped that the committee would consider all the circumstances, and allow them to pass. It was held that the by-laws could not be altered by the committee, although the opinion was expressed that the by-laws pressed very hard in many cases.

The British Archæological Association held its second meeting of the session on November 21st, Mr. C. H. Compton, in the chair. The hon. editorial secretary (Rev. H. J. D. Astley) read an interesting résumé of the proceedings of the recent Congress at Leicester. Mr. Astley also read some "Notes on the Mound Dwellings of Auchingaish," by Mr. W. A. Donnelly. The locality of these mounds is the north-west corner of Dumbartonshire, in the picturesque and mountainous belt which runs between Loch Lomond and the Gareloch on the Auchingaish, one of the highest tributaries of the Fruin Water. The mounds are all more or less circular in shape, standing about 5ft. high at the highest, but more often not more than 3ft. 6in. above the level of the natural hillside, and present a remarkable similarity to the homes of the beaver. Excavations made in some of them disclosed the existence of boulder-built walls, rude and strong, each mound having a narrow doorway, with the jambs invariably in their original position, but the lintels displaced, and in two instances lying on the doorstep. The general characteristics of these mounds suggest the idea of their having been the homes of an early pigmy race.

COMPLETE LIST OF CONTRACTS OPEN.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
	BUILDING.		
Dec. 7	Holyhead—Post Office	H.M. Office of Works	Office of Works, Storey's Gate, S.W.
" 7	Pembroke Dock—Barracks	War Department	Royal Engineer Office, London Road, Pembroke Dock.
" 7	Hayes, Middlesex—Groundwork	British Electric Transformer Manufacturing Company, Limited	Company's Office, Woodfield Road, Harrow Road, W.
" 7	Workington—School	Rev. Father Hutchinson, O.S.B.	J. Howes, 23 Curwen Street, Workington.
" 8	Caerphilly, Wales—Alterations	Standing Joint Committee	Clerk, County Council Offices, Westgate Street, Cardiff.
" 8	Cilfynydd, Wales—Police Station	Standing Joint Committee	Clerk, County Council Offices, Westgate Street, Cardiff.
" 8	Merthyr, Wales—Alterations	Standing Joint Committee	Clerk, County Council Offices, Westgate Street, Cardiff.
" 8	Lytham, Lancs.—Ward	Cottage Hospital Committee	Haywood and Harrison, Architects, Lytham.
" 8	Dundee—Electric-lighting Station	Gas Commissioners	W. Alexander, City Architect, Dundee.
" 8	Inverarity, near Forfar.—Cottage		D. Ross, Road Surveyor, Kirriemuir.
" 8	Colchester—Barracks	War Department	Royal Engineer Office, Colchester.
" 8	Cleator Moor, Cumberland—Bank Premises	Bank of Whitehaven, Limited.	A. Huddart, 22 Lowther Street, Whitehaven.
" 8	Walker, Northumberland—Buildings	Urban District Council	Handcock and Dykes, 1 Victoria Street, London, S.W.
" 8	Warrington—Technical Institute		W. and S. Owen, Architects, Warrington.
" 10	Chatham—Villa		E. J. Hammond, High Street, New Brompton.
" 10	Eastbourne—Convenience	Town Council	R. M. Gloyne, Town Hall, Eastbourne.
" 10	Nottingham—House	Corporation	W. B. Starr, 12 St. Petersgate, Nottingham.
" 10	Sunderland—Electric-lighting Station	Corporation	F. M. Bowey, Town Hall, Sunderland.
" 10	Aberdeen—Asylum	Lunacy Board	A. M. Mackenzie, 343 Union Street, Aberdeen.
" 10	Canterbury—Dispensary	Dispensary Committee	A. Bromley, Architect, Cathedral Yard, Canterbury.
" 10	Denbigh—School Buildings		A. Foulkes-Roberts, Clerk, Denbigh.
" 10	Glasgow—Shed	Trustees of Clyde Navigation	W. M. Alston, 16 Robertson Street, Glasgow.
" 10	Basford, Notts—Entrance Lodge	Rural District Council	W. V. Betts, Radford Road, Old Basford.
" 10	Romford—School	School Board	W. Smith, 24 North Street, Romford.
" 11	Southampton—Custom House	H.M. Office of Works	Collector of Customs, Custom House, Southampton.
" 11	Barking, Essex—School	School Board	C. J. Dawson, Architect, Barking.
" 11	Barking, Essex—Pulling Down	Urban District Council	Surveyor, Public Offices, Barking, Essex.
" 12	Wolverhampton—Dwellings	Housing of the Working Classes Committee	J. W. Bradley, Town Hall, Wolverhampton.
" 12	Maestelo—Church		D. Jenkins, Architect, Llandilo.
" 12	Whitehead, Ireland—Houses		A. E. Wilson, 22 Waring Street, Belfast.
" 13	Greenwich—Buildings	Guardians	T. Dinniddy, 12 Croom's Hill, Greenwich.
" 15	Evesham—Cottage Homes	Union	E. Wadams, Union Offices, Evesham.
" 17	Lancaster—Shops	Co-operative Society	Austin and Paley, Architects, Castle Park, Lancaster.
" 20	Skenfrith, Abergavenny—Dado	School Board	J. H. Farquhar, Clerk, Abergavenny.
" 21	Belfast—Abattoir	Market Committee	City Surveyor, Belfast.
	ENGINEERING.		
Dec. 7	Portsmouth—Feeders, &c.	Corporation	E. Rotter, Town Hall, Portsmouth.
" 7	Portsmouth—Electrical Equipment	Corporation	E. Rotter, Town Hall, Portsmouth,
" 8	Padiham—Iron Roof	Urban District Council	J. Gregson, Council Chambers, Padiham.
" 10	Ilford—Pumping Station	Urban District Council	Taylor, Sons, and Crimp, 27 Great George Street, London, S.W
" 10	Preston—Bridge	Lancs. County Council	County Bridgemaster, Preston.
" 10	Bexhill—Electrical Plant	Urban District Council	A. H. Preece, 13 Queen Anne's Gate, Westminster, S.W.
" 10	Sunderland—Caisson	River Wear Commissioner	H. H. Wake, Engineer's Office, Commissioner's Quay, Sunderland.
" 11	Poole—Engine	Waterworks Company	H. F. J. Barnes, Secretary, Poole.
" 13	Gravesend—Promenade Extension	Town Council	Borough Surveyor, Town Hall, Gravesend.
" 13	Pentre, Glamorgan—Well	Rhondda Urban District Council	W. W. Hood, Consulting Engineer, Llwynypia.
" 13	Withington, Lancs.—Boilers	Urban District Council	A. H. Mountain, Town Hall, Withington, near Manchester.
" 13	Brighton—Tramroads	Town Council	F. J. O. May, Town Hall, Brighton.
" 17	Leigh, Lancs.—Purifiers	Gas Committee	J. Foster, Gasworks, Leigh, Lancs.
" 18	Headington, Oxon.—Bridge	Rural District Council	L. Turner, Hartfield Cottage, New Headington, Oxon.
" 22	Walsall—Retort Benches	Gas Committee	B. W. Smith, Pleck Gasworks, Walsall.
" 29	Winwick, Lancs.—Wiring	Asylums Board	J. S. Muspratt, County Offices, Preston.
" 31	Llandudno, Wales—Promenade Works	Urban District Council	E. P. Stephenson, Church Walks, Llandudno.
" 31	London, N.W.—Plant	Hendon Urban District Council	R. Hammond, 64 Victoria Street, London, S.W.
Jan. 2	Christiania—Transmission of Electric Power	Stavanger Corporation	E. Berentsen, British Vice Consul, Stavanger.
" 2	Tooting Bec—Wiring	Metropolitan Asylums Board	Board Offices, Embankment, E.C.
Feb. 28	Wellington, New Zealand—Engines	Corporation	J. Duthie & Co., Limited, 23 Lime Street, London, E.C.
April 10	Rosario—Harbour Works	Argentine Government	Commercial Department, Foreign Office, S.W.
	IRON AND STEEL.		
Dec. 7	Margate—Materials	Corporation	Manager, Waterworks Office, Municipal Buildings, Margate
" 10	London, S.W.—Rails		Agent-General for Victoria. 15 Victoria Street, S.W.
" 10	Leamington—Pipes	Corporation	W. de Normanville, Town Hall, Leamington Spa.
" 12	Ilkley—Steel Joists	Urban District Council	F. Hall, 31 Parish Ghyll Road, Ilkley.
" 17	Wimbledon—Sewer Ventilating	Urban District Council	C. H. Cooper, Engineer and Surveyor, Wimbledon.
" 31	Llandudno—Pipes	Urban District Council	E. P. Stephenson, Church Walks, Llandudno.
	ROADS AND CARTAGE.		
Dec. 7	Cross Hills, Yorks—Roads		F. W. Petty, Architect, Woodridge.
" 8	Sandal Magna, Wakefield—Street Works	Urban District Council	F. Massie, Tetley House, Wakefield.
" 10	Royton, near Oldham—Granite Setts	Urban District Council	T. Bleasdale, Town Hall, Royton, near Oldham.
" 11	Dover—Road Widening	Town Council	H. E. Stilgoe, Town Hall, Dover.
" 11	Willesden—Road Making	District Council	Engineer, Public Offices, Dyne Road, Kilburn, N.W.
" 11	Amble—Making-up	Urban District Council	W. Gibson, 31 Queen Street, Amble.
" 13	London, N.E.—Making Up	Hackney Borough Council	Engineer, Town Hall, Hackney.
" 19	Horsham, Sussex—Materials	Roads and Bridges Committee	W. B. Purser, 31 Bedford Road, Horsham.
" 21	Chartham, near Canterbury—Making Up	Asylum Committee	W. J. Jennings, 4 St. Margaret's Street, Canterbury.
" 30	Nottingham—Carting	Corporation	A. Brown, Guildhall, Nottingham.
	SANITARY.		
Dec. 8	Dalry, N.B.—Drainage Works	District Committee	J. Barr, 22 West George Street, Glasgow.
" 10	Ilford—Sewers	Urban District Council	Taylor, Sons, and Crimp, 27 Great George Street, London, S.W.
" 11	Dorking—Drainage Works, &c.	Rural District Council	W. Rapley, junr., Clovelly, Tower Hill, Dorking.
" 11	Barking, Essex—Sewerage Works	District Council	C. F. Dawson, Surveyor, Barking, Essex.
" 11	Bedlington—Sewerage Works	Urban District Council	Cuthbert Brown, Bedlington.
" 12	Kinning Park, N.B.—Scavenging	Commissioners	W. and W. L. Lucas, 140 Hope Street, Glasgow.
" 13	Twickenham—Sewers	Urban District Council	F. W. Pearce, Town Hall, Twickenham.
" 13	Withington, Lancs.—Sewage Outfall Works	Urban District Council	Clerk, Town Hall, Withington, Lancs.
" 15	Horwich, Lancs.—Sewer Extension	Urban District Council	Surveyor, Public Hall, Horwich.

COMPETITIONS OPEN.

DATE OF DELIVERY.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	BY WHOM ADVERTISED.
Dec. 14	Swansea—Harbour Offices	£100, £50	T. Strick, Harbour Offices, Swansea.
" 31	Malling, Kent—Steam and Hot Water Scheme	£25	J. F. Allison, West Malling, Kent.
" 31	South Shields—Municipal Buildings	£200, £100, £50	J. M. Hayton, Town Clerk, Court Buildings, South Shields.
Jan. 18	Hindley—Public Offices	£50, £25, £10	A. Holden, Surveyor, Hindley.
Feb. 14	Ballarat, Australia—Statue		J. W. Nedwell, Hon. Sec. Soldiers' Statue Fund, Ballarat, Australia.
March 25	Basford—Sewerage Scheme		C. J. Spencer, Clerk, Public Offices, Basford.

Trade and Craft.

Lifts.

One of the most notable features of the nineteenth century is the universal application of the principles of mechanics for saving labour, reducing cost, and accelerating production. The development of engineering has been the keynote of all manufacture and in each of the numerous branches a marvellous change has been effected. Not the least is the improvement which has been, and is still being, made in the design and construction of lifting machinery of all kinds, an improvement which has resulted in the production of remarkably efficient appliances. In the front rank of modern manufacturers of lifts and hoisting machinery Messrs. R. Waygood and Company, Limited, of Falmouth Road, Great Dover Street, London, S.E., occupy a prominent position. To keep pace with the increasing demand for lifts and cranes of all sorts they have found it necessary to revise their catalogue, which is now divided into three parts, dealing respectively with hand lifts and cranes, lifts and hoists driven by steam and belt power, and hydraulic lifts and machinery, especially passenger lifts. The hand-power lifts include varieties for use in warehouses and manufactories, for passengers, food, coal, and a number of other purposes, while the belt-driven lifts are specially suitable for factories and works where engine power is used for driving the machines used in the various operations of manufacture. Hydraulic lifts are being increasingly employed. They are of two kinds—direct-acting and suspended, the former consisting of a cage borne directly on the top of a ram which slightly exceeds in length the distance the lift has to rise, the latter having a ram of shorter stroke and a multiplying cylinder round which pass the wire ropes suspending the cage. Direct-acting lifts are essentially the safest, the strain on the machinery being always in compression, but with suspended lifts there is a saving of expense when the height of travel is considerable; moreover, in some cases it would be inexpedient to excavate a deep well to receive the long ram cylinder. Messrs. Waygood have devoted considerable time and money to the design of a safety apparatus for lifts, and they have achieved success. During the Liverpool Exhibition of 1887 a test was made with their apparatus, twelve men getting into a cage suspended by a hemp rope; at a given signal the rope was cut, but the grips immediately came into action, the cage having fallen 1¼in. only. The cage is now suspended from four steel ropes, and it has been found, after careful experiment, that the gear is certain to act if any of the ropes fail; as an extra safeguard a fifth rope is provided which bears no weight unless *all* the other ropes part. It is impossible here to notice the many other improvements which Messrs. Waygood have introduced, but special attention should be given to their electric lifts, which can be made to work more economically than any others. For those requiring any kind of lifting machinery we cannot do better than refer them to this firm.

New Companies.

Bright Buildings, Limited.

This company was registered on November 10th with a capital of £4,800 in £100 shares to acquire certain land fronting to Hill Street and John Bright Street, Birmingham, and to carry on the business of builders, contractors, decorators, builders' merchants, architects, surveyors, agents, &c. The first directors (to number not less than two nor more than five) are F. Taylor, A. J. Bolus and G. Kenwick. Registered office: 33 New Hall Street, Birmingham.

Imperial Electrical Supplies Company, Limited.

This company was registered on November 5th with a capital of £50,000 in £1 shares to adopt and carry into effect an agreement made by this company with G. Bargate, G. S. Hertslet, H. W. Knott, E. P. Harvey and J. L. Bell; and, generally, to carry on in all its branches the businesses of electrical and general engineers. The first directors (of whom there shall be not less than two nor more than seven) are G. Bargate, G. S. Hertslet, H. W. Knott and E. P. Harvey.

Horsehay Company, Limited.

This company was registered on November 6th with a capital of £100,000 in £10 shares to adopt and carry into effect an agreement made by this company with H. C. and A. Simpson for the acquisition of the business of engineers, &c., as carried on at Horsehay Works, Horsehay, Salop, by the Horsehay Company, and, generally, to carry on in all or any of their branches the businesses of iron and steel roof, girder, and bridge makers, engineers, and metal founders, smelters, cable manufacturers, hardware dealers, &c. The first directors (of whom there shall be not less than three nor more than seven) are H. C. Simpson (chairman), A. Simpson, H. R. G. Bayley and J. Simpson, jun.

Electric Lighting Boards (British Manufacturing Company), Limited.

This company was registered on November 8th with a capital of £75,000 in £1 shares to adopt and carry into effect an agreement made by this company with the Electric Lighting Boards, Limited, to acquire the benefit of certain existing inventions relating to luminous advertisements and electric-lighting boards, and to manufacture and deal in and with any articles used in connection with the same. The first directors (of whom there shall be not less than three nor more than seven) are to be elected by the signatories—W. G. Gadsden, A. Tibbits, H. L. Pring, W. Brittan, J. W. Strickland, E. Newroy and A. H. Lister.

E. R. Saile and Co., Limited.

This company was registered on November 14th with a capital of £300 in £1 shares to carry on at Kettering or elsewhere the business of shop, bar and office fitters, counter makers, decorators, sign makers, electricians, gas fitters, ironfounders, &c.

French Electric Lighting Boards, Limited.

This company was registered on November 15th with a capital of £4,000 in £1 shares to acquire from E. O. Sachs the benefit of certain existing inventions relating to electric lighting boards for luminous advertisements or otherwise. The first directors (to number not less than two nor more than five) are to be appointed by the subscribers. Registered office: 7 Pall Mall, S.W.

Deans, Limited.

This company was registered on November 9th with a capital of £500 in £1 shares to acquire the business carried on at Alsager, Cheshire, by Dean Brothers, and to carry on the business of timber and wood cutters, splitters, and dealers, sawyers, firewood manufacturers and merchants, &c. The first directors (to number not less than two nor more than five) are to be appointed by the subscribers.

Perfect Light Company, Limited.

This company was registered on November 13th with a capital of £25,000 in £1 shares to adopt an agreement with the Scott, Snell Phillips Syndicate, Limited, and M. Lachman, and to carry on the business of electricians, manufacturers of electrical and lighting apparatus and lamps of all kinds, &c. The first directors (to number not less than three nor more than five) are C. S. Snell, C. W. Phillips and M. Lachman.

Armstrong and Co. (Birmingham), Limited.

This company was registered on November 14th with a capital of £5,000 in £1 shares to acquire the business carried on by H. R. Hill, J. H. Rogers and R. M. Hughes at Peel Buildings, Lower Temple Street, Birmingham, as Armstrong and Co., and to carry on the business of builders' merchants, brick, tile and pipe manufacturers, &c. The first directors (to number not less than three nor more than five) are H. R. Hill, R. M. Hughes and J. H. Rogers. Registered office: 128 Colmore Row, Birmingham.

Della Robbia Pottery and Marble Co., Ltd.

This company was registered on November 13th with a capital of £3,500 in £1 shares (1,750 preference) to adopt an agreement with the Della Robbia Pottery, Limited, and its liquidator, and an agreement with H. S. Rathbone and E. de Caluwe, and to carry on, at Birkenhead, Liverpool, and elsewhere, the business of pottery and ornamental marble manufacturers, contractors for decorative works for architectural, ecclesiastical, domestic and other purposes, &c. Harold S. Rathbone and Emile de Caluwe are the managers.

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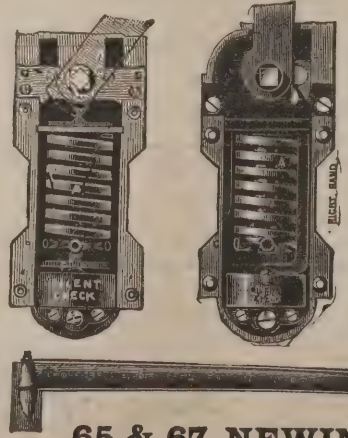
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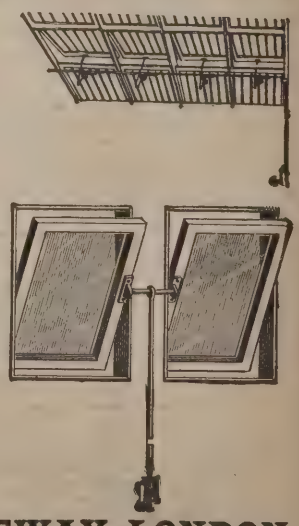
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CURRENT PRICES.

FORAGE.

		£	s.	d.	£	s.	d.
Hay, best	per load	4	0	0	4	7	6
Sainfoin mixture	do.	3	10	0	4	10	0
Clover, best	do.	4	5	0	5	0	0
Beans	per qr.	1	9	0	—		
Straw	per load	1	8	0	1	18	0

OILS AND PAINTS.

Castor Oil, French	per cwt.	1	10	0	1	11	6
Colza Oil, English	do.	1	11	9	1	12	0
Copperas	per ton	2	0	0	—		
Lard Oil	per cwt.	1	19	0	—		
Lead, white, ground, carbonate	do.	1	4	10	—		
Do. red	do.	1	0	4½	—		
Linseed Oil, barrels	do.	1	11	3	—		
Petroleum, American	per gal.	0	0	5⅞	0	0	6½
Do. Russian	do.	0	0	5⅛	0	0	5⅝
Pitch	per barrel	0	8	6	—		
Shellac, orange	per cwt.	3	1	0	—		
Soda crystals	per ton	3	2	6	3	5	0
Tallow, Home Melt	per cwt.	1	5	6	1	6	0
Tar, Stockholm	per barrel	1	8	6	—		
Turpentine	per cwt.	1	10	6	—		

METALS.

Copper, sheet, strong	per ton	86	0	0	—		
Iron, Staffs., bar	do.	8	0	0	10	10	0
Do Galvanised Corrugated sheet	do.	12	7	6	12	10	0
Lead, pig, Spanish	do.	17	0	0	—		
Do. do. English common brands	do.	17	5	0	17	7	6
Do. sheet, English, 3lb. per sq. ft. and upwards	do.	21	0	0	22	0	0
Do. pipe	do.	23	0	0	—		
Nails, cut clasp, 3in. to 6in.	do.	12	0	0	13	0	0
Do. floor brads	do.	11	15	0	12	15	0
Steel, Staffs., Girders and Angles	do.	8	0	0	8	5	0
Do. Mild Bars	do.	8	5	0	8	15	0
Tin, Foreign	do.	124	10	0	125	0	0
Do. English ingots	do.	128	0	0	—		
Zinc, sheets, Silesian	do.	22	10	0	—		
Do. do. Vieille Montaigne	do.	23	2	6	—		
Do. Spelter	do.	19	0	0	—		

TIMBER.

HARD WOODS

Ash, Quebec	per load	3	17	6	4	10	0
Birch, Quebec	do.	3	12	6	3	17	6
Box, Turkey	per ton	7	0	0	15	0	0
Cedar, 1in., Cuba	per ft. sup.	0	0	3	0	0	3½
Do. Honduras	do.	0	0	3⅜	—		
Do. Tobasco	do.	0	0	3⅜	—		
Elm, Quebec	per load	0	12	6	5	10	0
Mahogany, Average Price for Cargo, Honduras	per ft. sup.	0	0	4 9/16	—		
Do. African	do.	0	0	3⅜	—		
Do. St. Domingo	do.	0	0	6⅜	—		
Do. Tobasco	do.	0	0	5¼	—		
Do. Cuba	do.	0	0	3¾	—		
Oak, Dantzic and Memel	per load	3	15	0	5	7	6
Do. Quebec	do.	4	12	6	5	0	0
Teak, Rangoon, planks	do.	8	5	0	13	10	0
Wainscot, Riga (Baulk)	do.	3	15	0	5	15	0
Do. Odessa Crown	do.	3	15	0	5	15	0
Walnut, American	per cub. ft.	0	3	1	—		

SOFT WOODS.

		£	s.	d.	£	s.	d.
Fir, Dantzic and Memel	per load	3	0	0	4	0	0
Pine, Quebec Yellow	do.	4	7	6	6	0	0
Do. Pitch	do.	2	13	0	2	19	0
Laths, log, Dantzic	per fath.	4	10	0	5	10	0
Do. Petersburg	per bundle	0	0	9	0	0	10½
Deals, Archangel 2nd & 1st	per P. Std.	8	15	0	12	15	0
Do. do. 4th & 3rd	do.	—			—		
Do. do. unsorted	do.	—			—		
Do. Riga	do.	6	15	0	8	10	0
Do. Petersburg 1st Yellow	do.	14	15	0	15	0	0
Do. do. 2nd „	do.	8	15	0	14	15	0
Do. do. Unsorted „	do.	5	5	0	13	0	0
Do. do. White	do.	9	10	0	11	5	0
Do. Swedish	do.	8	10	0	13	0	0
Do. White Sea	do.	11	15	0	18	0	0
Do. Quebec Pine, 1st	do.	19	5	0	—		
Do. do. 2nd	do.	18	15	0	—		
Do. do. 3rd &c.	do.	9	0	0	9	15	0
Do. Canadian Spruce, 1st	do.	10	10	0	11	15	0
Do. do. 3rd & 2nd	do.	8	15	0	9	0	0
Do. New Brunswick	do.	7	5	0	8	0	0
Battens, all kinds	do.	8	5	0	10	10	0
Flooring Boards, 1in. prepared, 1st	per square	0	11	9	0	12	6
Do. 2nd	do.	0	11	6	0	12	6
Do. 3rd &c.	do.	0	10	3	0	10	3

TENDERS.

Information from accredited sources should be sent to "The Editor." Results of tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the Work.

BROMSGROVE.—For the erection of isolation hospital at Hill Top, Bromsgrove, for the Bromsgrove, Droitwitch, and Redditch Joint Boards. Mr. Henry T. Hare, London, and Herbert R. Lloyd, Birmingham, joint architects:—

Barnsley & Son	£12,388 0 0	J. Dallow	£11,195 0 0
C. Bryant	12,245 0 0	Dorse & Co.	11,125 0 0
T. Rowbotham	12,120 0 0	W. Hopkins	10,800 0 0
Hurley & Son	11,963 0 0	W. & J. Webb	10,559 0 0
Sapcote & Son	11,837 0 0	W. Bishop	10,445 0 0
Huino & Son	11,600 0 0	J. Tilt	10,400 0 0
D. Panter	11,506 12 0	Harvey Gibbs	10,350 0 0
Guest & Son	11,500 0 0	J. & A. Brazier, Broomsgrove *	10,080 0 0
Moffat & Son	11,370 0 0	Gowing & Ingram	9,993 0 0
T. Broad	11,825 0 0	* Accepted.	
Smith & Pitts	11,277 0 0		

CHADWELL HEATH.—For the erection of villa residence in Whalebone Grove, for Mr. A. Tatham. Mr. J. M. H. Gladwell, architect, 34 Lawrence Road, Bow:—

A. Webb	£1,595	J. R. Holliday	£1,275
G. R. Reid	1,500	Finegan & Co. *	1,148
G. W. Death	1,350	* Accepted.	

DEVONPORT.—For the erection of electricity works, buildings, &c., East Stonehouse, exclusive of chimney and flues. Mr. Charles Furniss, Borough Electrical Engineer, Devonport. Quantities by Mr. H. Gray Robins, 55-56 Chancery Lane, London:—

May	£7,969	Wakeham Bros.	£5,906
Hortop	7,391	Blake	5,831
Skinner	6,821	Lapthorn	5,709
Hatcham & Co.	6,710	A. N. Coles, Plymouth	5,433
R. H. B. Heal	6,140	* Accepted.	

DONCASTER.—For the execution of private street works, Church Street, &c., Butcher Street, and Cross Butcher Street, Thurnscoe, for the Rural District Council. Mr. J. R. Dodds, Civil Engineer, 19 Baxter Gate, Doncaster:—

W. Johnson	£2,633 0 0	B. Roberts, Retford*	£3,040 16 10
R. T. Hodgson	2,307 9 6	W. H. Cliffe	2,021 17 10
Jones Bros.	2,214 19 2	J. Holmes	1,823 0 0
W. Chapman	2,207 7 9	Yardley, Dransfield and Taylor†	904 6 7
F. Eyre	2,194 15 10		

* Accepted. † Church Street only.
[Engineer's estimate, £2,283 5s. 8d.]

DUNDALK.—For additions, &c., to old Grammar School buildings and conversion into free library. Mr. Wm. Beck, architect, Dundalk:—

McAdorey	£1,198 0 0	McGuinness, Dundalk*	£1,041 18 6
Wynne	1,193 0 0	* Accepted.	
Parks	1,171 16 10		

ILFORD, Essex.—For erection of Methodist Free Church, Ilford Lane, for the trustees. Mr. F. W. Dixon, architect, Trevelyan Buildings, Manchester. Quantities prepared by Mr. A. Goodchild, 81 Finsbury Pavement, London, E.C.:—

F. & E. Davey	£6,095	F. Willmott	£5,225
G. H. Hosking	5,827	Battley, Sons & Holness	5,167
Castle & Son	5,800	J. W. Jerram	5,123
G. Sharp	5,756	F. J. Coxhead	5,027
S. J. Scott	5,695	W. J. Maddison, Clarkson Street, Canning Town, E.*	4,926
Shelbourne & Co.	5,249	* Provisionally accepted.	

NEWTON ABBOT.—For new girls' school at Highweek, for the Highweek School Board. Messrs. J. W. Rowell & Sons, architects, Newton Abbot. Quantities by Mr. Vincent Cattermole Brown, of Paignton:—

W. Gibson	£2,840 0	H. Drew	£2,180 0
F. J. Stokes	2,524 0	R. F. Yeo	2,160 0
W. A. Goss	2,398 0	F. Stacey, Newton Abbot*	2,051 19
L. Bearne	2,315 0	* Accepted.	
Geo. Hicks	2,300 0		

RADLETT, Herts.—For proposed residence. Messrs. S. Doddimeade Edmunds, architect, St. Albans and London:—

J. Verdon	£1,900 0 0	Boff Bros.	£1,230 0 0
C. H. Taylor	1,372 14 8	G. Wiggs	1,140 0 0
W. King	1,310 0 0	* Accepted.	

SLIGO.—For the erection of chapel in the Asylum grounds for the Committee of Management of Sligo District Lunatic Asylum. Messrs. Sir Thomas Deane & Son, architects, 15 Ely Place, Dublin:—

J. & P. Good	£5,200	John Clarence	£4,600
Michael Gallagher	5,200	D. McLynn, Sligo*	4,275
		* Accepted.	

COMING EVENTS.

Wednesday, December 5.

BUILDERS' FOREMEN AND CLERKS OF WORKS' INSTITUTION.—Ordinary meeting at 8 p.m.

INSTITUTE OF SANITARY ENGINEERS.—Meetings of General Purposes and Finance Committee at 3.30 p.m., and Election Committee at 5 p.m.

GEOLOGICAL SOCIETY OF LONDON.—Meeting at 8 p.m.

SURVEYORS' INSTITUTION.—Meeting of Elections Committee at 4 p.m.

RUSKIN SOCIETY OF BIRMINGHAM.—The Very Rev. G. W. Kitchin, D.D., on "Ruskin in the Old Oxford Days," 8 p.m.

NORTHERN ARCHITECTURAL ASSOCIATION.—Council meeting and Students' Evening.

EDINBURGH ARCHITECTURAL SOCIETY.—Mr. Thomas Hume, F.I.S.E, on "Effect of Heat and Cold on Plumber's Work, and how to Prevent Damage Therefrom."

SOCIETY OF ARTS.—Prof. H. S. Hele-Shaw, LL.D., F.R.S., on "Road Traction," 8 p.m.

BRITISH ARCHÆOLOGICAL ASSOCIATION.—Mr. T. Cann Hughes, M.A., on "A Ramble in South Devon," 8 p.m.

ROYAL ARCHÆOLOGICAL INSTITUTE OF GREAT BRITAIN AND IRELAND.—Mr. P. M. Johnston on "Wall Paintings, &c, at Hardham Church, Sussex, and at St. Mary's, Guildford," 4 p.m.

Thursday, December 6.

CIVIL AND MECHANICAL ENGINEERS' SOCIETY.—Prof. R. H. Smith, Wh. Sc., A.M.I.C.E., M.I.M.E., on "Valve Gears and Valve Diagrams," 8 p.m.

SOCIETY OF ANTIQUARIES OF LONDON.—Meeting at 8.30 p.m.

CHEMICAL SOCIETY.—Meeting at 8 p.m.

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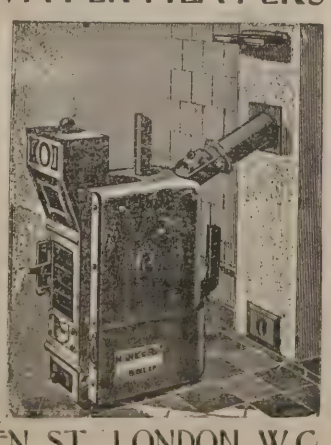
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Friday, December 7.

ARCHITECTURAL ASSOCIATION.—Mr. A. Wallace Rimington on "Colour in Architecture seen through an Artist's Glasses." 7.30 p.m.

GLASGOW AND WEST OF SCOTLAND TECHNICAL COLLEGE ARCHITECTURAL CRAFTSMEN'S SOCIETY.—Mr. Thomas S. Fraser on "Some Principles of Design," 8 p.m.

ARCHITECTURAL ASSOCIATION OF IRELAND.—Technical demonstration at the works of Sir Richard Martin and Company, Ltd., 29 Rogerson's Quay, Dublin. Messrs. Alston and Hudman on "Timber," 2 p.m.

BIRMINGHAM ARCHITECTURAL ASSOCIATION.—Mr. Arthur Lee on "Ancient and Modern Marble Works," 6.45 p.m.

INSTITUTION OF CIVIL ENGINEERS (Students' meeting).—Mr. F. K. Peach on "Dock Gates," 8 p.m.

Saturday, December 8.

NORTH OF ENGLAND INSTITUTE OF MINING AND MECHANICAL ENGINEERS.—Newcastle-on-Tyne Council meeting at 1.30 p.m. General meeting at 2 p.m.

BRITISH ASSOCIATION OF WATERWORKS ENGINEERS.—Meeting at Geological Society's Rooms, Burlington House, W. Presentation of Report from the "Water Boards" Committee on "The Control of Water Undertakings and Sources of Water Supply." Mr. William Matthews, M.I.C.E., on "The Protection of Underground Water," 11 a.m.

ROYAL ACADEMY STUDENTS' CLUB.—Smoking concert at the Suffolk Street Galleries, W., Sir L. Alma-Tadema in the chair. Tickets can be obtained from Mr. A. R. Jemmett, 21 Great College Street, S.W.

Monday, December 10.

CLERK OF WORKS' ASSOCIATION.—Meeting at Carpenters' Hall, E.C., at 7.30 p.m. Paper by Mr. Lewin Sharp.

SOCIETY OF ARTS.—Canton Lecture: Professor John A. Fleming. on "Electric Oscillations and Electric Waves."—III., 8 p.m.

SURVEYORS' INSTITUTION.—Ordinary General Meeting at 8 p.m.

SOCIETY OF ENGINEERS.—Meeting at 7.30 p.m.

PHILOSOPHICAL SOCIETY OF GLASGOW: ARCHITECTURAL SECTION.—Mr. Charles Gourlay, B.Sc., A.R.I.B.A., on "Architecture in Central and Northern Italy," 8 p.m.

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.—Mr. Edwin T. Hall. F.R.I.B.A., on "The Leeds Infectous Hospitals," 6.30 p.m.

BRISTOL SOCIETY OF ARCHITECTS.—Mr. J. Atwood Slater on "Architecture Critically and Poetically Considered," 8 p.m.

Tuesday, December 11.

CARDIFF, SOUTH WALES, AND MONMOUTHSHIRE ARCHITECTS' SOCIETY.—Mr. W. H. Dashwood Caple on "Sanitary Building Construction."

Wednesday, December 12.

SANITARY INSTITUTE.—Sessional Meeting.

EDINBURGH ARCHITECTURAL ASSOCIATION.—Mr. G. S. Aitken, F.S.A., on "Bothwell Castle," 8 p.m.

NORTHERN ARCHITECTURAL ASSOCIATION.—Meeting at 7.30 p.m.

SOCIETY OF ARTS.—Professor Frank Clowes, D.Sc., on "The Treatment of London Sewage," 8 p.m.

SOCIETY OF ENGINEERS.—Annual Dinner at Hotel Cecil, 7 p.m.

Thursday, December 13.

INSTITUTION OF ELECTRICAL ENGINEERS.—Meeting at 8 p.m.

SOCIETY OF ANTIQUARIES OF LONDON.—Meeting at 8.30 p.m.

SOCIETY OF ARCHITECTS.—Meeting at 8 p.m.

Friday, December 14.

PHYSICAL SOCIETY.—Meeting at 5 p.m.

INSTITUTION OF JUNIOR ENGINEERS.—Mr. John H. Davy James on "The Metallurgy of Tin," 8 p.m.

ARCHITECTURAL ASSOCIATION OF IRELAND.—Technical Demonstration at the Works of the Dublin Timber Company, Ltd., 1 to 4 Lower Erne Street, Dublin. Mr. Thomas Hudman on "Timber Working Machinery, Staircase Work, Sashes and Frames, Doors, Door Frames, and Roofs," 4.30 p.m.

CONTRACTS OPEN.

TO BUILDERS. — LYTHAM COTTAGE HOSPITAL.—"LUKE FISHER WARD."—The Committee are prepared to receive Tenders (all trades) for the Erection of a NEW MEMORIAL WARD to this Hospital.

Plans may be seen and quantities obtained from the Architects, Messrs. Haywood and Hartison, Accrington and Lytham, on payment of £1, which will be returned on receipt of a bona-fide Tender.

Estimates to be sent, sealed and addressed, to Thos. Fair, Esq. (Chairman), Westwood, Lytham, on or before DECEMBER 8th.

GLAMORGAN QUARTER SESSIONS AND COUNTY COUNCIL.

ERECTION OF A NEW POLICE STATION AT CILFYNYDD.

The Standing Joint Committee of the Glamorgan Quarter Sessions and County Council is desirous of CONTRACTING for the ERECTION of a NEW POLICE STATION at Cilfynydd.

Contractors will be required to pay their workmen the recognised rate of wages.

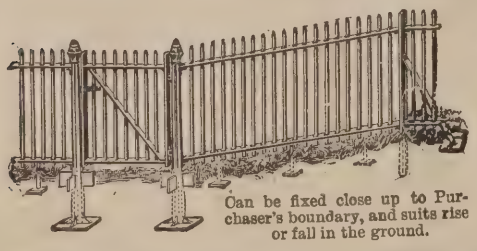
Plans and specification of the buildings required may be seen, and copies of the bill of quantities obtained, by those desirous of tendering at Pontypridd Police Station and at these Offices.

Sealed Tenders are to be delivered to me, together with the names of two substantial sureties, not later than SATURDAY, the 8th of DECEMBER, marked outside "Tender for Cilfynydd Police Station."

The Committee will not necessarily accept the lowest or any Tender.

T. MANSEL FRANKLEN,
Clerk of the Glamorgan County Council.

Glamorgan County Offices,
Westgate Street, Cardiff,
November, 1900.



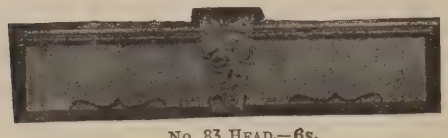
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THE BUILDERS' JOURNAL & ARCHITECTURAL RECORD

DECEMBER 12, 1900. No. CCCV.

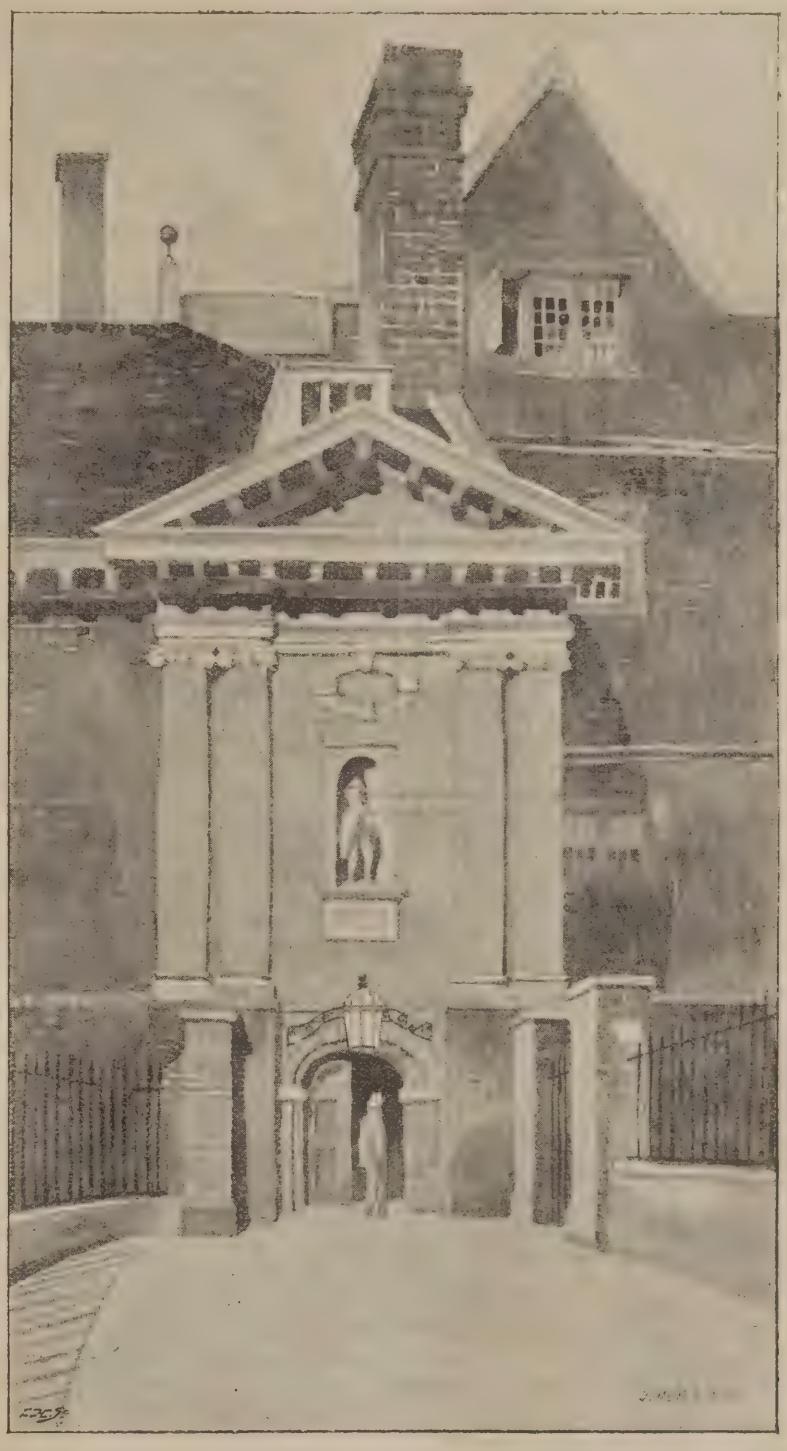
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An Architectural Causerie.

First-floor Shops. SIR FREDERICK BRAMWELL'S reply to his critics is interesting, though one still feels that his scheme would not be a success architecturally. When the question was first raised Mr. Frederick Harrison pointed out that the London County Council could not build on the immense area of the new street from Holborn to the Strand, and he asked how it could impose the task of erecting an upper footway on purchasers and lessees. Doubtless the first-floor shops would add to the rental value per length of frontage, but we are inclined to believe that the requirement in question would hamper very considerably the disposal of the land. To meet the case of different buildings being erected at different times, leaving great gaps between them, Sir Frederick Bramwell ingeniously proposes that the Council should provide, within a certain time after the letting of the first plot, a temporary footway of girders at the first-floor level. He assures us that it was never intended to dispense with pillars, which he considered essential to the picturesque architectural effect, and his bridges across the main thoroughfare were not a necessary part of his scheme, but simply possibilities arising out of it. "I do not see any way," he says, "by which I could further advocate this mode of construction short of inducing some architect of position to associate himself with me in the preparation of an artistic design—of which I do not profess myself to be capable (although I would answer for stability)—with the hope that such a design might find its place among the architectural drawings in the Academy next May. But to do this would involve my devoting a more considerable portion of my time to the matter than I can afford." Certainly this is a fitting conclusion to Sir Frederick's proposal.

A New Factor. SINCE its opening in June last, the Central London Railway has received unstinted praise and liberal patronage—which it well merits; but now that the novelty of the undertaking is wearing off, a serious complaint has been made against it. When, in 1891, the parliamentary committee was investigating the scheme, expert evidence was given to the effect that as the railway line would be 60ft. below the ground no noise or vibration could possibly be heard or felt in the adjacent houses. The fact, however, is otherwise, as the following two cases prove. The first is that of a house in the West End, 28yds. from the high road under which the electric railway runs. Every time a train passes the whole house is shaken to its foundations, the window sashes rattle in their frames, and ornaments in the rooms are set in vibration. The second case concerns a house about 23yds. from the road: here the same vibration is felt, and there is very little quiet except between the hours of 1 a.m. and 5 a.m. It is not surprising that cracks have appeared. There seems to be no cure for this state of affairs except to construct the tunnels still lower, but without doubt attention will be drawn to the fact when the Bills for the numerous new "tubes" are brought before the present session of Parliament. It need hardly be pointed out that the vibration referred to depreciates the value of the houses affected, as nobody desires to live in a building which is in a state of almost constant tremor. Nevertheless, so long as the railway is worked in the manner authorised by Parliament, those who live along the route may have their repose broken or their houses shaken down, but they will not be entitled to compensation or damages.

Our Narrow Pavements. THE visitor from the country or from abroad marvels at the narrowness of the London streets. Here and there, indeed, within the vast circle of houses wide streets may be found, but even these have very narrow side-pavements. Those of Regent Street are not wide enough for the throngs who lounge and stroll through it; in Bond Street it is difficult for three people to pass at some points; Piccadilly from the Circus to the Green Park is little better; the City, the busiest place in the world, is full of narrow lanes and alleys, and the inconvenience of all this to the public is great and increasing. Strange to say, the new streets, made after so many years of discussion and opposition, are not remarkable for width, though better than those they superseded; and, more curious still, they are not straight: Shaftesbury Avenue and the miserable circus of indeterminate outline where it is intersected by Charing Cross Road are dreadful examples of civic failure. A vast new approach to Westminster is now opened up by the widening of Parliament Street, but the footways are quite inadequate. The question arises, too, of tree planting in so wide a street: it will be dreary without it, but it is very doubtful if anything will be done. The immense masses of white stone which will be built along its sides would be greatly improved in architectural appearance by rising over trees and foliage, for which there is ample room. No great street—for the Embankment is not a popular thoroughfare, and therefore not a case in point—in London has yet been so treated. It would probably be found necessary, in view of the traffic, to protect the trees by a little "parking" enclosed by dwarf walls and balustrades with openings at frequent intervals. An arrangement of the kind may be seen in Westbourne Terrace. If we wish the enormous London of the future to be comfortable our footways must be wide enough for throngs of people strolling for pleasure as well as for those hastening on business.



GATEWAY TO CHRIST'S HOSPITAL, LONDON.—DRAWN BY J. HUTCHINGS.

ANCIENT LONDON.

BY J. HUTCHINGS, A.R.I.B.A.

THE City of London has been most unjustly described as lacking in the picturesque element, a charge thoughtlessly made, and one which only the Philistine or casual observer would dare to maintain. Be this as it may, no one can deny that much of the quaintness of London streets is due to those relics of a past age that remain clustered here and there, but which unhappily are fast disappearing. Many of them appear as solitary survivors, who, having so far weathered the storms of time, now stand out conspicuously amongst a host of moderns; in a measure, they seem to have outlived their own generation.

Doubtless it is in harmony with the laws of the universe that the old should give place to the new, and that progress, or at least change, should proceed unimpeded by the sentiment that attaches itself to all ancient things. Nevertheless, it is occasionally worth while to study pleasing examples of the architecture of the past, and to compare them with the productions of to-day, with a view to gauging the value of modern art.

Many of the originals of the accompanying illustrations have disappeared, and those not already doomed to destruction protract a precarious and uncertain existence.

Those familiar with the Fleet Street of a few years ago, can recall without effort the appearance of the old plaster-fronted houses that recently adjoined St. Dunstan's Church, and lent quite an old-world aspect to that busy and "up-to-date" thoroughfare. To the student of English literature they formed a link with the days of the coffee-houses and the illustrious band of essayists and poets that made famous the England of a century ago. They appeared an appropriate background for the scenes described by Mr. Spectator, and but a little imagination was required to picture the burly and ungainly figure of Dr. Johnson waddling through Temple Bar, past these old houses on the one side and the palace of Henry VIII. and the Temple on the other, on his way to take wine with Addison and Steel, Goldsmith and Boswell, at the Mitre Tavern. Before the suppression of the Fleet marriages, the houses were thriving business premises, and doubtless played their part in those irregular proceedings. Their weather-beaten fronts have looked down upon many a stormy fray in the street below, when the populace, goaded by oppression and heavy taxation, made a fanatical raid upon the lawyers of the Temple, the supposed authors of all their woes; or it might be that the "'prentices," in answer to a call for aid, rushed out to rescue some members of their fraternity in trouble with the civic authorities.

Aubrey informs us in his "Lives" that Michael Drayton the poet "lived at the Bay window house, next the east end of St. Dunstan's Church in Fleet Street."

Previous to the rebuilding of St. Dunstan's the churchyard was covered by houses abutting against the fabric itself in quite continental style. It appears that Smethwick, the original printer of some of Shakespeare's plays, "lived in one of the shops in St. Dunstan's churchyard, that under the clock." And in the same locality "Marrot published the first edition of Walton's Angler."

Old St. Dunstan's Church was noted for a projecting clock, embellished with two figures of Hercules, which struck the hours, and was considered to be one of the sights of the metropolis. The Hercules Tavern derived its name from these effigies.

Hard by St. Paul's an old landmark still exists in Panyer Alley, though, owing to its unobtrusive position in the front of a building facing a narrow lane, it is known to few. It was embodied in the new structure erected some years ago, and was thus fortunately preserved *in situ*. The monument consists of a stone panel bearing sculptured upon the surface the figure of a child seated upon a pannier, with the following legend inscribed below:—

WHEN Y HAVE SOUGHT
THE CITY ROUND
YET STILL THIS IS
THE HIGHEST GROUND
AUGUST THE 27
—1688—

The mediæval architects frequently placed their cathedrals on the top of rising ground, and so it happens that St. Paul's occupies a position that could not be bettered in all London.

The gateway to Christ's Hospital, until recently the Bluecoat Boys' School, is an exceptionally good example of brick architecture, simply treated and in excellent preservation. Even the Ionic capitals and bases are of the same material; they are very good specimens of plastic work. The attachment of the modern Tudor addition behind, rising above the Renaissance pediment, is a pointed illustration of the irony of fate, for the original builders regarded the Gothic style as utterly barbarous and doomed for all time, little suspecting that their own example of seeking inspiration for a new development by a revival of past forms would be repeated, with consequences even more fatal to steady progress than those which immediately attended their own aberrations. The figure of King Edward VI., the founder, clad in the costume prescribed for the inmates, is the only evidence now left to remind us of the time when the hatless boys, clad in long coats and yellow stockings, were seen flitting about Newgate Street or playing football in the schoolyard.

A few hundred paces distant, bordering upon the slums of West Smithfield and quite out of the regular beat of the visitor and sightseer, stands a fine fragment of what was once a splendid monastic establishment. The old priory church of St. Bartholomew is the finest example of the late Norman period in London, and ranks with the very best specimens of its class in the kingdom. Rahere, the founder, was a gay courtier-cleric of the reign of King Henry I., who, falling sick whilst on a pilgrimage to Rome, repented of his former dissolute life and vowed to erect on his recovery a hospital for the poor in the neighbourhood of London. These good resolutions, as was not uncommon in those days, were reinforced by supernatural visions, and in pursuance of his scheme he secured a grant of land at West Smithfield, and there laid the foundation-stone of his great undertaking.

The nave and transepts of the old church have disappeared; the stones of the conventual buildings and the cloister formed convenient material for the erection of the houses that arose on the monastery grounds after the Dissolution, and so have disappeared; only the eastern limb of the church, the four great arches of the crossing, with fragments of the Lady chapel, have survived to the present day, together with the neighbouring hospital of St. Bartholomew, an institution which still continues its career of usefulness unimpaired by the lapse of centuries, though of the first building no traces remain. Rahere was buried in the sanctuary which occupied many of the latter years of his life in building, and the position of his resting-place is marked by a superb Perpendicular tomb, raised by a fifteenth-century prior, on which lies a wooden effigy of the founder; the latter is older than the tomb. Opposite this monument, inserted in the triforium gallery, is a sixteenth-century oriel window bearing the rebus of the builder, Prior Bolton. This window was doubtless erected for the convenience of watching the shrine, on which a lamp was kept perpetually burning.

The architecture of the church is of late Norman character, massive, dignified, well proportioned, and the details combine the boldness of the earlier work with much of the elegance, variety and playfulness that distinguished in so eminent a degree the first Pointed style. The tracery of the clerestory windows is modern.

The apse is a restoration by Mr. Aston Webb, a sixteenth-century prior having destroyed the original in constructing a square termination embellished by a great traceried window in



Old Houses
Fleet Street.
J. Hutchings



accordance with the national tradition of his time. The same architect (Mr. Webb) practically rebuilt the south transept, and in all he has done to this great church he has dealt reverently with its crumbling walls, abstaining from pulling down anything that would stand for years to come, re-using, wherever possible, old fragments that were unearthed in excavations; and in the new work he has exhibited a modest individuality, upon which the old has been allowed to exercise a due restraint, instead of imitating with mathematical exactness ancient forms with the vain object of deceiving the eye, a course tempting by its ease, by its sureness to attain a certain degree of harmony, and one which would have been followed by a less able man. As it is, the happy manner in which the old contrasts, and at the same time accords, with the new establishes Mr. Webb's reputation as a master builder, and must win the respect due to those who, while showing a proper reverence for past, successfully demonstrate the value of new ideals.

A great fair was held at West Smithfield, called Bartholomew Fair, from which the monks, in the palmy days of the monastery, derived no small pecuniary advantage. This institution survived the latter, and later writers tell us much about the doings at these great merry-makings. Pepys informs us how he went to Bartholomew Fair and saw "the mare that tells money and many things to admiration." On another occasion he describes the puppet-shows which used to be so popular, and of which he speaks with great approbation.

It is a truism that we know least those objects amongst which we dwell, and it were curious to enquire how many City men are acquainted with the superb interior of St. Stephen's, Walbrook, an edifice they pass a score of times a day, and drive their bargains upon its very threshold. This church presents so unprepossessing an exterior that it can scarcely be a matter of wonderment that few care to become more intimately acquainted with it. But the interior, in point of architectural effect, is second to none of Wren's designs, and is so utterly different from the ordinary basilica plan that it has been a matter of surprise to many writers that this type of sanctuary, so admirably adapted to meet the exigencies of modern worship, should have been neglected by succeeding architects. Perhaps lesser men shirked the difficulties of a problem that taxed all the resources of a Sir Christopher Wren; in any case they adopted the fatally easy course of repeating badly what had been better done before, a habit that is almost as prevalent to-day with the majority of church architects, and one which has filled our land with spurious Gothic edifices — slavish copies — as true in point of detail to the original models as Chambers' much-sneered-at Somerset House is faithful to the rules of Vitruvius, but ten times more soulless, inasmuch as the whole spirit of Gothic work consists of variety, individuality even eccentricity, of detail, constant change, and a development that is appreciable in a single building. Chain the soaring spirit of Gothic, fetter its imagination, apply what was evolved to meet the requirements of centuries ago to the needs of the present, and the result is a melancholy fiasco. It were better, far better, to return to plain unadorned utilitarianism, and, if need be, decorate our portals with a death's-head, rather than with the dead weeds of an extinct architecture. St. Bartholomew's was the result of collectivism in architecture; St. Stephen's was the work of an individual: the one utilised all the ability and invention possessed by each particular craftsman engaged; the other merely demanded mechanical finish, and a faithful copy of the details. The latter method, then in its infancy, has in the eyes of the political economist arrived at the highest state of efficiency, and by dividing men into two hostile camps—thinkers and mechanics—has resulted in a vast cheapening of production. In the eyes of the humanitarian it is held responsible for all the physical ills that beset the brainworker, by depriving him of healthy exercise and specialising his thinking faculty at the sacrifice of all else; it is held responsible for robbing the other class, and by far the larger, of all interest in their labour, and has made them either animals or machines.

The plan of the church is an oblong, consisting of a large central dome supported on columns. But the ability shown in overcoming the extraordinary difficulties of construction, the exactness of the proportions, the clever manner in which the light is introduced, and the exquisite effect of the whole, are evident even to the uneducated, and cannot fail to impress the beholder with delight.

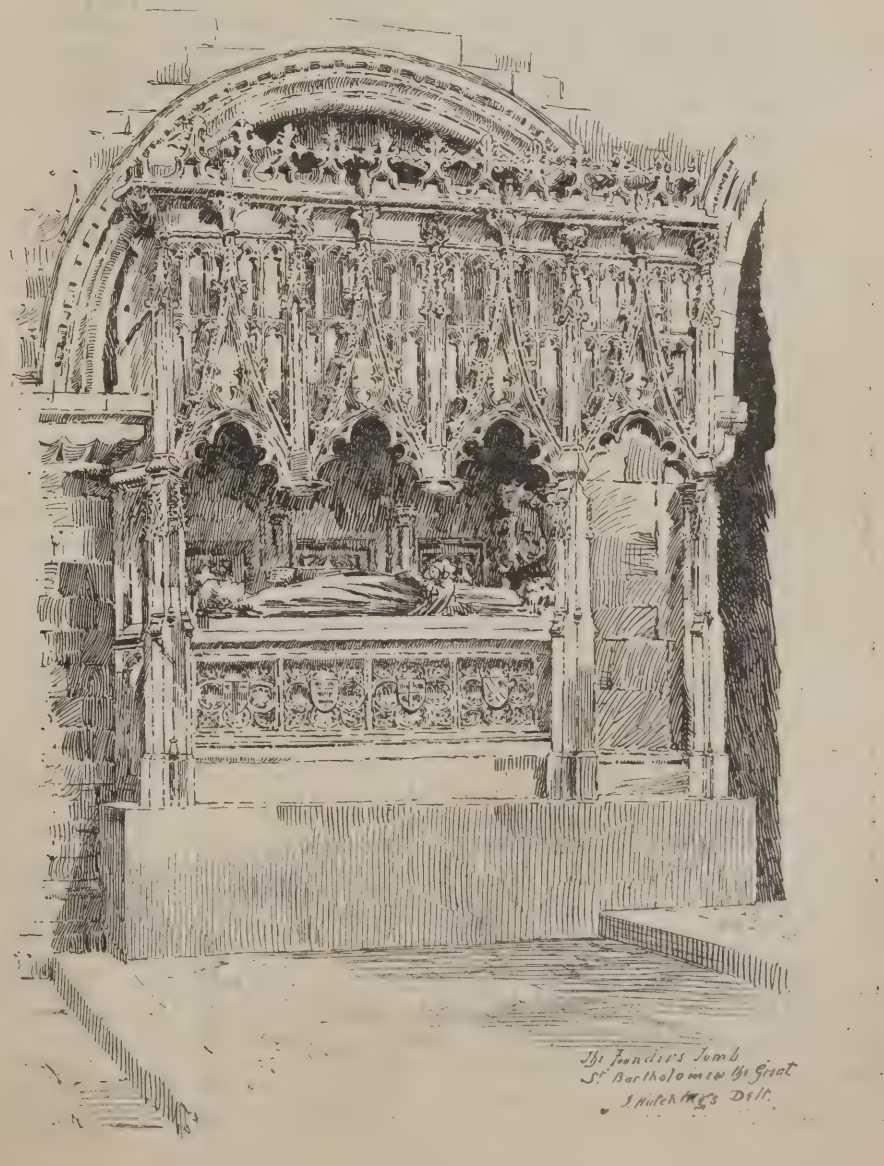
(To be concluded.)

RECENT PRACTICE IN SEWAGE DISPOSAL.

IN the course of a paper on this subject, read before the Society of Engineers on December 3rd, Mr. Henry C. H. Shenton referred to the older methods of sewage disposal, pointing out that, until recently, failures of sewage works, constructed under all the older systems, had been notorious. As an example he quoted the failure of the combined chemical treatment, filtration and land irrigation system at Sutton in 1895, two years after the works were constructed. Passing on to the modern system of bacterial purification he stated that it consisted of the resolution of impurities into inoffensive materials by the agency of micro-organisms. He pointed out that changes, formerly considered chemical, were really due to the action of bacteria, and that the bacteria necessary for the purification of sewage already existed in it.

Turning to practical work the author remarked that for the bacterial treatment of sewage there were two methods: (1) that in which sewage passed through a tank where anaërobic organisms produced liquefaction of solids and putrefaction as a step towards purification, the effluent being then purified on bacteria beds; and (2) the system in which no tank was used, the crude sewage being purified on bacteria beds only.

In describing the practical construction and working of the bacteria bed the author said it consisted of a water-tight tank, containing furnace clinker or other durable material likely to form a home for bacteria, into which sewage could be run, and in which it could be held to bring it into contact with bacteria. The effluent from this bed, after it had stood a short time, would be greatly purified, and could be again



treated on second or third contact beds. In describing the septic tank the author said it was of practical use in getting rid of sludge, but he pointed out that the storage of putrid sewage in bulk was not an ideal arrangement. The septic tank is an air-tight chamber with trapped inlet and outlet, from which liquid only should be discharged, owing to the fact that solids must either float or sink.

While pointing out the many admirable results obtained at works constructed by the Septic Tank Syndicate, the author drew attention to the failure of a septic tank constructed by the Leicester Corporation. He then showed that a septic tank need not necessarily be air-tight, as open and closed tanks had produced identical results. He also stated that gas generated in the Exeter septic tank was used for lighting purposes and for generating steam by which an 8-h.p. engine was driven.

He mentioned the folly of allowing road grit to go on to bacteria beds, and said that first-contact beds were generally much overworked. He suggested a possible improvement to obviate this, which consisted of an alteration in the construction of the first bed. He also said that automatic working was essential for success, and, in conclusion, he pointed out that the new system was equally applicable for the largest city or the smallest cottage. The paper was illustrated by diagrams and lime-light views of works.

FORM OF BUILDING CONTRACT.

THE PROPOSED AMENDMENTS.

CONSIDERABLE attention has been drawn to the proposed amendments of the "Form of Agreement and Schedule of Conditions for Building Contracts." The matter was discussed at the meeting of the Royal Institute of British Architects held on December 3rd, when much dissatisfaction was expressed with regard to clause 32 as amended. The Council are now reconsidering this clause. The amended clauses as proposed are set out below.

1. The works shall be carried out in accordance with the directions, and to the reasonable satisfaction of the architect, in accordance with the said drawings and specification, and in accordance with such further drawings, details, and instructions in explanation of the same as may from time to time be given by the architect. If the work shown on any such further drawings or details, or necessary to comply with any such instructions, directions, or explanations, be, in the opinion of the contractor, in excess of that comprised in the contract, he shall, before proceeding with such work, give notice in writing to this effect to the architect. In the event of the architect and contractor failing to agree as to whether or not there is any excess, and of the architect deciding that the contractor is to carry out the said work, the contractor shall accordingly do so, and the question whether or not there is any excess, and if so the amount thereof, shall, failing agreement, be settled by the arbitrator as provided in clause 32, and the contractor shall be paid accordingly. The contract drawings and specification shall remain in the custody of the architect, and shall be produced by him at his office as and when required by the employer or by the contractor.

12. The contractor shall, when authorised by the architect, or as provided by clause 5, vary by way of extra or omission from the drawings or specification; such authorisation is to be sufficiently proved by any writing or drawing given by the architect, or by any subsequent written approval by him. No claim for an extra shall be allowed unless it shall have been executed under the provisions of clause 5, or by the authority of the architect as herein mentioned. Any such extra is hereinafter referred to as an authorised extra.

17. [The sole difference between the amended and the original clause is the omission in the former of the words "or other person" in the sentence beginning "Should any defective work have been done or material supplied by any sub-contractor . . ."]

20. All specialists, merchants, tradesmen, or others executing any work, or supplying any goods for which prime-cost prices or provisional sums are included in the specification, who may at any time be nominated, selected, or approved by the architect, are hereby declared to be sub-contractors employed by the contractor; but no such sub-contractor shall be employed upon the works against whom the contractor shall make what the architect considers reasonable objection, or who will not enter into a contract with the contractor upon terms and conditions consistent with those in this contract, and securing the due performance and maintenance of the work supplied or executed by such sub-contractor, and indemnifying the contractor against any claims arising out of the misuse, by the sub-contractor or his workmen, of any scaffold erected or plant employed by the contractor, or that may be made against the contractor in consequence of any act, omission, or default of the sub-contractor, his servants or agents, and against any liability under the Workmen's Compensation Act, 1897, or any amendment thereof.

21. The contractor shall be responsible for all structural and decorative damage to property, and for injury caused by the works or workmen to persons, animals, or things, and shall hold the employer harmless in respect thereof, and also in respect of any claim made under the Workmen's Compensation Act, 1897, or any amendment thereof, by any person in the employ of the contractor. He shall also be responsible for all injuries caused to the buildings, the subject of this contract, by frost or other inclemency of weather, and shall reinstate all damage caused by the same, and thoroughly complete the whole of the works.

28. The provisional sums mentioned in the specification for materials to be supplied or for work to be performed by special artists or tradesmen, or for other works or fittings to the building, shall be paid and expended at such times and in such amounts and to and in favour of such persons as the architect shall direct, and sums so expended shall be payable by the contractor without discount or deduction, or (without prejudice to any rights of the contractor existing under the contract referred to in clause No. 20) by the employer to the said artists or tradesmen. The value of works which are executed by the contractor in respect of provisional sums, or in additional works shall be ascertained as provided by clause 13. At the settlement of the accounts the amount paid by the contractor to the said artists or tradesmen, and the said value of such works executed by the contractor, shall be set against all such provisional sums or any sum provided for additional works, and the balance, after allowing *pro rata* for the contractor's profits at the rates contained in the contractor's original estimate, shall be added to or deducted from the contract sum, provided that in estimating the amounts paid as last herein provided no deductions shall be made by or on behalf of the employer in respect of any damages paid by the sub contractor to the contractor, the intention being that the contractor, and not the employer, shall have the benefit of any such damages.

29. The contractor shall permit the execution of work by any other artists or tradesmen who may be engaged by the employer.

32. Provided always that in case any dispute or difference shall arise between the employer or the architect on his behalf and the contractor, either during the progress of the works or after the determination, abandonment, or breach of the contract, as to the construction of the contract, or as to any matter or thing arising thereunder (except as to the matters left to the sole discretion of the architect under clauses 4, 9, and 19, and the exercise by him under clause 18 of the right to have any work opened up), or as to any objection by the contractor to any certificate, finding, decision, requisition, or opinion of the architect, or to the withholding or failure by the architect to give the same, then either party shall forthwith give to the other notice of such dispute or difference, and such dispute or difference shall be and is hereby referred to the arbitration and final decision of or, in the event of his death, or unwillingness, or inability to act, of or, in the event of his death or unwillingness or inability to act, of a person to be appointed on the request of either party by the President for the time being of the Royal Institute of British Architects, and the award of such arbitrator shall be final and binding on the parties. The arbitrator shall have power to determine all such matters in dispute except as aforesaid which shall be submitted to him, and of which notice shall have been given as aforesaid. The works shall not be stopped pending such reference excepting by the direction in writing or award of the arbitrator. If either party desires to have such dispute or difference determined forthwith, he shall give written notice to that effect to the other party, and the arbitrator shall, with the assent in writing of the other party, proceed with the arbitration. In the event of the other party failing within days of such notice to give to the other his assent in writing to the immediate determination of such dispute or difference, the arbitrator shall, after written notice to the non-assenting party of a time and place of hearing, decide whether such dispute or difference shall be immediately determined or whether such determination shall await the completion or alleged completion of the works, and the same shall be determined at such time or times as the arbitrator shall decide. If in any such reference the arbitrator shall be of opinion that either party has been unreasonable or vexatious or dilatory either in invoking or insisting upon reference or in the mode of its conduct, or that injury from delay or otherwise has been occasioned thereby to the other, he may by his award indemnify the latter in respect of such injury. Upon every or any such reference the costs of and incidental to the reference and award respectively shall be in the discretion of the arbitrator, who may determine the amount thereof, or direct the same to be taxed as between solicitor and client, or as between party and party, and shall direct by whom, and to whom, and in what manner the same shall be borne and paid. This submission shall be deemed to be a submission to arbitration within the meaning of the Arbitration Act, 1889.

Surveying and Sanitary Notes.

The Institute of Sanitary Engineers.—At a meeting of the Election Committee held on the 5th inst., the following were elected:—*Fellow:* T. E. Fellows, Willenhall. *Member:* A. W. Pelling, London. *Associate:* A. E. Kinder, Blackpool.

Heaton Park, the seat of the Earl of Wilton, and the last of the great private estates in the Manchester district, has been sold to a London syndicate for building purposes, the price paid being £240,000. Previous attempts to dispose of the park with a reserve of a quarter of a million sterling had failed, and suggestions had been made that it should be purchased by the Corporation of Manchester as a public park.

Plumber's Work.—The Edinburgh Architectural Society held a meeting on December 5th, when a lecture was delivered on "The Effects of Heat and Cold on Plumber Work, and How to Prevent Damage therefrom," by Mr. Thomas Hume, F.I.S.E. The subject was discussed at some length, in relation to the different metals now used in the execution of plumber work, some of which were entirely dissimilar in their nature to lead, the metal originally pertaining to plumber work, and up to a period about fifty years ago almost exclusively used in that trade. The effect of changes of temperature on these different metals was very striking, and by the extensive introduction of hot-water systems for domestic use these effects had become much more obvious and destructive. Careful study of these effects, which in their nature were irresistible, was therefore needful in order to avoid their destructive influence or reduce it to a minimum. Reference was made to the damaging effects of frost on exposed water-pipes and the need of ample means of protection being used, especially in the case of pipes connected with pressure boilers.

Correspondence.

"Render unto Cæsar."

To the Editor of THE BUILDERS' JOURNAL.

SIR,—For many years I have taken your paper regularly and can bear testimony to its high qualities, literary and artistic, but I must say that I cannot agree with "J. B.," who writes under the above title in your issue for November 14th. I cannot agree with his recognition of the "Cæsar" in "the architect who cannot draw"; neither do I like the patronising way in which he speaks of the "draughtsman-architect" as compared with "the architect who does not draw." Why "draughtsman" applied almost as a term of reproach to the one, as if he were nothing else, and the full-blown title "architect" to the man who has not taken the trouble to learn the first part of the profession he lives by?

"J. B." cites a particular case of "an architect who is a truly great designer of an almost monumental dignity," and brings in the draughtsman-architect who did his work for him and is now, I rejoice to hear, "in a practice of his own, a draughtsman-architect among the best of them"; and then brings in the point that his successor is also a very clever fellow, and "the work which comes from the office still maintains its excellence, and more than that, its subtle individuality."

Quite so. I have seen the same thing done in many many instances, and "J. B.'s" architect who cannot draw would be utterly lacking in worldly wisdom if he were not to replace talent by equal, or even greater, talent, provided he could obtain it; in fact, it is a matter of life and death to such a man to do so.

As "J. B." has evidently taken up a brief for the architects who cannot draw, perhaps he will enlighten some of us, who would like to know, how these gentlemen convey their subtle ideas and individualities into the brains of their assistants.

How could such a design, say, as the Scott Monument in Edinburgh have been conveyed from the brain of Kemp into the brain and fingers of another had Kemp been unable to draw? Fortunately, Kemp did not need the assistance of another, and there is no question as to any ghost in that instance.

In the long ago, when I was serving my indentures, a story went the round of a then great Scottish artist that a lady asked him out of curiosity how it was his pictures were always so successful, sold so readily, and at such high prices. Being somewhat of a wag, he replied, "Oh! I get so-and-so (naming a famous landscape-painter) to do my landscapes, so-and-so (naming a great animal painter) to put in the animals, so-and-so (a great figure painter) to put in my figures, and so-and-so (whose skies were always the best part of his pictures) to put in my skies." "And where do you come in, Mr. B.?" said the astonished lady. "Oh!" he replied, "I sign the pictures and take the high prices."

No, Mr. "J. B.," your "Cæsar" is a sham and a fraud and not by any means the genuine article; in fact, he is not an architect at all; he is a tradesman with capital in hand and buys and sells like any other tradesman—and has his name attached to his wares like the retail bootmaker or hatter has on the goods he gets from the various wholesale firms with whom he deals. But boots and hats soon wear out and no real harm is done, while architecture lasts longer and the monumental works which are carried out by the architect who could not draw go down to posterity as his own works, and the real architect is unknown.

"J. B." may say, then, why does the draughtsman-architect consent to do it, and become "a being who has sold himself for a few pounds a week?" Well, sir, as another of Mr. "J. B.'s" architects has it, "a man must live." It is the old story of Jacob and Esau over again. Jacob had what was necessary to Esau's existence, and Esau had to pay the price.

But there is a remedy for all this. Let the profession be put on a proper basis, like the legal or medical, and only men admitted who can pass its examinations on all necessary points; and in the meantime I would suggest that the merchant-architect should publicly couple the name of his helpmate with his own and divide the spoils with him, instead of considering that he ought to be satisfied with a weekly wage. Knowing there is always available talent to be had, I am afraid this last suggestion will not be so readily followed up as it ought to be, because the Jacob of to-day is so much like the old article that he will rob his brother in the present (legally, of course) as he did in the past.—Yours truly, I. Y.

SIR,—If your correspondent "I. Y." will kindly re-read my article he may find that the views therein expressed are, after all, not so greatly at variance with his own as he seems to suppose. It may be that something in the manner of the saying rather than in the matter of it is in the front rank of my offending. So, at least, I am inclined to guess. For, had my remarks, in stirring amongst his rooted convictions, struck against any of his bed-rock principles, surely he would have been able to deliver an attack of a less nebulous sort. And yet it is a right good sort of attack, too, in its way—its own "knock-me-down" way. Its very nebulousness is the "kopje" from whose cover he launches his missiles, his deadly "J.B.'s" (I declare, Mr. Editor, that if he had got in but one more "J. B." I should have surrendered unconditionally). But, fortunately, after firing his seventh round, he comes out on the open, and there one can see what he is made of.

He proposes a remedy—for what, one is not perfectly clear—but the remedy itself is simple, and the directions on the wrapper are explicit: Shake the bottle and take as directed: "Let the profession be put on a proper footing . . . and only men admitted who can pass their examinations on all necessary points." Aha! sits the wind in that quarter? And in case this should be too strong a dose to take all at once, or in order to allay impatience during its preparation, we have a gentle sedative offered us: "In the meantime I would suggest" (thus runs the prescription) "that the merchant-architect should publicly couple the name of his helpmate with his own and divide the spoils with him." A good idea! Oh, shades of Moloch. Five per cent., an excellent idea! Of course he should; but will he? Not, for sure, if he is only a "merchant-architect," or unless there are such material advantages in the arrangement as his merchant-eye would be the first to detect.

Now I protest I spoke not of any merchant-architect. I know the breed, and like it not. Nor will I admit the soft impeachment of having "taken up a brief for the architects who cannot draw"; but for those who *do* not draw—which is another matter. It is time someone did take up a brief for these good gentlemen (they are too busy to do it themselves, too busy, maybe, to care whether it is done or not); and why not I, if they will have me, or for want of a better? They make a broad target for muddy missiles. It is so easy to besmear them. There are so many hard names to fling at them. And how tempting a thing it



INTERIOR, ST. BARTHOLOMEW'S CHURCH, LONDON. DRAWN BY J. HUTCHINGS.

is to have at those who are successful! For we may as well admit the fact, the non-drawing architects are generally among the successful ones; it is their success that has robbed them of the leisue for drawing, and has forced them to become brain-workers alone. Again, suppose we do admit the cannots to a share of toleration. Why not? I do not see that even they need necessarily be all and altogether "merchant-architects."

The point is this: Can an architect (who does not command the full-blown title of draughtsman-architect, but is just, poor fellow, a plain architect) conceive a building root and branch, plan, mass, and detail, and then communicate his ideas all and whole to his draughtsman? If the latter is a man like-minded to himself, an architect like himself, though not for the moment *the* architect, can he do it? He can, he does, and his name is Legion beyond the one or two men I had in my mind when I wrote.

But when I am invited to describe how the thing is done, I really must kindly, but very firmly, decline. That were quite a large order. Indeed, that would be to attempt to lay bare the great psychological secret that makes all the difference between worthy success and worth without success; between the mind of the man who is fitted not only to be a good architect, but to make a great practice, and that of him who may be fitted to be a good architect, but—— It is a very big and unsurmountable But.—Yours truly, J. B.

Keystones.

A Block of Workmen's Dwellings in Lambeth has been erected in St. George's Road, on the Hayle's Estate, at a cost of £50,000.

A Proposed Infectious Diseases Hospital at Whickham formed the subject of a Local Government Board enquiry recently in regard to an application by the Whickham Urban District Council for sanction to borrow £3,250 for the purpose.

Mr. E. C. Howell, London, has been appointed chief clerk of the works in connection with the new municipal buildings and law courts at Cardiff. Mr. Howell has superintended the erection of some very important works, amongst them being the new Parliamentary buildings at Victoria, British Columbia.

Tom Hughes Memorial.—It is desired to raise a sum of £15,000 for the improvement and enlargement of the Working Men's College buildings in Great Ormond Street, and it is understood that the scheme is intended to form a memorial to the late Tom Hughes, who was so ardent a supporter of the college.

New Theatre for Greenock.—Greenock Dean of Guild Court recently passed the plans for a new circus and theatre of varieties for Greenock. The building will be situated in West Blackhall Street, only a few yards from Greenock Theatre Royal. It will seat two thousand persons, and can be utilised either as a circus or a music-hall.

A Y.M.C.A. building at Leicester has been erected, at a cost of over £30,000, opposite the Midland Railway station. It is four storeys high, and, with the exception of the shops on the ground floor, the whole of the premises will be devoted to the objects of the Young Men's Christian Association. In addition to the ordinary reading and recreation rooms, a hall and a large gymnasium are provided, as well as about thirty bedrooms.

Discovery of a fine Greek Statue.—A short time ago during some excavations at Pompeii a magnificent bronze statue of Grecian workmanship 4ft. high was brought to light. The discovery was made in the presence of Professor Orsi, director of the excavations of Syracuse. The statue, which strongly resembles the celebrated "Idolino degli Uffizi," of Florence, is estimated to be worth £20,000. It is in perfect preservation, and seems to have been designed to support a lamp in some villa outside the walls of Pompeii. It is the most important discovery made at Pompeii for the last thirty years.

New Sunday Schools at Rogerstone have been erected at a cost of £1,300. The architects were Messrs. Habershon, Fawckner and Groves.

The National Schools, Banbury, are being warmed and ventilated by means of Shorland's patent Manchester grates and special inlet panels, supplied by Messrs. E. H. Shorland and Brother, of Manchester.

Cripplegate Church Gateway.—In carrying out the improvements in Fore Street steps are to be taken to preserve this ancient landmark. The view of the north side of the church will, however, probably be obscured, because the Corporation of London is looking to the sale of the land to recoup itself for the heavy expenditure—£19,000—which the improvements involved.

The London and Middlesex Archæological Society held its first meeting of the present session at the London Institution, Finsbury Circus, E.C., recently. In the absence of the president (Dr. Freshfield) Mr. Deputy White presided. A lecture was delivered by Mr. H. W. Fincham on "An Antiquarian Ramble through Clerkenwell." The various places of interest were noticed, including Hicks Hall, Old Baptists' Head, St. Mary's Nunnery, St. James's Church, Red Bull Theatre, the two prisons, the New River Head, the tea gardens of the last century, Sadlers' Wells, London Spa, and Bagnigge Wells.

The Steps of St. Martin's.—All efforts to prevent the alteration to the steps of St. Martin's Church have been futile, for the City of Westminster Borough Council decided last Thursday to proceed with the work. Lord Doneraile moved as an amendment: "That the matter be referred back with a view of considering how the work could be carried out without altering the architectural character of the building, and that the contract be varied accordingly." Alderman Emden said the contract was entered into by the late St. Martin's Vestry, and if the work did not proceed they would have to compensate the contractors. On a show of hands the amendment was rejected by 24 votes to 23, and on a division by 28 to 24.

The Leeds School of Art and Technical School being in need of extra accommodation, a new building is to be erected upon a site in Vernon Street at the back of the present premises. The following Leeds architects have been invited to send in designs for competition, and all have accepted:—Messrs. Bedford and Kitson, Mr. W. Carby Hall, Messrs. Howdill and Howdill, Mr. F. Musto, Mr. A. E. Dixon, and Messrs. Perkin and Bulmer. Mr. W. H. Bidlake, of Birmingham, will act as assessor. The estimated cost of the new building is £10,000, some portion of which the public will be invited to contribute. This move on the part of Leeds does not stand alone, for Hull has entered into a scheme to provide a new School of Art at a cost of £17,000, and Birmingham, whose School of Art stands first in the country, has just added a branch building costing £6,602.

Wolvesey Castle.—It is proposed that the city of Winchester should purchase the ruins of Wolvesey Castle. Little now remains of this ancient fabric. It is asserted that Kincoils, first Christian king of the West Saxons, erected a castle upon this spot, but the present remains are Norman in their origin, as can be distinctly seen by the masonry, which has no Saxon peculiarities. The castle was dismantled by King Henry II., but must have been either reconstructed or extensively repaired, as it served for the residence of the bishops until it was destroyed by Cromwell, who only left the small fragment still remaining, which seems to have formed a portion of the Norman crypt. A modern palace upon part of the ancient site was begun by Bishop Morley in 1684, attached to a chapel of fifteenth-century date. The chapel still remains, but fire and other demolitions have left little of the palace, which was a fine structure in the style of Sir Christopher Wren—if it was not built by that eminent architect himself, as is frequently asserted. It is proposed that the park or grounds shall be thrown open to the public in August next, when the millenary of King Alfred will be celebrated.

The Central Fire Station at Bradford is now being erected.

The University College of South Wales.—The Cardiff Town Hall Committee have decided to recommend the Council to grant five acres of land in Cathays Park, free of cost, as a site for the proposed new buildings of the College.

A New Church at Weston Green, Thames Ditton, is in course of erection. At present only a portion of the building is to be proceeded with, at a cost of £1,460, so that the church will be capable of enlargement when necessary.

The Penrhyn Quarry Dispute.—Not a single Penrhyn quarryman complied with the invitation of the chief manager to resume work last Wednesday, referred to in our issue of last week, and the quarries have now been definitely closed. The migration of quarrymen continues unabated. Over seventeen hundred have already gone, and it is now stated that so determined are the men in the struggle that many who are tenants on the Penrhyn estate intend to give up their houses. A considerable number of men lately in Lord Penrhyn's employ have found work in South Wales and in Lancashire. It is estimated that from 1,200 to 1,500 have already left North Wales, while about 400 remain. Some of these, it is said, will shortly be engaged at a local slate quarry, which will be opened expressly to find work for them.

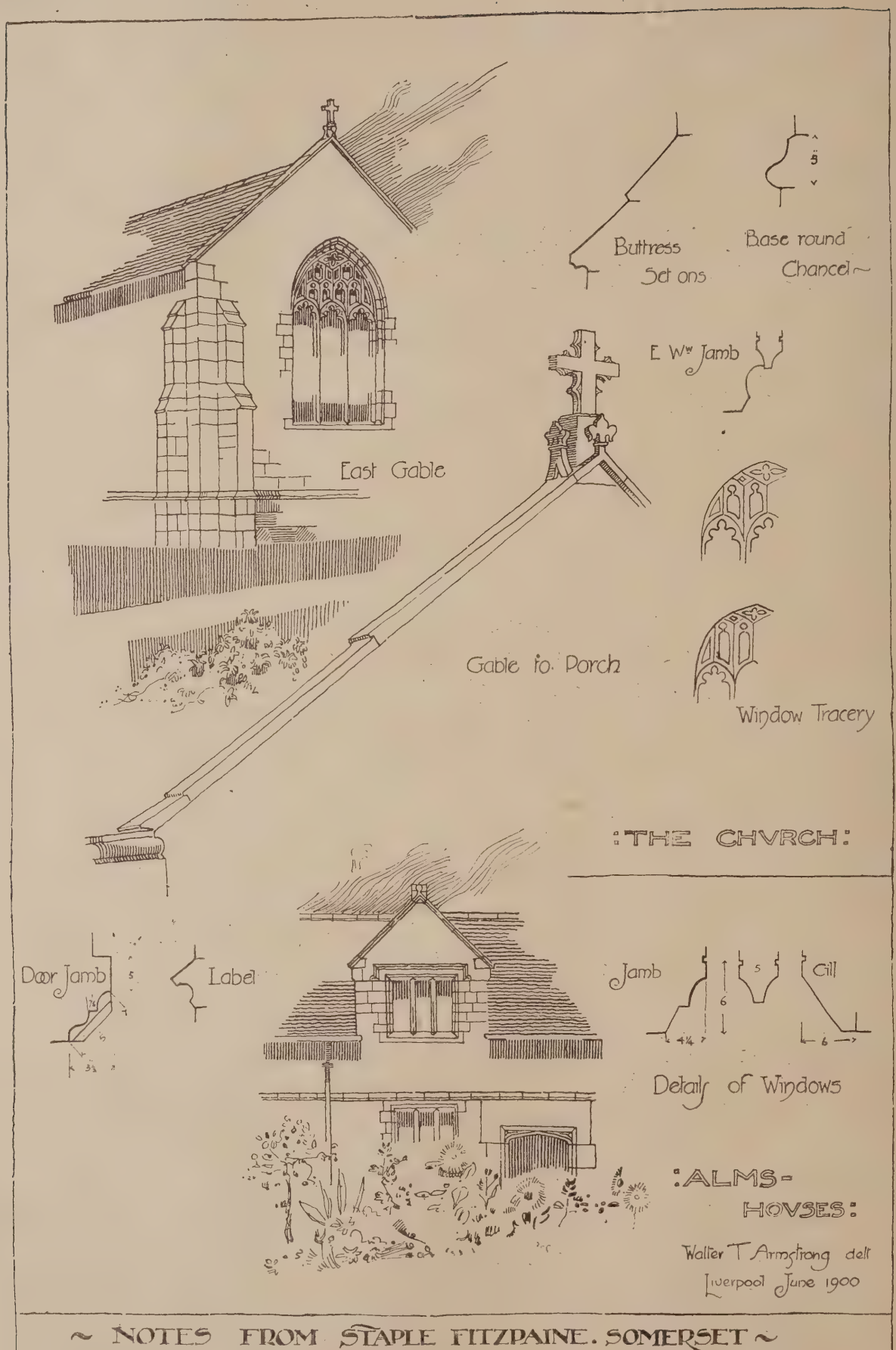
Christchurch Cathedral, New Zealand, still requires to be completed. The building was designed by Sir Gilbert Scott, and in 1881 the nave, with tower and spire, giving accommodation for 1,200 worshippers, was consecrated. As a memorial of the Jubilee it is now proposed to complete the building by adding the choir, sanctuary, transepts, and vestries, for which the foundations and walls have been provided. Upwards of £45,000 has been spent on the edifice, and it is estimated that about £15,000 will be needed for its completion. About £9,000 has already been collected.

The Church of St. Stephen, Westbourne Park, W., has been improved and enlarged. Built less than fifty years ago, it has already undergone many changes. Considerable structural alterations were effected in 1884 and 1888, but the present changes almost constitute remodelling. It was found that some parts of the sacred edifice were in a very bad state, and examination showed that the spire and roof were in a dangerous condition, while staircases and exits were little better. The arrangements and appearance of the interior were unsuited to modern requirements, and were even regarded by some as mean and shabby. The whole structure is now in a thorough state of repair. A new apse, altar, and reredos have been added to the chancel, a chapel for daily services, and a commodious choir vestry have been provided, the electric light has been installed, and many minor alterations have been effected calculated to add to the comfort of the worshippers. A number of gifts, including a new lectern and altar cross, have been presented by members of the congregation. The estimated expense of the work amounts to £6,764.

The Hull Property Committee at a recent meeting received a letter from Mr. Thomas Blashill, dated June 13th, accepting the appointment of consulting architect in connection with the competition for the proposed extension of the Town Hall. The sub-committee reported that they had discussed plans in connection with the Junction Street improvement, the formation of a square, and rebuilding of the Corporation property down to Chariot Street. The committee recommended that Engine Street be abolished, and that the block plan of the site submitted by the city engineer, as amended, be approved by the committee. It was resolved that the city architect be requested to consult with the various tenants with a view of ascertaining what accommodation they desired the Corporation to provide for them in rebuilding the property, and the city architect was asked to prepare and submit a rough scheme. It was also resolved that in the opinion of the committee it was desirable that a portion (facing the new square) of the upper floors of the new premises should be utilised for an hotel.

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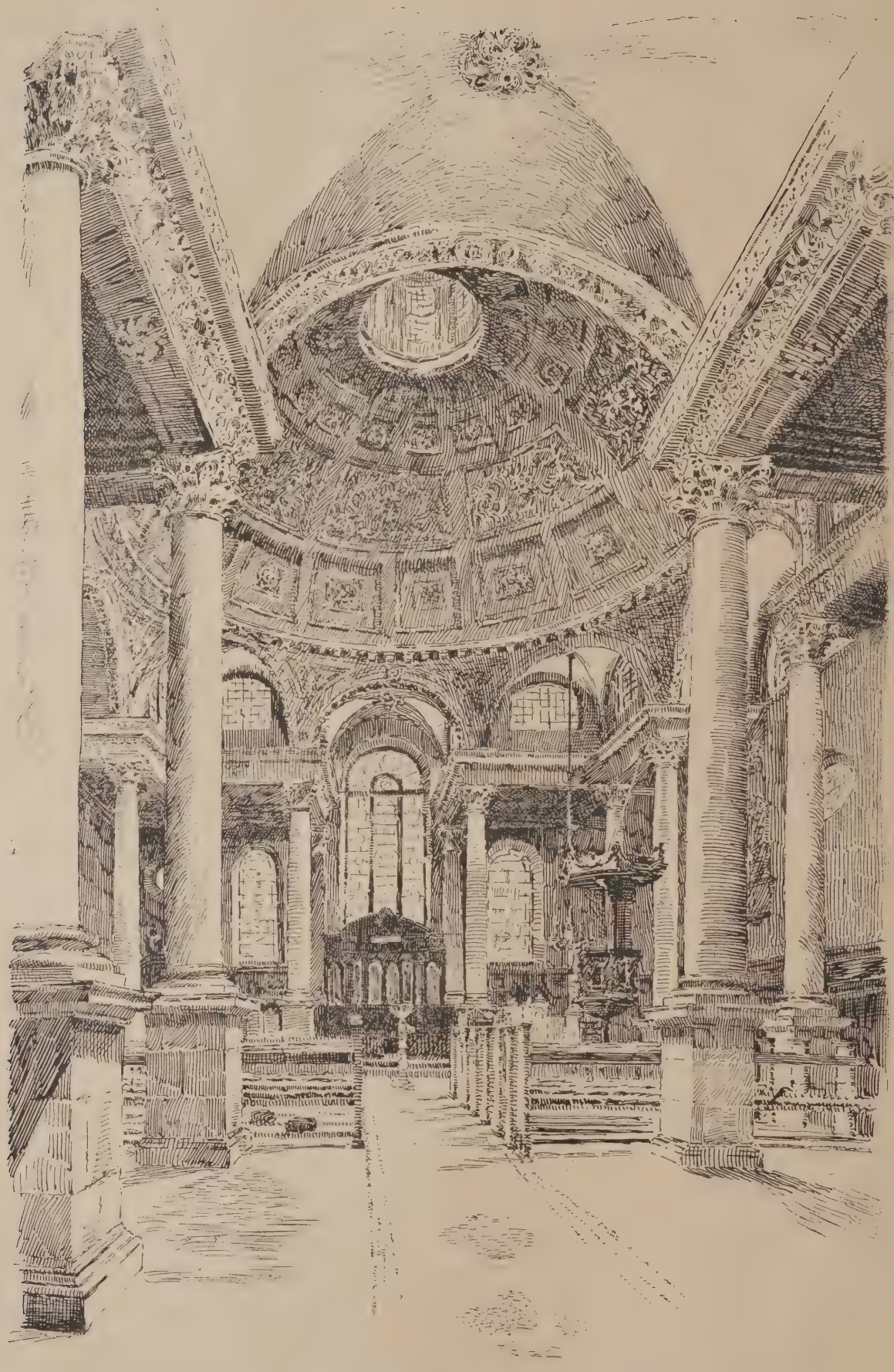
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Wednesday, December 12th, 1900.



~ NOTES FROM STAPLE FITZPAINE. SOMERSET ~

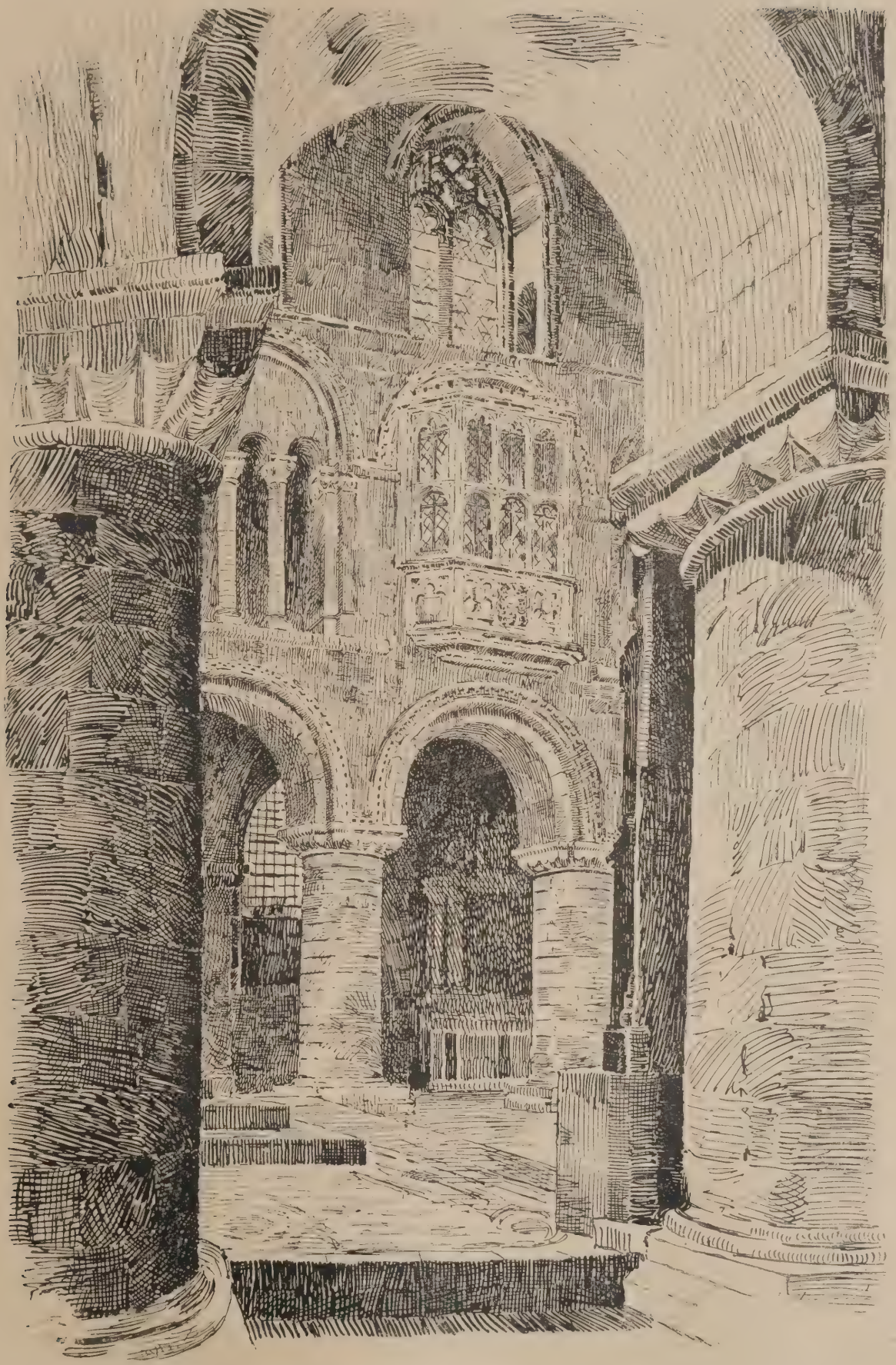
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ST. BARTHOLOMEW'S CHURCH, GREAT SMITHFIELD, LONDON, E.C. Drawn by J. HUTCHINGS.

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Drawn by SYDNEY R. JONES.

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Bricks and Mortar.

APHORISM FOR THE WEEK.

So fair a church as this had Venice none:
The walls were of discoloured jasper stone
Wherein was Christos carved; and overhead
A lively vine of green sea agate spread.
CHAUCER.

Our Plates. THE illustrations of the churches of St. Bartholomew and St. Stephen form part of the article on "Ancient London" which begins on page 364 of this issue.—"A Glimpse of Bygone Days," by Mr. Sydney R. Jones, is a composition of sketches made at different times and places. The old-fashioned doorway, the creeper-covered wall shining in bright sunlight, and the surrounding objects which form the centre of interest are to be found within the cathedral close of Exeter, which city abounds in old-world subjects alike of interest to artist and architectural student. The small courtyard is approached from the roadway by a stone archway, which, while possessing good colour, is not favourable to a pen-and-ink sketch. Consequently this has been replaced by the one taken from quite another part of the country—Lapworth, in Warwickshire. When this method of working is adopted it should always be borne in mind that, though the details of the original study are altered for the sake of composition, the spirit and feeling should always remain the same.—Staple Fitz Paine is close to Taunton and the almshouses illustrated adjoin the church.

The late Mr. Francis Chambers. MR. FRANCIS CHAMBERS, architect, of 11A College Hill, Upper Thames Street, E.C., died on Saturday week last at the age of 71 years. The deceased commenced as a pupil of the late Sir Sidney Smirke, and was closely associated with the City throughout his long and useful professional career. He was a partner for nearly half a century in the firm of Dress and Chambers, architects and surveyors, whose offices were at 28 Queen Street. The name of the firm was subsequently changed to Francis Chambers and Sons, and it has been located on College Hill for many years. The deceased appeared in many important arbitration cases. He was concerned in the designing and erection of a great number of costly buildings, including those occupied by Cassell and Co., Limited, Messrs. Copestake and Co., Messrs. Pilkington Brothers, and Waterlow Brothers and Layton, Limited; St. Ann's Church, Hoxton; the schools belonging to the Central London School District at Hanwell; and the markets and Ladies' College at Guernsey. He was for many years the surveyor of the parish of St. James's, Garlickhithe, in which capacity he designed the present vicarage Upper Thames Street. The deceased also occupied many important appointments, being *inter alia* a surveyor to Her Majesty's Customs Fund and several building societies, a Fellow and a member of the Council of the R.I.B.A., and for many years an examiner of district surveyors in connection with that body. For some months past the deceased had been in indifferent health owing to heart trouble, a disease which he succumbed at his seaside residence, Cobo, Broadstairs, leaving to mourn his loss two daughters and one son, with whom he was in partnership.

New Elections to the R.I.B.A. THE following gentlemen have quite recently been elected to the membership of the Royal Institute of British Architects:—As Fellows: Messrs. Louis Ambler (London), T. P. Figgis (London), H. G. Garson (London), E. J. Jackson (Sydney, N.S.W.), C. E. Mallows (Bedford), and J. W. Simpson (London). As Associates: Messrs. S. Chesney (Stourbridge), G. E. Clay (Gravesend and Warrington), C. H. F. Comyn (London), F. Cooper (Feniscowles Old Hall, near Blackburn), C. A. Daubney (London), W. E. Emerson (London), J. E. Franck (London), A. R. Groome (Manchester), H. Haines (New Brompton), E. V. Harris (London), J. S. Heath (London), W. B. Hopkins (London and Great Berkhamsted), P. E. Nobbs (Edinburgh), S. V. North (London), C. W. Smith (London), W. H. Swann (London), A. Symon (London), A. M. Torrance, jun. (London), R. P. S. Twizell (Newcastle-on-Tyne), C. E. Varndell (London), and C. F. Young (London). As Hon. Associate: Mr. E. W. Smith, Member of the Royal Asiatic Society, Archæological Surveyor to the Government of India, N.W. Provinces and Oudh Circle, and Curator of the Lucknow (Government) Museum, Oudh; of the Museum, Lucknow, India; and Cheena Lodge, Naini Tal, N.W.P., India. As Hon. Corresponding Members: Messrs. J. Antoine Bouvard, Director of the Architectural Works of the Paris Exhibition, 1900; of 99 Rue de Verneuil, Paris; and L. C. Pedro d'Avila, hon. architect to the King of Portugal, architect to the Government, member of the Royal Academy of Fine Arts, Lisbon; of 41 Rue de Vasco da Gama, Lisbon, 2mo.

Overcrowding in Domestic Dwellings. LECTURING recently on this subject before the Sanitary Inspectors' Association, Mr. F. W. Morley summarised the causes of overcrowding as follows: The commercial conditions under which we live disturb the equal distribution of the population and cause the crowding together of the majority in certain centres which may happen to be convenient for carrying on certain industries, with the result that the law of supply and demand enhances the value of the land in these localities to such an extent that in order to secure a return for capital invested a larger number of buildings are erected on a given space than is proper. The great obstacle in the way of an efficient and final remedy of the problem, said Mr. Morley was the unsatisfactory state of the land laws. One outcome of the attempt at a solution had been the erection of various blocks of model dwellings. But there was something radically wrong with a system which rendered it necessary to crowd such a large number of persons upon a given area, when within a comparatively short distance large tracts of land were to be found vacant. Useful as model dwellings were, it was infinitely preferable, whenever possible, to provide cottage accommodation on the outskirts. After dealing with the various aspects of the question, Mr. Morley enumerated the following methods as capable of playing their part in the final solution: The provision of ample means of transit, the removal of factories from town to country, the erection of ample and suitable dwellings, the full use of the powers conferred by the Public Health Act, the Housing of the Working Classes Act, &c., the teaching of hygiene in public schools, and the taxation of the land in order to create a fund to be utilsed in cheapening the cost of the provision of suitable dwellings.

Types of Beauty. IF we want to form an idea of what bygone races were like, we must go to what artists have left; but, as the Hon. John Collier remarked when lecturing at the London Institution last week on "Varying Types of Beauty," artists are idealists, and cannot be depended upon. Did the Greek statue represent the true racial type of what the Greek man and woman wanted to be? That was the question. The fact of the matter was that everyone tried to become like the prevailing fashionable type, and the artists exaggerated the type. Egypt possessed the most rigidly conventionalised art, and yet an art in its earliest form singularly realistic, as shown by the famous figure of the Scribe in the Louvre. The remains which were left to us by the Greek sculptors showed us the elevated type created by Phidias. The lecturer showed on the screen photographs of many of the most famous statues and basreliefs of Egyptian, Assyrian, and Greek art, instancing the Venus of Milo and the Hermes of Praxiteles as among the greatest instances of ideal beauty. After the degenerate Roman and Byzantine times the Middle Ages had a poor ideal as regarded human beauty, but in Italy, where classical influences lingered, the type was always higher. The ideals of Botticelli, Raphael, and Michael Angelo were successively displayed; but it was Leonardo who created in his Monna Lisa a type of beauty which was more attractive than any of these; and following him, Luini perpetuated it. Everywhere in Europe, save in Italy, the ideal of beauty was always lower than that of the Greek Age, and the fact that at the time of the Renaissance the Italians were probably the handsomest race in Europe accounted for this. Coming down to Velasquez, Rembrandt, Van Dyck, and Rubens, whose portraits revealed but little actual beauty of racial type, Mr. Collier passed to the English school of the last century—Gainsborough, Romney, and Sir Joshua Reynolds—and the French school of Watteau, Boucher, Lancret, and Fragonard. The Frenchmen were not so much given to portrait painting, but their ideals were not high. And in modern times, was there an ideal of beauty at all? There was certainly great variety, and with the examples of the past ages it was possible that a great ideal might be attained. But we had not got it yet.

Forum Excavations: A Complaint. A CORRESPONDENT of the "Daily Graphic," writing from Rome, states that much surprise and dissatisfaction is felt there among archæologists that the Ingegnere Giacomo Boni should not be recognised in England as the author of the recent discoveries in the Roman Forum. On the occasion of the presentation of the gold medal of the Royal Institute of British Architects Mr. Emerson, the president, in giving Professor Lanciani high praise for his work and writings so well known among English-speaking people, also spoke of his having discovered the original Via Sacra and other monuments in the Roman Forum. Professor Lanciani has been on the Commission for the Works, but the excavations for the last two and a half years have been carried on solely by the Ingegnere Boni under the Italian Government, and the discovery of the original Via Sacra, the Lapis Niger, Fons Juturna, and Rostra of Julius Cæsar are entirely due to his extraordinary energy, indefatigable labours, and deep study of classic writers. It was for this that Ingegnere Boni was presented with the title of "Commendatore" by King Humbert, and by which he has earned the respect and high admiration of his confrères in Italy. Ingegnere Boni is a member of the Royal Institute of British Architects, was a pupil of Ruskin's, and has spoken in London, in English (in which he is fluent) on the architecture of Westminster Abbey, &c.

A Royal Residence at Rome. IT is stated that the vexed question of a residence at Rome for Queen Margherita has at last been decided upon, as the contract will shortly be signed for the purchase, for £100,000, of the Piombino Palace, so long the residence of the American Ambassadors, and two adjacent houses, all standing in large grounds in that part of the Eternal City known as the Ludovisi quarter. The palace is a modern building, the chief feature of which is a magnificent staircase, with a celebrated marble group, at the entrance, of Orestes and Electra, which is supposed to have stood in the gardens of Sallust, now belonging to the Piombino-Ludovisi collection. Above, there is a good-sized entrance hall hung with antique tapestry, which opens into a wide white-and-gold corridor, which runs the whole length of the palace, each wall being decorated with long mirrors from floor to ceiling, alternating with old family portraits set in as panels, with here and there a door, the whole set off by a red velvet carpet and innumerable varieties of palms, which grow so luxuriantly in Rome. Out of the corridor open many rooms, the chief of which is a gold-and-white ballroom. There is also a red-and-gold drawing-room, yellow-and-gold and blue-and-gold salons, followed by the dining-room, the *clou* of the whole. It is a square chamber of palatial proportions, with terra-cotta-coloured walls and an immense chimney-piece of black marble, veined with white. Above, as a frieze, is exquisite tapestry, representing hunting scenes in green, grey, and white, adding an air of richness and elegance to the apartment seldom attained in modern homes.

ARCHITECTURAL ASSOCIATION.

COLOUR IN ARCHITECTURE AS SEEN THROUGH AN ARTIST'S GLASSES.

BY A. WALLACE RIMINGTON.

A MEETING of this Association was held last Friday, Mr. W. Howard Seth-Smith, F.R.I.B.A., in the chair. The minutes of the previous meeting having been read and confirmed, Messrs. F. Baker and C. J. Goodwin were elected members of the Association. Mr. A. Wallace Rimington then read the following paper on "Colour in Architecture as seen through an Artist's Glasses":—

As a painter who has only studied architecture non-professionally, I felt some diffidence in addressing an architectural society upon an architectural subject; but as I have a great love for architecture, and have painted and sketched architectural subjects a good deal in Europe for a good many years past, I thought perhaps I might venture to make some few remarks to you upon colour in architecture from a painter's standpoint. Perhaps two further excuses for doing so might be found in the fact that most artists have to make a special study of colour, and that it seems to me the whole question of colour in art is at this moment of special importance.

We live at a time when from various causes the colour sense of civilised Europe has seriously deteriorated, and when, although there is some slight revival or new development of the feeling for colour amongst the cultivated few, it is, perhaps, becoming more and more weakened or obliterated amongst the great majority.

Taking a general view of Europe, and, excepting this partial revival, it is difficult to avoid the conclusion that in decoration, in costume, and in the thousand small objects of everday life,

Colour Tends to Disappear,

and, speaking broadly, where it remains, to become perhaps more crude and less harmonious. And this, I am afraid, also applies to some extent to the fine arts. There are a few good colourists amongst the artists of most countries; but, on the whole, good and powerful colour is becoming rarer in the great picture exhibitions of Europe, and those who have a keen and cultivated appreciation of it are confining their attention more and more to the old masters and to that very small modern school which attempts to carry on their colour traditions. Perhaps it may be said that I am overstating the case; but, if so, it is from no desire to do so, but because the conviction is forced upon me after a good deal of observation and in spite of the wish that it were possible to endorse the popular opinion as to a general advance of the feeling for colour in the decorative arts.

Compare the present condition of things with regard to colour with what it was in the later Middle Ages or in the full tide of the early Renaissance. Do we not go back to the remaining art fragments of these colour periods and study them with care and reverence, while we are almost hopeless of excelling them in refinement and strength? Does not the glass of Fairford and Trinity Chapel, of Chartres and Bourges, excite our admiring envy; and can we altogether reach the colour harmonies of the working handicraftsman who produced the enamels of Limoges, or the mosaics of St. Mark's, Ravenna, Monreale, and Cefalu?* Do not the early frescoes which are to be found in French and Italian† churches show a widespread feeling for good colour through the long periods in which they were produced, which is absent (in point of extension) at the present day? If further circumstantial evidence were necessary, one might enlarge upon the significant fact that it is in the out-of-the-way and little modernised parts of Europe that a pronounced colour sense still lingers amongst the people, like the few remaining leaves of orange and crimson of a once gorgeous autumn.

It is not, however, necessary to press the contention. Even assuming that the opinion is too pessimistic, it is better to see clearly the artistic dangers of our time rather than to underrate them. We shall at least lose nothing by being on our guard against

The Decay of the Colour Sense,

and we shall gain much by doing all in our power to stimulate and develop it. Whether we compare our present feeling in Europe for colour with what it was in the past or not, it is at least certain that it contrasts most unfavourably with what it has been for centuries past, and still is, in the East. There is, therefore, much room for improvement; and consideration of the whole question would seem not unadvisable.

And, further, in view of the part which colour plays in the economy of nature, and the fact that it is probable that it has some considerable influence not only upon our minds but upon our health, quite apart from its capabilities of giving æsthetic pleasure and pain, it can scarcely be denied that there are still vast opportunities for widening its use and making it a greater influence in our daily lives and in the art with which we are surrounded.

And in architecture, as the oldest and possibly the greatest of all the arts, the study of colour cannot, of course, be neglected. Whether we like it or not,

It must Come into Play

more or less in every building. All materials possess colour of some kind, and this colour directly affects the impression produced by a building. Moreover, the good effect of any architectural work, fine in respect of proportion, line and detail, may be completely destroyed by a vulgar colour scheme, with bad division of its colour masses or inartistic colour accentuation of unimportant parts; whereas, on the other hand, harmonious and refined colour may, as we all know, add immensely to its interest and dignity.

And now, before proceeding to the more practical part of this paper, there is one more proposition which I am sure most of you will agree with, namely, that the whole question of colour is surrounded with great and special difficulties. The condition of public opinion in England and in most European countries with regard to colour is almost chaotic, and although something is at last being done in America,* hardly any attempt is made to promote study of colour as that necessary

Part of Every Cultivated Man's Education

which some of us think it ought to be. Notwithstanding this, almost every one professes some taste in colour, and most people pronounce decided though divergent opinions about harmonies of colour and would consider it an insult if it were implied that they were not quite right about them, even though they might frankly confess to nearly total ignorance of, let us say, electrical science or musical composition. Colour is, however, quite as difficult to deal with as musical sound, and probably much more so. It is not easier to strike an absolutely true colour note than to sing a musical one, and the colour scale has a longer and more subtly-graduated range in point of ether waves than the musical one of air vibrations. The colourist has to stop his intervals upon a string a hundred times as long as that of the violinist, and he has often to strike a chord of colour with many more notes in it than a musical one, though if he be a great colourist he will produce it with unerring feeling and truth. Every good picture is, in fact, a series of such chords, carefully selected and combined, and perhaps we may venture to assert that every building ought also to be, even though its colour harmonies may be simpler.

This much at least we may say with some degree of certainty, namely, that every good architectural building ought to have some of the elements of a good picture about it, and that one of these elements is

Harmonious and Interesting Colour,

and, if so, then I would submit to you that it may perhaps be worth while for the architect to consider architectural design in the light of some of the more or less defined principles which guide the artist.

Upon the wider subject of these general principles I do not propose to enter to-night, but did time permit I should like to have included some general defence of such guiding canons in art and trace their development. I must, however, confine myself to saying that there is a certain broad general agrement as to some few of them. *Pace* a few extremists of the naturalistic school, all art has developed from what has preceded it, modified more or less, and sometimes very largely, by the study of nature. The artist, both from experience of what other painters have observed and selected from nature, and from nature herself arrives at some understanding of her laws. He studies other art works, and picks up a secret here and there from the pages of nature's great open book, and thus gradually learns something of how in her most beautiful effects she harmonises and emphasises her form and colour just as he discovers how she produces some of her effects of light and shade. Gradually also he learns that, when his picture is bad and out of harmony, it is because he has broken some one of those laws the necessity for the observance of which, I think, can even be traced into his own personal mode of artistic expression. Perhaps he is, to some extent, unconscious of this, and, like Turner, has not the power of putting his experience into words; but every painter, even though he may disown it, works more or less by the light of principles as well as mere feeling.

In two previous papers read elsewhere I have attempted to project the light of some of the more or less universally accepted canons or principles of

Composition in Painting

upon architectural design, and to-night I propose to refer very briefly to some of those connected with colour, and to submit the proposition to you that they also are in a greater or less degree applicable to your great art.

In dealing with the subject I find myself, however, in somewhat the same position that Ruskin did when he wrote "The Seven Lamps of Architecture" and had great difficulty to prevent their turning into thirteen; but as our time is very limited I must confine myself to a very few detached ones.

Let us, then, take as our first example that great open secret of nature in regard to good colour which is perhaps more neglected and less understood in these days than any other. I mean the natural law which, in any given coloured object under normal lighting, causes

The Richest Colour to be in the Half-tones.

The power of any colour-producing surface to absorb the vibrations which it abstracts from white light is limited. Thus, where white light falls most strongly upon an object, there its colour-producing powers will after a certain degree of illumination be most weakened, or, in other words, the balance of coloured rays which it gives off will be most diluted. On the other hand, when the light is less strong there will be less dilution and the colour richer. Take, for instance, a piece of drapery. It is quite evident that the richest colour is in its folds, or half-tones, and the weaker in its high lights, though these have the same colour-absorbing power and receive more light. In the deeper folds the colour is also still further increased by reverberation, like sound, in a reverberating space. In other words, the natural law is that the colour should be strongest in the half-tones.

Now, although, strange to say, the uneducated eye seldom appreciates this law, the great masters in painting, almost without any exception, have observed it most carefully, or, if you refuse to allow that they thought it out, at any rate they felt its action most strongly. Some of the early painters, whose colour is universally admitted to be of the most exquisite kind, combining strength with subtlety, and truth with decorativeness of the highest description, especially did so. Such painters, for instance, as Botticelli, Benozzi Gozzoli,

* For example: Church of the Jacobins at Toulouse, Cathedral of Amiens, St. Savin at Vienne, Cathedral of Chartres, Church of Montoise, and many others.

† San Francesco at Assisi, as a single instance.

* See "Instruction in Colour for Public Schools." L. Prang. "Class Book of Colour." M. Maycock. "Colour Work for Schools." H. P. Chace.

Fillipo Lippi, the Bellini, Perugino, and Titian even went as far sometimes as almost to bleach the high lights of their drapery, and, curiously enough, without taking special note of this, one is almost unconscious of the fact, which, instead of weakening their colour schemes, strengthens them.

Turning from the early to the later schools, whatever rank we may give Rubens in other respects, he was at any rate a splendid colourist. Here is what he says in his own words with regard to flesh painting:—"Paint your high lights white. Place next to it yellow; then red, using darker red as it passes into the shadows, then, with the brush filled with cool grey, pass gently over the whole until they are tempered and sweetened to the tone you wish." Finally, to step back at one stride from Rubens to early classic art in the few fragments of Greek painting that are left to us, the high lights are almost invariably but "faintly stained."* On the other hand, the bad painter, and especially

The Bad Modern Painter

of the French and German schools, nearly always puts his very strongest colour into the high lights, and his half-tones look, in consequence, poor and thin, while not infrequently vulgarity sets its seal upon his work.

There are, of course, exceptions to every law, but in the main this great colour principle of nature might, I think, be shown to be of value in every form of art into which colour enters. And, turning from painting to architecture, I cannot help thinking that the better recognition of it ought also to be of some assistance.

Though it may not have been definitely worked out in the minds of some of the architects in the Middle Ages and the Early Renaissance, it would seem more than probable that it influenced some of their work. Perhaps some of the brick and marble architecture of Italy and Spain show this. But whether this is so or not is a matter of relatively small importance, for in architecture, as in all else, progress, building upon selected precedent, ought surely to be more striven for than imitation.

To take one or two examples of how the observance of the principle might reasonably affect architectural design; in exteriors, in which varied colour enters, it would indicate the undesirability of putting a weaker colour into a cornice immediately under the eaves of a building, into the under-cut portion of a projecting moulding, or into any hollowed or shadowed surfaces, rather than into those exposed to the full strength of the light. Conversely if it were desired to strengthen the general colour effect, it would be well to enrich the former with relatively strong and warm colour.

One is often struck, from the painter's standpoint, by the way in which a building of warm-toned material has been made unbearable to the artist by the shivering

Coldness of its Painted Woodwork,

just where the eye, accustomed to nature's methods, would expect additional warmth and richness.

Examples of the advantage of keeping recessed mouldings warm and full in colour may easily be found in the mixed brick and terra-cotta architecture of Italy, especially of such districts as those of Pavia, Milan, Bologna, and Brescia. In the church of Chiaravalle warmth and richness of colour are throughout introduced into the shadowed mouldings, and cool coloured materials are always avoided in them; and the same thing applies to the exquisite little campanile of San Gottardo at Milan. Numberless other instances might be adduced, but I would rather suggest practical experiment than precedent. I am not contending either that the general colour or portions of the colour of a building should not, if it is desired, be pale or cool, but merely that the relative paleness or coolness of its parts should, if the colour be varied at all, be in the right place. A whitewashed cottage is often delightful, but the violent contrast of much modern white woodwork is detestable, coming, as it often does, just where it is not wanted. So, too, the cold grey frieze or decorated coving of stucco or cement, which is sometimes to be found under the eaves of a red brick building, is often most injurious to its colour scheme. It is cool colour in the wrong place, and it is, I think, especially to be avoided in our sunless climate, where there is no assistance to be obtained from shadows full of rich reflections, and where colour is so much needed in our buildings. We may also draw the further deduction that if the architect uses the richest colour at his command in his high lights, it will not merely be wasted but actually injurious. Experiment will, I think, prove the main contention. We must remember also that

Colour is so Potent

that it may completely overpower the light and shade of a design. It surely cannot then be right to use colour in such a way as to lessen the effect of the carefully planned light and shade which the architect has given by his mouldings and other projections and recessings, and observance of this law of colour will, perhaps, help to prevent our doing so.

In addition, it is a significant fact that the experience of the painter shows that by working thus in harmony with the principles of nature it is much easier to deal with strong colour and yet make it look refined. If an example were required to prove this, I might instance Albertinelli Visitazione at Florence.

The next principles to which I propose to refer are the twin ones of "inter-contrast" and "quality." "Inter-contrast" may be described as that interweaving of divergent colours which tends to make them appear pure and luminous. "Quality," a vague term to which various meanings are attached, may be roughly defined for our purpose as texture.

In painting the appreciation of and the careful striving after these characteristics of good colour by an artist have much to do with his position as a colourist. For a second-rate and insensitive colourist there is none of that

Exquisite Vibratory or Living Quality

which makes it uncertain whether the tendency of a given colour is in one direction or another, and renders it difficult to analyse it.

In the work of a great painter there is hardly any quiescent or absolutely flat colour. It is all full of palpitating life, and is composed of slightly differing and opposing tendencies and woof and weft of hue towards the warm and cool end of the scale. Take, for instance, the dark-toned sea in the work of a good painter. Here its broken quality shows a slight tendency towards green, there towards violet or purple. Perhaps there is a broken red tone under it which tells through; perhaps there are particles of orange which do the work of rendering it luminous and transparent. Take what looks like a nearly plain blue sky which yet is full of light and not a mere surface covered with a coat of paint. Examine it, and you will find that warm and cool colours, separate or only partially overlaid, telling through each other, give it its chief charm, a suggestion of that exquisite quality which Longfellow suggests when he speaks of

> The tender azure of a sky
> Just washed by April rains.

The physical and optical reasons for this are not far to seek. The retina is excited by the juxtaposition of colours of a slightly complementary tendency in small quantities just as it is by larger adjacent masses. The mind also is stimulated by the introduction of an element of mystery into the resultant tint which gives those possibilities for the imagination without which no art work is quite satisfying.

I need not pursue this part of the subject further. I would rather appeal again to nature and assert for her that no colour of hers is ever without this characteristic in greater or less degree, and that where it is especially present there her colour is of the loveliest kind, as, for instance, in the shimmering atmospheric tints, and in substances like mother-of-pearl and opal. In a word, experience suffices to show that

Inter-contrast is Essential

to give colour its full power and interest. It is the art principle of "exchange" or colour balance—upon which I shall touch shortly—carried much further, and is of vital importance. And not only are interminglement and inter-contrast of much value, but also in many cases what, as I have said, the painter calls "quality," or texture. All nature's colours are full of this, and though it is sometimes so subtle as not to be easily observed, and the resultant colour-tint seems almost flat, it is nevertheless omnipresent, and it exists, of course, side by side with interminglement of colour tones.

It is obvious that these two sister principles are also very applicable to colour in architecture. One sometimes sees a building or part of a building which is interesting in its forms and detail, and at the first glance is not absolutely bad in colour, and yet one feels it is monotonous and unsatisfactory, and that it would be impossible to sit down and paint it. One asks oneself "Why?" and one discovers it is because its colour surfaces are dead and uninteresting, and because there is no play of intermingled colour and no "quality" in them.

There are many ways in which this dull monotony might have been avoided, at little, or perhaps no, extra expense, by better commingle-ment of material, by rougher and less machine-made surfaces, or perhaps by saving the cost of a little carved detail and putting it into the colour scheme. It is, moreover, not only a question of good colour and quality, but also of contrast. In a picture it is essential that different kinds of things should be painted with a different touch; that some should be expressed with smooth sweeps of the brush, others by roughness and loading of the pigment. Variety of handling is necessary to avoid monotony. And as

Texture so Much Affects Colour,

the architect also can by using varied and contrasting surfaces make the colour of his stone, brick, metal or other material more pleasing to the eye.

If this applies to exteriors, how much more to interiors. There the architect has endless opportunities for producing colour which shall be real colour and of educating the colour sense of his clients. Paint, distemper, and other stains, gilding, coloured materials of all kinds, give him a palette almost as rich and varied as that of the artist.

Much of our modern colour decoration, ignoring as it does these two delightful characteristics of good colour, namely, quality and inter-contrast, is crude and offensive, or severely cold and inartistic, and though it is not of course contended that relatively plain and flat surfaces of colour should never be used, even when they are employed they may be made more luminous or interesting by some attention to these principles.

"Inter-contrast" and "quality" may perfectly well exist even in what appears at a little distance to be a relatively flat surface; and, of course, this has to some extent been recognised in modern decorative work of the best kind. Apart from artificial surface colours for internal decoration these characteristics, of course, come into evidence in many materials which are in use for decorative purposes, and which, as in the "encrusted" architecture of Venice and Arabia, may add great charm to a building. In textured marbles, for instance, the transparent play of colour is one of their chief sources of beauty, as it often is in the vitrified colours of tiles and in various metallic or semi-metallic surfaces. Distance also often blends decorative colouring, when the individual colour spots are somewhat crude, into rich masses of colour apparently full of quality and iridescence, and in large buildings this fact might perhaps be taken more advantage of.

Granting that these two characteristics help much to avoid monotony something further is also frequently required which, while assisting the general harmony of the colour scheme of a picture, tends still further to prevent it. The painter finds this in the large and broad principles which he sometimes calls

"Exchange" or Partial Repetition.

"Exchange" as applied to colour may be described as the carrying over of a smaller portion, or repeat, of one colour mass into another. In most scenes in nature which strike us as especially beautiful we find this constantly occurring.

* Fuselli.

The deep blue of the sky is carried down in smaller quantity by cool cast shadows or reflections from water or leaf surfaces into the warm tints of a landscape, and the effect gives us exceptional pleasure. The red of the sunset repeats itself upon rocks or tree-stems, or is carried into the cool tones of a green glade by touches of autumnal foliage, and we again feel a sense of satisfaction in the colour chords.

As in nature, so in art; and in the work of almost every good painter you will find the principle carried out, even though it may have been less the result of deliberate intention than of unconscious artistic feeling.

To go no further than the pictures in our own National Gallery, plenty of examples might be quoted. I will refer to only two. In Titian's "Bacchus and Ariadne" there is a deep-toned distance of remarkable strength and purity. Its colour is repeated, or exchanged over, into the warm tints of the figures, while some of their rose-coloured drapery is carried up into the sky. In the "Virgin and Child," by Fra Bartolomeo, part of the drapery of the Virgin is a very peculiar cool greenish-grey blue. It has its exact counterpart in the colour of the sky, while portions of the flesh tones are also repeated in the clouds.*

It is evident that it also applies to architectural design, that many buildings owe part of their satisfactory colour to it, and that it might help to redeem the colour scheme of others. In many cases

The Colour of a Building Material

has nothing to do with its strength or utility, and there is a fairly free choice to the architect, apart from his opportunities for giving artificial surface colour in interiors and elsewhere. The principle would seem to be very beautifully carried out in parts of the exterior of St. Mark's, and in many other Venetian palaces in which small spaces and panels, and even dots of colour, are carried down into other masses and help to give unity without monotony. So also in some excellent buildings of the Early Renaissance elsewhere in Northern Italy and in many Spanish ones which I have sketched with delight. But although a good many precedents may be found amongst the exteriors of architectural buildings, colour has apparently for a long time been so little considered in their design that it is rather to the future treatment of them, when there may be more feeling for colour, that I would suggest that the principle may apply. No principle, however, can do more than assist the artist, and much artistic feeling is always required to carry out colour repeats and exchanges successfully.

Taking two more detached principles from the sister art, I would refer next to those of

Gradation and "Focussing."

We all know how important a part gradation plays in Nature, and that scarcely a colour space can be found in a landscape in which it is not present almost to the verge of infinity. Beauty of colour does certainly depend on it in a large degree, and is still further increased in many instances if the gradation culminates in a focus or spot of colour which is predominant.

How, it may be asked, can these principles possibly apply to architecture? Perhaps you will permit me to answer that question by a very brief description of a building which is to me amongst the most beautiful pieces of architectural colour I know in Europe, and to which I have made more than one pilgrimage. I mean the Palazzo Publico of Piacenza. It is a structure of considerable size, interesting and beautiful, not only in respect of its colour, but also as to its general forms and details.

The first storey of the north façade is carried upon a substructure of pointed arches raised upon piers. These latter are of cool-toned marble, coolest at their bases, and gradually intermingled with stone of a warm tone, which approaches a delicate pink grey of indescribable tint at the upper part of the arch and in the spandrils. Warmth of colour thus having been led up to, the first storey is built of terra-cotta of about the colour of red sandstone, the grey of the substructure is "exchanged" into this in small quantity by the marble shafts of a line of extremely beautiful windows, and the colour tends towards increased warmth as it rises to the battlements above it. These are finally of red brick of the deepest burnt sienna, mellowed and qualified, of course, by irregularity of tint and the action of time, but still a splendidly strong "trumpet blast" of red against the sky.

The building is as harmonious in colour as a Bellini background, and it is, I think, an instance of what might be done by introducing the painter's principle of gradation in exteriors.

Nature is continually employing it in the happiest way in her treatment of buildings. I have often painted a roof in which the tiles have been toned down by time to one large gradation towards brown umber or a russet grey, whilst perhaps some interesting feature remains the strongest note of the original colour.

Leonardo da Vinci thought painters might learn a good deal from an old wall. So, perhaps, Nature's treatment of the colour upon a roof may have some significance for the architect. The builders of the delightful old Tudor houses of Gloucestershire varied the size of the shingles or tiles in a progressive ratio towards the ridge. Why should not we vary our colour somewhat similarly? This is, of course, a matter of opinion; but gradation being a source of beauty in colour, we should at least be careful not to destroy it where it is given by curved surfaces and gradually increasing shadows, which even a few spots or patternings of colour which are out of tone may easily do. "Focussing" also is unquestionably of great use in painting, in rendering colour more interesting, and in accentuating features or details which it is desired to bring into special notice; and in colour schemes for architectural buildings I think it might also be made use of.

A most important aid to the painter in making his colour tell with some approach to the force it has in Nature is of course

Contrast.

In fact, it is at the very root of the painter's art. Without contrast he cannot even express a sense of light. So too with regard to colour; the full force of colour can only be felt under conditions of contrast, just as movement can best be realised in opposition to repose. Contrast is, however, so powerful an instrument that the best painters are careful not to overdo its use. A picture is helped by one or two passages of strong opposition—sharp darks entering boldly into lights, or warm colours telling forcibly against cool ones—but in the greater part of a good picture the artifice is not resorted to, and harmony may easily be destroyed by over-contrast, which is the besetting vice of the second-rate painter. It is a very keen-edged, though valuable, tool, and may easily cut too deeply; and I submit that these considerations apply quite as much to colour in architecture as in a picture. More buildings seem to be ruined by over-contrast than from any other cause, and it is certain that many otherwise fine buildings are often prejudiced in cultivated eyes solely by reason of it.

It is scarcely necessary to call to your minds some few buildings in London in which strong contrasts have done their vulgarest worst, and seem to have tried to shout down that implacable enemy of the modern architect, the street advertisement.

Still, so valuable a resource as strong contrast cannot be neglected, and in all contrasts the question of the relative quantity of the colour masses is an important factor. A violently opposed colour which would be unendurable when in large volume will be no longer irritating if it is in very small quantity relatively to the principal colour masses. It is often most successfully employed in pictures in very small points of opposition, and it may also be of great use if skilfully introduced in forcing several rather too divergent colours into harmony, just as a slightly discordant accidental is often valuable in musical composition.

Examples of this may, of course, easily be found in the works of the great colourists and also in the ornamental embroideries, enamels, and mosaics of the good colour periods and nations, especially in those of India, Persia, and Japan. In architecture I have seen many charming examples in Italy and Spain and in other parts of Europe. The harmonising effect of the detached and isolated points of strong colour in many Moorish and Arabic buildings is often delightful. Skilful contrast of colour would seem to be of special use in architecture where the building itself is relatively uninteresting.

Time presses, however, and leaving some other general principles upon which I should have liked to have touched, I must pass on to two final ones which are closely related, and are certainly common to the arts of both painting and sculpture; namely,

Breadth and Harmony.

It seems almost absurd to mention such well-recognised qualities; but I venture to think that, although harmony and breadth of colour are often talked about, they are not such simple matters as most people suppose. We are deceived when we look at a great and harmonious picture by its apparent simplicity, and we fail to realise how carefully through all its colour scheme the subordination of every particle of colour has been felt out. No art work can be really great without harmony and without breadth, for they are necessary to that artistic unity which is the most universally accepted of all laws in art: namely, that in a given work some one essential idea or impression shall hold the attention or appeal to the emotions.

Harmony does not, however, mean monotony, and a picture will be greater and more impressive if, while containing a great range of colour, it is still harmonious.

A Musical Chord

is built up of divergent tones, but they bear an inter-relation; and just as in music there is a science of harmony which is of some assistance to the musician, and which is founded upon physical and physiological facts, so in colour, as I believe, there are underlying physical laws which, if we knew more about them, might be of great assistance to us. The universe is built up of what we are pleased to term laws, and it would be strange if there were none which underlie our pleasurable and painful sensations with regard to colour as they do with regard to music. Be this as it may, what I would submit once more is, that as harmony of colour is of the first importance in painting, it is also of the first and greatest importance in colour as applied to architecture, and in much of our modern work is insufficiently studied.

Nature, if you leave her alone, tends to harmonise the discords of colour of almost any building, softening down the sharp contrasts, overlaying the surfaces with lichens, or toning them down by time stains and oxidisation; but we often refuse to learn from her, and go on cutting up our pictures with a patchwork of violently opposed colours, and destroying the effect of our buildings by crude contrasts and over-emphasis.

Systematic study of harmonious colouring would thus seem to be as needful for architects as it is for painters; and as it is now mainly a matter of artistic feeling—whatever help we may some day obtain from scientific systems of harmony and counterpoint, somewhat resembling those of music—I would put in a plea for the study by architects of the great masters of colour in the sister art of painting. Amongst the old masters of such painters as the Bellini and Perugino, Titian, Veronese, Andrea del Sarto, Velasquez, Luini, and Giorgione, and amongst the moderns, Turner, Sir Joshua Reynolds, Watts, Burne-Jones, Lady Waterford, Müller, Albert Goodwin, and other members of that great school of our English water colourists, which is universally recognised abroad as being without a rival in Europe, but which we ourselves are too apt to depreciate.

Pictures are interpretations of, or siftings from, the great colour schemes of Nature, and they are easier to study and analyse than those of Nature herself.

Careful Analytical Colour Studies,

as opposed to mere copies made from the pictures of great colourists, may, I think, do much to educate the eye and something towards discovering some of their principles.

Most painters plan out in their minds some

* Other instances of more complexity may be found in the following pictures:—Ghirlandaio's "Procession to Calvary"; Garofalo's "Madonna and Saints"; in almost every Turner; and most of the pictures of Rembrandt, Vandyke, and P. de Hooch.

more or less clearly-seen scheme of colour for their works. Some go further and make a definite colour-scheme upon paper, which, if it is not allowed to chain down the ideas of the painter too much in the development of his picture, is an admirable plan. It might be, and, I suppose, often is adopted by the architect. But in order to conceive a good colour-scheme, the colour sense of the artist must have been developed. He must have the same kind of experience and feeling which enables the musician to combine musical sounds. Apart from what has been said as to the study of pictures, some few additional means of training the eye and the mind may, perhaps, be suggested. Notes made direct from Nature of natural combinations and composition of colour are, of course, valuable. They should, I think, not be too detailed, but made rather with a view to

Decorative and not Realistic Colouring.

They will, of course, not only store the memory, but will help to educate the powers of observation.

As the appeal has been made to Nature it may, perhaps, be objected that art is art because it is not Nature. But all art is, as a matter of fact, founded upon Nature; and it would at least seem probable that, as we live surrounded by Nature's laws and Nature's pictures, what is out of harmony with them is probably bad both for our eyes and our intellects. The Creator can scarcely have intended us to live in opposition to them.

Of course, I need say nothing to you of the study of Oriental and other systems of colour decoration.

One curious result of the systematic study of colour carried out in this way is that it also usually develops a more sensitive feeling for form, for, notwithstanding what has been said by some writers, it is hard to enjoy a space of colour without being influenced by its form.

Lastly, throughout what I have said I have assumed that what is beautiful and harmonious in colour is admirable. I cannot conclude, however, without touching upon another side of the question. We live in a strange period of the world's history, and just now, among other strange things, there is what most of us think a morbid current of reaction both in literature and in art towards

The Ugly and the Repulsive.

We know to what this has led in naturalistic literature. The question for us to decide is whether we shall allow ourselves to be influenced in the same direction towards the ugly in art. I trust, for my own part, that the answer may be emphatically in the negative. The movement has dragged many into it through fear of their being supposed to admire what the opponents of beauty often contemptuously call the "pretty." It also includes those amongst impressionist artists whom William Morris has spoken of as "loudly proclaiming their enmity to beauty" as a deliberate choice, and I think, in addition, not a few who have absolutely no sense of the beautiful, but who look upon art merely as a mode of expressing facts or ideas. If art is not to rest upon beauty as its chief foundation it would seem to me to have no *raison d'être*. We had better give up attempting to be artistic, and confine ourselves to empirical science. Architecture would then no longer be an art, but merely the science of building, and could be left to

The Builder and the Engineer.

In such a view of art good colour could scarcely find a place. But this side-current (for, after all, it is a side-current, though it may lead to a dangerous cataract) has arisen principally, as far as colour is concerned, from the weakness of the colour sense at the present time. It is also a standing temptation both amongst artists and critics to place technical skill in front of the higher qualities of an art work, and the production of good colour is one of the least obvious evidences of technical skill. So it is somewhat underrated.

Perhaps we may trace some slight reflection of this spirit in some of the recent architectural buildings which have risen around us, and in some of the current opinions about colour in architecture that we hear expressed. Let us beware that it does not help to make the flickering flame of such feeling for beautiful colour as exists amongst us burn yet lower.

Lastly, as one who believes that a field lies open for the creation of a pure colour art, wider and greater in its influence and differing from anything that we have yet seen, and which might do much to add to the joy and culture of life, may I venture to say that whatever architecture may have done in the past for

The Development of the Colour Sense,

it has it in its power to do much more in the future? Architecture is the one art with which all classes are in contact, and which perhaps more than any other has the opportunity for silently presenting and interpreting beautiful form and colour to them. And those of us amongst painters who love and reverence good architecture with an intensity which we cannot put into words, and who have drawn so many of the great buildings of the past with a thrill of enthusiasm which we can never forget, sometimes have visions of cities in which every building should be full of interest and beauty, and in which colour should play an infinitely greater part in architectural design than it does at present.

And as tending towards the realisation of such a dream, which we know from the experience of the past is not altogether chimerical, I cannot help thinking that the closer association of the two great arts of painting and architecture may be of assistance to both, and that, more especially in regard to colour, architecture might perhaps honour painting by considering some of her principles and methods.

I would therefore ask you to consider anything I have said thus briefly with regard to a few of the best recognised of them as merely suggestive of some trains of thought with that object in view, and which you may possibly think it worth while to follow out in the light of your more practical experience of architectural design.

THE DISCUSSION.

Mr. G. H. Fellowes Prynne, in proposing a vote of thanks to Mr. Rimington, said that only by sympathy with the painter could architects hope to bring colour into architecture. He thought that architects were somewhat afraid to use colour in a building, as they had made so many mistakes. In using colour they must not be afraid of the primaries or high colours. If, however, colour was used in England as in Venice it simply looked garish. In interiors this of course did not apply.

Mr. J. D. Crace in seconding the vote said colour had always suffered from the want of a law, though the theory that it was allied to music was as old as Aristotle.

Mr. A. T. Bolton thought the question of colour could not be excepted from the climate. There was much colour effect given by weathering. Historically speaking, when the great decorative work of the past was produced the painters were really less advanced than they were now. Modern painting was really the study of lighting. The old painters were working in a conventional way which suited the conventional architecture of the time. It was here that modern painters and architects had parted company. With regard to the Palazzo Publico of Piacenza the colour effect mentioned by Mr. Rimington was in all probably not the intention of the architect, the different coloured materials being of various dates. They must be very careful in introducing colour into buildings.

Col. Luard next spoke. Mr. Seth-Smith felt with Mr. Bolton that climate was a very important point in this subject. In northern countries, where the climate was little better than our own, costumes were full of colour and had not been vitiated by the deterioration in taste. As architects they felt that the great conventionality of their lines and the very limited power of varying their materials made the application of the principles advocated very difficult. But many of the architects in the provinces had worked upon those lines, attending carefully to their colour of materials and the texture.

The vote of thanks having been carried by acclamation, Mr. Rimington, in reply, said, with regard to the building at Piacenza, he had only used it as an illustration of a beautiful building. He had in his paper in the same way given other instances, with the reservation that they might perhaps be copied. He could not agree that we required less colour than in a country like Italy with a brilliant climate. He did not mean his remarks to be applied only to strong, but also to delicate colour. Architects should of course apply colour in their own way, conventionally, and not as painters: he only meant that some of the principles might apply to both.

New Patents.

These patents are open to opposition until January 14th.

1899.—Hot-water Boilers. — 22,173. C. B. PEAKE, 73 Fountain Square, Fenton, Staffs. The top of the boiler is sunk in the middle so as to allow the pinheads which fasten the lid to lie level with the surface.

Gas Burners.—23,088. J. WILSON, 42 Plaistow Park Road, Essex. Inside the burner is a slotted disc and a spiral spring which allow only sufficient gas to pass to ensure perfect combustion, irrespective of the pressure on the mains.

Chemical Chimney Cleansers. — 24,375. T. HUSON, 13 Batavia Buildings, Hackins Hey, Liverpool. The cleanser consists of nitrate of potash, 56 parts; sulphate of soda, 26 parts; and sulphur, 18 parts. It is burned on the fire and acts by partly consuming and partly dissipating in fine particles the soot in the chimney or flue.

Drawing Pins.—24,489. F. H. SHAW, Universal Wood-working Company, Newhall Hill, Birmingham. In order to facilitate their removal, the pins have a lifting tab of leather or other suitable material fixed to their heads. Several modifications are shown, one with the tab projecting at the side, so as not to be in the way of the drawing appliances.

Ceiling and Wall Coverings.—25,526. L. H. RITTMAN, 26 Norfolk Street, Strand, W.C. (communicated by La Société Josz et Fils et Cie., Brussels). The covering which forms the subject of this invention is impervious to moisture, acids and corrosive salts. It consists of paper or fabric first steeped in a solution of liquid gutta-percha, mineral pitch, turpentine and a liquid siccative; then dried; then covered with a layer of white lead; dried again; and finally given a coat on one side of zinc white ground in copal varnish and clear linseed oil. It is affixed to the wall or ceiling by a liquid solution of white lead crushed in linseed oil and a siccative containing gutta-percha.

1900.—Bacterial Purification of Sewage.—2,647. H. B. KILLON, 22 Cooper Street, Manchester. The object of this invention is to produce an apparatus by which the flow of sewage automatically affects the filling and emptying of several beds in regular sequence, at the same time allowing an interval of rest to occur. This is accomplished by employing a series of syphons, floats and valves so arranged and connected with a corresponding series of filter beds that, upon the collection of a regulated quantity of liquid in a suitably disposed chamber, such liquid is automatically discharged by one or other of the syphons on to one or other of the series of filter beds.

Drawing Scales.—13,694. E. L. SYKES, 1 Grant's Lane, Calcutta. This invention relates to the scales used in making geometrical, mechanical and architectural drawings. It consists of an ordinary scale having a short pointer permanently fixed at zero and a slide, also provided with a point extending beyond the edge of the scale. By this means measurements can be pricked off directly on to the paper.

The following specifications were published on Saturday last, and are open to opposition until January 21st. A summary of the more important of them will be given next week. The names in italics within parentheses are those of communicators of inventions.

1899.—18,322, CAMERON, COMMIN AND MARTIN, apparatus for regulating the delivery

of sewage to filters or on to land. 22,898, McDOUGALL AND HAIGH, feed-water filters and fittings. 23,211, COWING, bascule lift bridges. 23,456, ROUNSIVELL, portable lift or loading platform. 24,586, MATTHEWSON, sanitary flushing apparatus. 25,036, MURTON, VARLEY AND MURTON, cutting tool for forming rectangular holes or openings in metal, wood, &c. 25,139, SIEVERT, manufacture of sheet glass.

1900.—400, LEE, electric arc lights. 564, GEHLE, locks and bolts. 641, SHANKS, hospital sinks and water-supply apparatus therefor. 792, BIRCH, incandescent gas burners. 797, HISLOP, device for use in lighting and extinguishing gas lamps. 860, LANGFORD, means for automatically regulating and for indicating the speed of filtration of water. 940, SHANKS, water-closet apparatus. 1,081, STRAWSON, pumps. 2,961, NORDTMEYER, filtering medium. 5,756, BALE, kilns. 7,499, BECSEY AND SZALAI, smoke-consuming apparatus for furnaces. 10,588, SCHNIEWIND, enrichment of gas. 13,363, BEHMER, machines for ramming paving material, &c. 14,015, NEWMAN, door springs and checks. 15,696, COLES, cranes. 16,641, KILIAN, apparatus for moulding pulverulent materials. 16,979, FAZAN, generator for acetylene gas. 17,481, BROWNLEES, gates and gate fittings. 18,019, SCHUMACHER, removable and collapsible window-cleaning stand. 18,109, DOELP AND PERFECT, nut locks. 18,466, MACNAMARA, door bolts and locks.

Enquiries Answered.

The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional, or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Honours Examination in Brickwork and Masonry.

PAISLEY.—J. S. B. writes: "Which are the best books to study for examinations in honours brickwork and masonry?"

One of the best books is Rivington's "Notes on Building Construction," 4 vols. (London: Longmans). "Brickwork," by F. Walker, 1s. 6d., and "Masonry and Stone Carving," by Edward Dobson, 2s. 6d., are also good books, published by Mr. B. T. Batsford, 94 High Holborn, W.C. G. H. B.

Iron Casements.

LONDON, N.W.—STUDENT writes: "(1) Is the section of iron casements (to open outwards) shown at A on the accompanying illustration watertight? (2) Which is the proper way to fix lead lights to this section? (3) What is the proper shape and size of the lead bars, and how is the glass fixed to them? (4) If the wooden sill projects from the face of the brick-

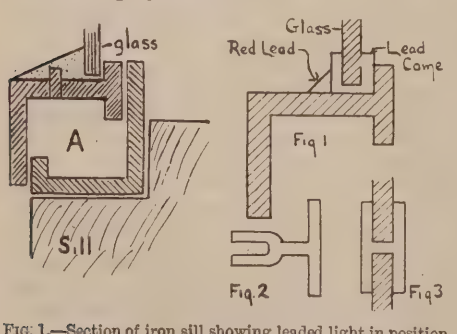


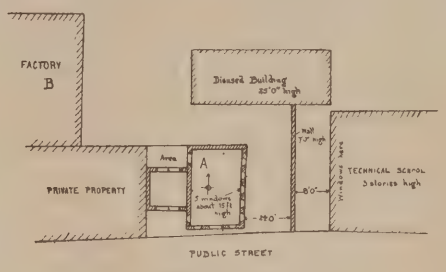
FIG. 1.—Section of iron sill showing leaded light in position. FIG. 2.—Lead came before glass is inserted. FIG. 3.—Came after glass is inserted.

work, is it necessary to have a brick sill as well?"

(1) Yes; but water would lie in the channel of fixed iron sill unless a way of escape were provided by holes drilled through the external angle. (2 and 3) See accompanying drawings, Figs. 1, 2 and 3. (4) A properly weathered and throated wood sill is sufficient. G. A. T. M.

A Question of Light.

PAISLEY.—J. S. B. writes: "The church marked A on the accompanying sketch is surrounded on the east and north by a private lane leading to a factory, B. The church was built some years before the factory, and depended principally on this lane for its light. Since B built his factory, and took possession



A QUESTION OF LIGHT.

of the lane, he has charged the trustees of the church at the rate of £5 5s. per year, as a guarantee that he would not build on the lane and obstruct the light. The trustees have ceased to pay the charge since the new Technical School has been built, believing that B would not be allowed to raise any obstruction. Do you think that B can force payment, or, failing payment, could he build so as to obstruct the light of A; also can B object to tradesmen standing ladders on his ground while repairing the church windows?"

It does not appear that the trustees of the church, A, have acquired any right of lighting over B's private lane; and as the said trustees appear to have broken their agreement with B, he is free to build on his own ground, and may build so as to obstruct the light to the church. He may also build so as to obstruct the light to the windows of the Technical School, if those windows are not ancient lights. Twenty years' uninterrupted enjoyment of light through a window makes that window an ancient light, and new windows may have the same rights as ancient lights, if they are in the same positions and include the shapes and surface-areas of windows in a previously existing building. G. H. B.

Liability of Local Authority for Accidents caused by Projections on Road.

HIGH WYCOMBE.—SUBSCRIBER writes: "In the main road of a municipal borough the road metal wears away and leaves the iron frame of a sewer manhole projecting to such an extent that an accident happens to my horse. Are the authorities liable for damages sustained? Has there been any action fought upon similar lines?"

It appears that the local authority would be liable for the damage sustained. In the case of *Kent* v. *Worthing Local Board*, in 1882 (10 Q.B.D. 118), the iron cover of a water valve was properly fixed in a highway by the defendants, but in consequence of the ordinary wearing-away of the highway it projected in such manner as to injure the plaintiff's horse. The court gave judgment for the plaintiff for £21 and costs. G. H. B.

The Architect's Diary.

TEDDINGTON-ON-THAMES.—J. D. C. writes: "Where can I obtain a copy of 'The Architect's Diary' for 1900?"

This book can be obtained from Messrs. Hudson and Kearns, Southwark Street, London, S.E.

Half-Timber Work.

AYR, N.B.—KINNOULL writes: "Can you inform me if there is a book published on half-timbered construction, giving all necessary details, &c.; if so, where can it be obtained?"

No work has been published that deals comprehensively with half-timber work from a constructional point of view. Some plates of details are given in the third volume of the "Abbey Square Sketch Book" (£3 3s., B. T. Batsford, 94 High Holborn, W.C.). There is also a small chapter on the subject in "Mitchell's Advanced Building Construction" (4s. 6d., Batsford). Articles dealing with half-timber work have appeared in Nos. 54 and 55 (February, 1896), Nos. 144 and 150 (December, 1897), No. 178 (July, 1898), No. 227 (June, 1899), and No. 236 (August, 1899) of THE BUILDERS' JOURNAL.

Book on "The Orders."

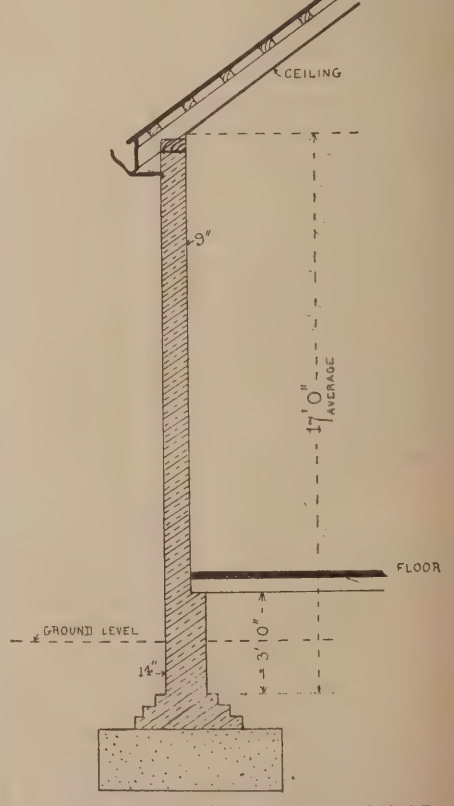
WOODSTON.—P. G. C. writes: "Kindly name a good book from which I can draw out the 'Orders.' I would like a book which combines the history with good examples, giving the proportions."

"Orders of Architecture," by R. Phené Spiers, 8s. 6d. Published by Mr. B. T. Batsford, 94 High Holborn, W.C.

Thicknesses of Walls required under By-laws.

ST. ALBANS.—BY-LAWS writes: "Is the accompanying diagram in accordance with the requirements of the Local Government by-laws as regards thickness of walls of buildings of the warehouse class up to 25ft. in height, or should the wall be all of 14in. work? It might be argued that it would be better if built in 14in. work for its full height, but can this be enforced? In 'Knights' Annotated By-laws,' diagram 8 shows a wall less than 25ft. in height with a 9-in. topmost storey and 14in. base, and, so far as I can gather, the height of either thickness is not limited."

By-law 17 (*a*) for St. Albans provides that where the wall does not exceed 25ft. in height it shall be 13½in. thick at the base. This does not regulate the thickness at the top of the wall. Under (*j*) we have the general rule for warehouse walls, which must be 13½in. thick at the top, and for 16ft. below the top, except in storeys not exceeding 10ft. high. This case does not come within the exception, and therefore the wall must be 13½in. thick at the top. Under (*k*) if any storey exceeds in height fourteen times the thickness prescribed for its walls, the thickness of the walls must be increased to 1-14th of the height. The height of a topmost storey, under by-law 15 (*i*) (*a*) is to be measured from the floor to half-way up the roof, when there is no tie. In this case no tie is shown, nor is the height of the roof shown; but if the height mentioned exceeds 15ft. 9in., the wall must be thicker than 13½in. G.H.B.



THICKNESSES OF WALLS REQUIRED UNDER BY-LAWS.

Clay's Patent Mercury Regulator.

CRAWLEY COURT, HANTS.—Clyde would be glad if any reader could state the name and address of the maker of "Clay's Patent Mercury Regulator."

Laying Wood-Block Floor.

HULL.—F. S. writes: "Which is the best material to use in laying a wood-block floor, and how is it used? The blocks are 1½in. thick, laid on a cement foundation."

In laying wood-block floors the area to be floored should be excavated to a depth of 6in. or 8in. below the intended floor line, and then levelled and well rammed. Stakes should then be driven into the ground about 6ft. or 8ft. apart around the space, with their heads levelled to the required height of the concrete, which should be poured in, rammed, and struck off to the tops of the stakes. After allowing a few days to elapse, screeds of cement 3in. wide and 1in. thick should be run around about 6in. from the walls, carefully levelled and made straight with rules. The whole space should then be floated with Portland cement and struck off from the screeds to a level surface When this is dry it should be swept clean, and (about 2ft. at a time) be well covered with boiling tar. Dantzic red deals, "flatted," make good blocks, so also do Gefle white battens; pitch-pine wears well but splits in drying. The blocks of wood should be ploughed all round, and loose tongues inserted when laying. The blocks, previously baked, should be dipped into a kettle of tar to a depth of half their thickness, and quickly rubbed into position, a few taps with a hammer being given to consolidate them. The work should be commenced at the farthest corner from, and finished at, the doorway.

Architectural Lantern Slides for Lectures.

DARWEN.—SMIVILLE writes: "I should be glad to know where to obtain a series of slides to illustrate a lecture on architecture. I do not want any 'set' of slides—such as 'The Cathedrals of England'—as I propose to deal with the whole subject in a more or less sketchy manner, giving a few illustrations and details of each style, commencing with the Egyptian and concluding with a few good modern examples by various architects."

Mr. Stewart of 457 West Strand, W.C., could supply such a list of slides as is required, and would let them out on hire, allowing them to be selected as desired—that is, a few from one "set," and a few from another. It is, however, very difficult to obtain slides of details without having them specially made from photographs; but finely-executed pencil drawings made on ground glass, or on glass coated with "retouching medium," look very well when projected on the screen, having much the effect of crayon drawings. Of course the glass should be cut to the standard size for lantern slides, namely, 3¼in. by 3¼in. G. A. T. M.

Builders' Notes.

The Building Trade in St. Andrews has for some time past been at a complete standstill, but there are fairly good prospects for the ensuing year. New ground has been broken upon at the west end of the town within the area of the recently extended burgh boundary. The ground is being feud at a comparatively moderate rent—£18 per acre—and at the price villas of a smaller size than those erected upon the dearer feuing ground in the neighbourhood are to be built. It is understood there is a considerable demand for this class of house in St. Andrews, and the start given in this part of the town will in all probability be followed by others. The ground is extremely suitable for building purposes, being level and standing higher than the remainder of the town.

The Sunderland and District Building Trades Association held its annual dinner last week. Mr. J. W. White, president, was in the chair. Mr. W. Lowry, of Newcastle, in proposing "Success to the Sunderland Branch of the Northern Counties Federation of Building Trade Employers," said the building trade at present was in a very unsettled state. There was the unfortunate bricklayers' strike, and i seemed a pity that there were not some means of conciliation to bring to an end that deplorable dispute. The chairman, in reply, dealing with the brisk business of the past year, said that the advanced price of material and labour largely diminished the margin of profit when people thought it should be highest. He thought, however, that the limits of good trade had been reached and that they might look for a declining. Regarding the lock-out, he would advise both sides in the present dispute to keep cool.

London County Council.—At last week's meeting of the Council, the consideration of the proposal to rebuild Lambeth Bridge (see p. 354 of last week's issue) was adjourned in order to allow the Finance Committee to report upon the estimates of cost. The same committee recommended that a five-arched, granite-faced, concrete bridge should be built at a cost of £308,000. Upon the recommendation of the Main Drainage Committee, it was agreed to spend £22,330 on the drainage of Coldharbour, which lies between the two entrances to the West India Docks at Blackwall. The tender of Messrs. Clay, Henriques and Co., at £1,401, for the manufacture, delivery, and erection of nine penstocks required for the carrying out of the above work was accepted. The Council passed estimates of £120,000, £13,500, £7,000, £15,000, and £9,100 in respect of the paving and other works for the following improvements: Holborn to Strand Street, Southampton Row; Wandsworth Road, Lambeth, Kensington High Street, and Cat and Mutton Bridge, Shoreditch. The Council agreed to send a deputation to the Local Government Board on the subject of the water supply of the county.

The Newport (Mon.) Master Builders' Association held its annual banquet last week. Councillor John Linton, J.P., president of the association, took the chair. Over 100 members and friends sat down to dinner. Mr. A. S. Morgan, in proposing "The Town and Trade of Newport," regretted that trade was not quite so flourishing as they could wish. That was due, no doubt, to a large extent to the strike of last year, which did a great deal of harm. He believed, however, that more prosperous days for the town were ahead. During the past ten years the ratable value had increased by over £100,000. The Corporation had recently received Parliamentary powers to carry out works which would involve an expenditure of £300,000 or £400,000. The Alexandra Docks Company were asking for powers to make new works and extend the dock accommodation, which works, if carried through, would cost £750,000. Councillor T. Parry, J.P., who first responded, thought the condition of things, so far as the town was concerned, was not so much to be deplored. There were no empty houses, but on the contrary, a great demand for houses. Councillor W. M. Blackburn proposed "The Architects and Surveyors," and Mr. E. Fawckner and Mr. Swallwell responded.

Building Boom in Peterhead.—Work is now assured for those engaged in the building trades throughout the winter and spring months. After the disastrous nature of the herring fishing during the past two seasons it was thought that trade would be practically at a standstill in the town. The fishermen throughout the year have, however, on the whole, done well The ordinary tradespeople have up to now also been well employed with the completion of new buildings, and repairs and additions to existing houses, while a very large amount of work has been done in the laying of concrete pavements throughout the town. This, however, was only of the nature of temporary employment, and there was little hope for the winter till within some days ago, when things took a decided turn for the better. At present two houses—one in Seagate and the other in King Street—are in progress of erection, but plans for other four new houses have been passed by the Street Committee of the Town Council. These include a large block of offices to be erected at the harbour by the Feuars' Managers at a cost of about £2,000; a new house in Landale Road; two villas to be built at the north corner of Landale Road and Prince Street with frontage to Landale Road; and several plans of additions and alterations on houses.

R.I.B.A. NOVEMBER EXAMINATIONS.

Results.

WE give below the results of the November examinations held by the Royal Institute of British Architects.

The preliminary examinations, qualifying for registration as Probationer R.I.B.A., were held simultaneously in London, Birmingham, Bristol, Manchester, and York on November 6th and 7th. The examinations in the provinces were conducted by the allied societies of the respective centres. Of the 172 candidates admitted, 32 claims for exemption from sitting were allowed. The remaining 140 were examined, with the following results:—

	Examined.	Passed.	Relegated.
London	78	58	20
Birmingham	9	9	0
Bristol	11	7	4
Manchester	25	22	3
York	17	13	4
	140	109	31

The successful candidates, together with those exempted, making a total of 141 newly-registered

Probationers,

are as follows:—

A. W. Anderson (Horsham), A. Ashton (Rugby), G. T. Austin (Birmingham), W. T. McN. Barrett (Stoke-on-Trent), J. C. Beare (Stanmore), Baron W. R. Beaumont (Exeter), F. Bell (Manchester), H. Black (Hampstead), C. L. Blethyn (Cardiff), Annie W. Bradshaw (Bolton), J. E. Braithwaite (Leeds), C. H. Brightiff (Southampton), F. G. Brooker (Peckham Rye), C. F. H. Brookes (Eye, Peterborough), R. J. Buck (Horsham), H. W. Burchett (Brixton), C. L. Burns (Forest Row, Sussex), H. W. Cathie (East Sheen), E. Chaplin (Hove), A. W. Clapham (Beckenham), P. M. B. Collcutt (London), J. O. Cook (Plumstead), L. J. Coussmaker (Walthamstow), P. G. Crawley (Peterborough), T. E. Crompton (Petersfield), J. J. Crowe (Brentwood), L. Crowley (Portsmouth), J. Day (Wakefield), W. H. Evans (Southampton), H. J. Fairburn (London), G. A. Farrar (Huddersfield), C. Forsyth (Glasgow), R. C. Foster (Loughton), W. J. Freeman (Halifax), E. L. Frost (Anerley), N. H. T. Fuller (Taunton), A. H. Gadsdon (Chichester), R. M. Geater (Holloway), W. H. George (Cheltenham), W. H. Godfrey (Catford), G. H. Goldsmith (Cheshire), A. C. Goulder (Leytonstone), A. G. Greenwood (South Kensington), C. Groves (Chester-le-Street), A. W. Hall (Ealing), L. H. Harrington (Bromley), W. Harvey (London), D. P. Hayworth (London), C. J. Hazard (Boscombe), A. J. Healey (London), H. Healey (Didsbury), W. B. Hellard (Teddington), J. L. Henderson (Edinburgh), F. Higginbottom (Withington, Manchester), E. F. Hill (Winchester), R. M. Hilton (Wimbledon), C. V. Hodges (Leicester), S. R. Hollingdale (Bayswater), J. B. Holt (Levenshulme), P. B. M. Hope (Perth), C. E. Howitt (Nottingham), H. Hunnisett (Rye), D. B. Hutton (Glasgow), W. H. Hyde (Nailsworth, Stroud), A. L. Iredale (Stroud), J. P. Irvine (Lincoln), J. W. Jarvis (Moseley), H. F. Keighley (Moss Side, Manchester), A. H. Laister (Wakefield), W. B. Lates (Birmingham), W. Leahy (Yeovil), G. Leresche (Manchester), T. C. Little (Longtown, Cumberland), R. A. Loveitt (Coventry), A. S. W. Mackay (Carlisle), W. K. McDermott (Borough Green, Kent), R. B. Medcalf (Aughton, Ormskirk), R. Mercer (Great Harwood, Blackburn), S. Moss (Eccles), G. E. Moxon (Barnsley), S. H. J. Murch (Loughton), A. F. Murray (London), J. R. Musto (London), G. V. Myer (London), F. G. Newton (London), F. Nicholls (Whipps Cross, Leyton), F. A. C. Old (London), G. M. Owen (Birkenhead), B. C. Page (Tonbridge), J. Page (South Lowestoft), H. J. Parr (Brixton), W. E. Paterson (Cheltenham), A. E. S. Payne (New Cross), J. H. Pearson (Balham, London, S.W.), W. A. S. Pettit (Balham, London, S.W.), W. H. Pickard (Whitchurch, Salop), J. Plottel (Middlesbrough), H. A. Porter (Gravesend), C. H. Potter (Matlock Bridge), G. A. Potts (Manchester), A. F. Potts (Leytonstone), W. Pyper (Cults-by-Aber-

deen), L. G. Rayner (Gravesend), C. A. Reed (Clapham), T. H. Rhodes (Leeds), A. S. Robertson (Perth), D. G. Round (Sutton), J. A. Ryan (London), H. Savage (St. Albans), D. G. J. Saw (Green Lanes, London, N.), H. S. Sawyer (Winchester), J. H. Sayner (Harrogate), H. S. Scott (Handsworth, Birmingham), H. E. Seccombe (Clapham Common), W. C. B. Sinclair (Bexley), B. C. Smith (Caversham), H. S. Smith (Manchester), H. Solomon (Haulgh, Bolton), P. H. Solon (Stoke-on-Trent), S. M. Spoor (East Putney), W. Stockdale (North Shields), E. A. Sudbury (Nottingham), F. Sykes (Kendal), R. J. Tall (Gravesend), T. T. Tallon (Bolton), H. F. Tasker (Hampstead), B. W. Thomas (Southampton), T. Thorne (Brockley), J. E. Tindall (Lavender Hill, London, S.W.), W. Turpin (Roker, Sunderland), H. Unwin (Bolton), F. Wade (Frizinghall, Bradford), F. A. Walker (Hampstead), P. Weston (Sheffield), N. C. Wetherilt (South Hampstead), O. White (Barton-under-Needwood, Burton-on-Trent), E. C. M. Willmott (Roath, Cardiff), A. W. Wilson (Peterborough), R. Wilson (Sheffield), J. L. Worssell (Regent's Park, London), R. Wylie (Gateshead-on-Tyne).

Students.

The intermediate examination, qualifying for registration as Student R.I.B.A., was held in London and the various provincial centres named below on November 6th, 7th, and 8th. The examinations in the provinces were conducted by the allied societies of the respective ditsricts. Fifty-nine candidates were examined, the results being as follows:—

	Total Examined.	Passed.	Relegated.
London	45	29	16
Bristol	6	2	4
Manchester	8	4	4
	59	35	24

The successful candidates are as follows, the names being given in order of merit:—

A. J. Hope (Atherton, Manchester), E. L. Gaunt (Ilkley), W. E. Dobson (West Hampstead), D. L. Allen (Dundee), H. A. Hall (Hastings), H. J. B. Hoskins (Birmingham), A. J. Taylor (Bath), F. Haswell (North Shields), T. W. Whipp (Scarborough), H. Prince (Bayswater), S. C. Stephens (Hockley, Birmingham), O. P. Milne (Bedford), W. R. Davidge (London, S.W.), N. C. Smith (London), E. J. Dixon (Stratford), A. R. Gradwell (Blackburn), V. Hooper (Redhill), J. G. Wilson (London, W.), J. H. de C. Ballardie (London), G. B. H. Hoole (Highgate), G. H. Lovegrove (Herne Hill), M. N. Castello (London), J. J. S. Naylor (Bayswater), R. Bennett (Buxton), C. E. L. Parkinson (Kennington), B. C. Chilwell (Wednesbury), A. C. Notley (London), H. F. Clarke (Pendleton, Manchester), L. Leeper (Great Yarmouth), F. A. Ling (Mitcham), A. A. Midwinter (London), W. B. Rees (Cardiff), C. E. B. Sutton (Warrington), C. R. Thickpenny (Bournemouth), F. E. Tomson (King's Norton).

Associates.

The Final and Special Examinations, qualifying for candidature as Associate, R.I.B.A., were held in London from November 16th to 23rd. Of the 51 candidates examined, 26 passed, and the remaining 25 were relegated to their studies. The successful candidates are as follows:—

T. B. Ball (Weston-super-Mare), E. W. Banfield (Camberwell), G. Brumell, jun. (Morpeth), H. M. Cautley (Westminster), *W. G. Cogswell (Wallasey, Chester), *W. E. F. Crook (London), H. A. Douglass (Brighton), T. W. Gordon (Nottingham), A. H. Goslett (Great Stanmore), S. Harrison (Leicester), *C. E. Hutchinson (London), A. L. MacGibbon (Edinburgh), R. H. J. Mayhew (Anerley), W. V. Morgan (Carmarthen), R. W. Owen (Waterloo, Liverpool), A. W. Papworth (Maida Hill, London), J. Quail (Leamington Spa), F. J. O. Smith (Westminster), E. J. Tench (Cambridge), C. B. Thomas (London), N. Thorp (Clapham), *H. A. Tinker (Kensington), P. J. Turner (Stowmarket), W. J. Walford (Anerley), R. D. Wells (London), E. P. Wheeler (Chelsea).

[* These candidates were admitted to the Special Examination, under the following regulation:—"Architects in practice not less than twenty-five years of age, and chief assistants over thirty years of age, who desire to be admitted as Associates, can be exempted from passing the Preliminary and Intermediate Examinations and in sending in Testimonies of Study. They can be admitted, by resolution of the Council from each case, to a Qualifying Examination (namely, the Final of the three examinations), which is conducted with especial regard to the requirements of such architects, their professional works and position being duly taken into account by the Board of Examiners."]

The following table shows the number of failures in each subject of the Final and Special Examinations:—

I. Design	24
II. Mouldings and Ornament	10
III. Building Materials	5
IV. Principles of Hygiene	1
V. Specifications	4
VI. Construction: Foundations, &c.	3
VII. Construction: Iron and Steel, &c.	3

Ashpitel Prize, 1900.

This prize has been awarded to Mr. Shirley Harrison, and extra prizes of five guineas each to Mr. C. H. F. Comyn and Mr. C. E. Varndell.

Quarry Notes.

A Monument to the Gordon Highlanders who fell during the Indian frontier fight from 1892–8 has been unveiled in the Duthie Park, Aberdeen. The memorial was erected by the contractors, Messrs. Henderson and Webster, granite merchants. It takes the form of an obelisk rising above a circular form about 7 feet in diameter and two triangular bases. At the top of the column there is the allegorical figure of Victory, in bronze. The total height of the memorial is about 20 feet. On the face of the column the names of those who fell in action or died of wounds are inscribed—about 100 altogether.

Prices of Slates for next Year.—The Slate Quarry Owners' Association have been discussing the list of prices for the ensuing year, and advances have been made in certain sizes and qualities, whilst small reductions have been made in others. Taken on an average, the prices for next year will be a trifle higher than those which at present rule. Much is expected from South Africa after the war. For some years past Festiniog slates have been shipped to Cape Town and Delagoa Bay, and there is every reason to believe that a still larger business with the colonies will be done. Fewer American slates have been imported than used to be the case; but we cannot say whether the slump in American and Continental production will continue. It may be said, however, that the influence of American slates on the market has been reduced.

Aberdeen Granite Trade.—The Aberdeen harbour returns dealing with the granite trade for the past twelve months show that last year 10,213 tons of foreign granite were received at Aberdeen, while this year the amount was 11,861, showing an increase of 1,648 tons. In regard to the quantity of granite of all kinds exported from Aberdeen during the past twelve months to various parts of the world, the harbour returns show that, while the total number of tons shipped in 1899 was 56,449, this year the figure stands at 54,854, a decrease of 1,585 tons. Of kerbing, paving and building stone, this year 4,725 were shipped, an increase of 92 tons. In rubble and chips there is a great falling off; during 1899 the number of tons being 11,180, and this year only 8,112 tons shipped, a decrease of 3,068 tons. The export of polished granite has also diminished, though only slightly; in 1899 the quantity being 9,590 tons, and in 1900, 9,485 tons, a decrease of 105 tons. Granite waste slabs for paving show a large increase, 4,184 tons having been shipped this year as against 2,062 tons last.

A new Warehouse at Glasgow is being erected on a large square site, with frontage to Buchanan Street, Argyle Street, and Mitchell Street, the principal elevations being in the two first-mentioned thoroughfares. The walls are of grey sandstone, and the expanse of front is agreeably broken by projecting balconies of Aberdeen granite from the quarries of Messrs. Macdonald & Co. (Limited), Aberdeen. One of the Argyle Street entrances has also a 9-ft. granite Hercules on each side. The building is being erected in sections so as to gradually replace the present premises of Messrs. Stewart & Macdonald (Limited), warehousemen, whose business it is intended to accommodate. When completed the warehouse will probably be the largest of its kind in Great Britain, as it will have a floorage of 235,000 sq. ft. The architect is Mr. Horatio K. Bromhead, A.R.I.B.A. A notable street improvement is being effected in connection with the new building, one side of the narrow-necked entrance to Buchanan Street from Argyle Street being removed by the line of the building being set back about seven feet, this having been done under arrangement with the Corporation, who paid £8,000 for the concession.

Engineering Notes.

Gwynfryn Wesleyan Chapel, Flint, has lately been fitted with the latest improved "Small Tube" hot-water heating apparatus by Messrs. John King, Ltd., engineers, of Liverpool.

A Proposed New Bridge across the Swale.—The directors of the South-Eastern and Chatham and Dover Railway Companies have decided to apply to Parliament for powers to construct a new bridge across the Swale, an arm of the sea which divides the Isle of Sheppey from the mainland of Kent.

Water Supply in India.—At a meeting of the East India Association held last week Mr. William Sowerby brought forward a project for supplying water in India during times of drought on the partial or complete failure of the monsoon rains. Considerable quantities of water, he thought, could most undoubtedly be obtained in almost every part of India by means of deep but inexpensive artesian tube wells. He calculated that twenty wells, sufficient to supply nearly 150,000 persons and their cattle, could be made for £10,565, including cost of boring apparatus, engine power, buildings, and supervision. Large supplies, again, could be secured by means of accumulating and compensating reservoirs constructed in the valleys of the great rivers. A tank holding 6½ million gallons of water, sufficient to supply 1,000 people with 25 gals. a day each for 260 days, he estimated could be constructed for £605.

The Lift Accident at Marylebone Station of the Great Central Railway has been reported upon to the Board of Trade. The report states that as the lift, containing six men, a truck, and eight chests of tea, was being lowered from the second floor of the warehouse, it suddenly descended rapidly to the basement. The men were severely injured and the cage was somewhat damaged. The primary cause of the accident appears to have been the breakage of the top pulley wheel. As far as can be ascertained no exceptional strain had been put upon the pulley wheel to cause the breakage. There is, therefore, no doubt that an increase in the strength of the pulley wheels is called for. From this accident it certainly appears that it is possible for a cage to fall sufficiently rapidly to cause serious injuries to its occupants while the suspension rope is in sufficient tension to prevent the safety clutches from acting.

Tewkesbury Abbey.—This is without doubt one of the most historically interesting abbeys in England. The greater part of it was built during the reign of King Henry I., in the earliest quarter of the twelfth century. The west front is principally occupied by a lofty receding arch; a treatment of a façade similar to that of Lincoln and Peterborough, though rather the exception than the rule in English cathedral architecture. The nave and aisles have the same style of simple grandeur as those at Peterborough, Durham, Gloucester, &c. The abbey abounds in beautiful monuments and monumental stained glass. The south side is generally of more interest than the north, for here the cloisters are situated as a rule. The cloisters at Tewkesbury were, however, destroyed at the time of the dissolution of the monasteries. The springing of the fan vaulting is still visible on the external walls. The illustration on the opposite page is from a drawing by Mr. W. Lee Clarke.

Professional Practice.

Doncaster.—The new workhouse at Balby, near Doncaster, erected by the Doncaster Board of Guardians for the Union of Doncaster, has been opened. The buildings, which have cost about £100,000, are the most unique in the kingdom, having all the latest improvements and being brought up to the most recent demands of the Local Government Board. The Government Inspector has expressed the opinion that the Doncaster Workhouse was the best that exists, and the Emperor of Russia has asked for plans of the building in order that they may erect buildings of the kind in their own country. The buildings are situated near Balby, and the site comprises about 30 acres, which provides ample space for future extension, the accommodation of the new buildings being for 600. The administrative portion of the buildings, such as stores, laundry, boiler-rooms, officers' rooms, bath-rooms, lavatories, and offices. The laundry and boiler-house buildings are placed in a central position between the main building, lunacy blocks and infirmary, and consist of the laundry, containing warehouse, ironing-room, drying-room, wash-house, receiving and distributing rooms, and head laundress's office. The boiler-house has space for three boilers, and in close proximity to it is the electric light house, with dynamo and accumulator rooms, the workshops, coal-house, and water tower. The infirmary is in the S.W. portion of the site, and is a complete building in itself, consisting of a central building, from which corridors to the left and right lead to the male and female pavilions, which are divided up into wards for the various class of sick. The nurses' homes occupy the central building, and contain nurses' bedrooms, sitting, recreation rooms, &c., doctor's surgery, and dispensary. The front of the infirmary wards face the south. All the walls of the wards are and mortuary. It is situated in a remote position to the north of the main building. The aged married couples' cottages are on the south side of the main building, and are entirely separate from it. Each of the cottages will have pleasant gardens, with a light metal palisading fronting them. The elevations have been designed with little ornament, and what there is is chiefly concentrated on the administrative buildings, proportion being studied more than ornament for effect. The buildings are faced with Nostell bricks and stone dressings, with slated roofs. The corridors and wards in the main buildings have dadoes of salt-glazed bricks, whilst the kitchens and sanitary offices are of cream glazed bricks. The lighting throughout is by electricity. The system of drainage is a simple one, and on the most approved plan. The contractors for the whole of the work have been Messrs. Harold Arnold and Son, of Doncaster, the architect being Mr. J. H. Morton, F.R.I.B.A., of South Shields. The



house, however, have been designed large enough for future extension. The buildings consist of six groups, namely: entrance building, main building, laundry and boiler-house building, infirmary, lunacy building, and isolation hospital. The entrance building, through the archway of which is the principal approach to the buildings, contains porter's accommodation, receiving wards and vagrant wards (vagrants of both sexes are provided for, principally on the cellular system). In this building are also rooms in which to store the clothing of the inmates when taken from them on leaving the receiving wards for their respective places in the workhouse. The workhouse proper, or main building, is in the centre, in the front of which are the committee-room, business offices, and master's house, and in the rear of these the dining-hall (a handsome apartment, with an open timbered roof), kitchen lighted from the roof, and fitted up with all the latest appliances, scullery, work-rooms, matron's office and stores, bakery, and flour store. Upon each side of the administrative blocks, and connected by corridors, are the pavilions for the male and female, aged and able-bodied classes, with the necessary day-of hard, impervious plaster, with glazed brick dadoes of light colour; the lavatories, w.c.'s, &c., are lined with glazed bricks, the incidental arrangements being of the latest hygienic pattern. All the internal angles of walls and between walls and ceilings, walls and floors, are quadrants; projections or mouldings are absolutely dispensed with, so that there may be no lodgment of dust, and every part of the building may be swept and kept clean. The heating of the large infirmary wards is by hot water and by means of central stoves faced with faïence, with horizontal flues in the thickness of the floors, which are supplied with fresh air direct from the outside. When warm these flues distribute the heat evenly through the buildings. The maternity block is in a convenient and quiet position in the rear of the infirmary. The lunacy buildings occupy a similar position to the infirmary, but in the S.E. portion of the site, and provide accommodation for imbeciles, epileptics, and short-period lunatics. The buildings contain wards for the different classes, and padded and attendants' rooms for both sexes. The isolation hospital is a complete building in itself, and has its own nurses' accommodation, washhouse, principal sub-contractors have been Messrs. Benham and Sons, Limited, of London, for the principal portion of the engineering; the Keighley Electrical Engineering Company, Limited, for the electric lighting; and Messrs. Dinning and Cooke, of Newcastle-on-Tyne, the heating. Mr. R. M. Robertson has acted as clerk of works.

Hull.—The foundation stone of new Board Schools which are to be erected in Holland Street, Hull, at an estimated cost of £17,000, was laid recently. These schools are the first of four new schools to be erected by the Board, and in each case the Central Hall scheme will be adopted. The principal building in the new schools will be a two-storey mixed school, the upper floor of which will be set apart for the seniors and the ground floor for the juniors. The central hall will be 55ft. by 32ft., and it will be surrounded on three sides by class-rooms. These number eight, and all of them open into the hall by means of a corridor. Six of the class-rooms will accommodate sixty children each and the other two fifty each. Swing doors will be fixed at both ends of the corridor, which abut out on to

the outer part of the corridor, from which access is obtained to the cloak-rooms and lavatories. Beyond this are to be entrances and staircases, the girls at one end and the boys at the other. The infant school is to be a separate one-storey building, planned on the same central hall system, surrounded by five class-rooms, four of which will accommodate sixty children each, and the fifth fifty, with a gallery. In each school ample accommodation has been provided in the way of teachers'-rooms, cloak-rooms, &c. Behind the main block a separate two-storied building will be set apart for the teaching of cookery and laundry work. The cookery class-room is to be 32ft. long and 25ft. wide, and the laundry-room will be the same size. Covered playgrounds are provided for each school. It is proposed to adopt a combined system of heating and ventilation. The heating of the buildings will be by low-pressure steam, and fresh air will be admitted by means of ventilating radiators, whilst the foul air is extracted chiefly through "risers," which communicate with the main extract shaft beneath the floor, leading to a vertical extract shaft at the end of the building, which will form an attractive feature. The exterior of the building will be of red bricks. Mr. J. Bilson is the architect; Messrs. Hockney and Liggins, of Hull, are the contractors; and Messrs. Ashwell and Nesbitt, of London, are responsible for the heating apparatus.

London, S.W.—The New Grand Music Hall at Clapham Junction, standing on an ideal site on St. John's Hill, was recently opened. The architect is Mr. Ernest A. E. Woodrow, A.R.I.B.A., who also designed the Camberwell, Collins's, and other halls. The style is a simple treatment of Renaissance in red brick and red stone. On either side of the entrances to the grand vestibule two projecting turrets rise about 80 ft. above the pavement level. At each of the two angles of the building are the wide public staircases. The dressing-rooms for the artistes are fitted up with every accommodation. A special feature has been made of the sanitary arrangements. The vestibule, with its marble steps, mosaic floor, and richly-decorated walls and ceilings, is a feature of the hall. The rake of the first floor is such as to afford persons at the back of the auditorium a good view of the stage; whilst the level of the pit ceiling is so arranged as not to curtail the range of vision in any way. The circle and gallery are constructed on the cantilever principle, there being no columns to obstruct the view of the stage. The interior decorations are gold, with various shades of cream. By an elaborate system of ventilation and a sliding roof, the temperature of the house is regulated, avoiding all vitiation and draughts. Special precautions have been taken against fire by asbestos and non-flammable wood. There is an electric-lighting plant at the rear of the hall. The holding capacity of the house is estimated at from 2,500 to 3,000. The stage is 68 ft. wide by 28 ft. deep from the floor, and 53 ft. in height from the stage door to the gridiron. The act drop and scenery is the handiwork of Mr. Francis H. Bull. The hall was built by Mr. C. Gray Hill, of Coventry, who erected the Camberwell Palace and other similar places. The following other firms were engaged on the work:—Electrical engineering, Messrs. Geipel and Lange, under the supervision of Messrs. Handcock and Dykes, Victoria Street; upholstery, Messrs. Lazarus and Messrs. Lyons; steel work, Messrs. R. Moreland and Son; decorations, Messrs. Campbell Smith and Co.

Nottingham.—The Jubilee wing of the Nottingham General Hospital, which the city and county of Nottingham have shared in erecting as a permanent memorial of Her Majesty's Diamond Jubilee, is now completed. The plans were by Messrs. Alfred Waterhouse, R.A., & Son, based largely upon a similar building recently erected by them at Liverpool. The wing is so constructed as to secure simplicity in administration. The new wards are airy, well heated, and well ventilated. The main feature is the series of three circular wards, one above the other, which are attached by a block of small wards to the north-east end of the existing long corridor, and extend in a south-easterly direction along the frontage to Postern Street. The erection necessitated the rearrangement and displacement of the old staircase, and the new wards are reached by a corridor 81ft. long, which is situated at right angles to the main corridor of the older portion. The main block is five storeys, or 72ft., high, and the three upper storeys, consisting of the ground, first and second floors, are to be used for patients' beds. The upper basement is set apart for the use of the servants, while the sub-basement is devoted to the staff of porters, in which are situated a series of sitting-rooms and bedrooms, together with a store-room, and there is also an exit, through which, by means of a new road, the new laundry which is being erected on Standard Hill may be reached. The upper basement is constructed upon much the same plan, and will accommodate 22 of the servants, for whom an extensive chamber is to be converted into cubicles for sleeping. Each of the three circular wards will contain beds for 18 patients. They have a diameter externally of 60ft. and internally of 54ft., and are 14ft. high, while 1,800 cubic feet of air are secured for each patient. There is a window between all the beds, except in two interspaces, one of which is occupied by the entrance door and the other by the gangway leading to the sanitary tower. This tower, like the main block, is five storeys high, containing on each of the three upper storeys a bathroom for patients, distinct sanitary accommodation for the nurses and patients, a housemaid's closet, a small room for clinical investigation, and a specimen room. Bathrooms are also provided in the two basements. The tower is cut off from the wards by means of bridges, with the usual methods of cross ventilation. The same principle is adopted at the junction of the smaller wards with the main building, a bridge 16ft. long separating the two on either floor. The portion of the extension which immediately adjoins the existing structure contains smaller rooms placed on each side of the corridor. On the right there are two wards, providing accommodation for two patients each, and on the left the necessary adjuncts of the larger wards, sculleries, larders, a small kitchen, stores for clothes, and comfortable apartments for the sisters. The new staircase, with a faïence dado, encloses a large passenger lift, capable of carrying a recumbent patient. The roof of the circular wards has been made flat: it is covered with an impervious paving, and is to be used as a promenade; while shelters and seats are arranged around the chimney stack which runs up the centre of the entire block, and serves also as a ventilating shaft. By an ingenious arrangement a further platform has been constructed round the stack, at a higher altitude, whence it is possible to obtain a view over the roof of the old hospital. The roof is reached by an independent staircase, to which access is obtained from each of the connecting bridges. Balconies have also been erected on the sunny side of the bridges of communication on each floor, where beds can be placed if desired. The whole of the wards are lined with glazed bricks, and the floors are fireproof, constructed as they are of steel joists encased in concrete. In all the wards the floors are covered with polished teak, while the corridors are paved with terrazzo, and lined with glazed bricks and plaster. Externally the walls of the new buildings are constructed and faced with red brickwork, relieved in the strings, dressings and cornices with Ancaster stone. Electricity is the sole illuminant throughout the Jubilee wing, and the heating is by the atmospheric system, though each of the circular wards is provided in addition with two fire-places. The extension altogether gives accommodation for 66 more patients. The new laundry buildings are situated on Standard Hill, and include, in addition to the laundry, drying and ironing rooms and boiler house, the boilers in which are intended also to supply the steam and hot water for the Jubilee wing. The laundry is fitted up with machinery of the most recent type. Mr. G. Reed has acted as clerk of the works. The contract for the superstructure was let to Mr. Woodsend, of Nottingham. The cost has been about £30,000.

Oldham.—New central premises have been erected for the Oldham Equitable Co-operative Society, at a cost of about £50,000. The educational department has a separate entrance, and contains a spacious newsroom and lending and reference libraries, conversation room, special room for ladies, and committee room. The two halls are approached by staircases of ample width and of easy access. The large hall will seat about 1,000 persons; a commodious platform is erected at one end seating eighty. The smaller hall will accommodate about 500 persons sitting, and for tea party purposes will seat 250. Two cloak-rooms are placed in convenient positions, and special kitchen accommodation is provided for the use of parties hiring either of these halls. The basement of the building fronting Greenwood Street contains the steam boilers, electric engines, and dynamos. These boilers were made by the Oldham Boiler Works Company, and provide steam to drive the electric engines and dynamos, made by Messrs. W. B. Haigh and Company—the latter firm having in hand all the electric lighting and power required for the buildings, under the supervision of Messrs. Crew and Handford. The front portion of the building is carried out in granite to the ground floor, and ashlar above. The buildings in Dunkerley and Greenwood Streets are faced with Accrington bricks, with stone strings, sills, &c. The work has being carried out by the following contractors:— Mr. James Brierley, excavator, &c.; Messrs. Ogden Brothers, brickwork and concreting; Messrs. S. and J. Whitehead, masonry; Mr. William Lees, joiners' work and fittings; Mr. Joseph Jackson, slater; Messrs. R. Chadwick and Sons, plumbers; Mr. James Hall, plasterer; Messrs. Dorman, Long, and Co., girders, &c.; Messrs. Heenan and Froude, steel roofs; Messrs. John Hall and Sons, gutters and castings; Messrs. E. Green and Co., Ltd., economisers; Messrs. Kirkpatrick Brothers, granite work; Mr. Alfred Whitehead, tiling; Mr. J. W. Hindshaw, fibrous plaster, &c.; Messrs. Homan and Rodgers, quartz floors, &c.; Mr. R. H. Lowe, wood blocking; Messrs. C. Schofield and Co., fittings; Mr. F. G. Floyd, stone carving; Messrs. J. and W. Guthrie, stained glazing; Messrs. Jackson and Ogden, electric lifts; Mr. James Heptonstall, tea tables, &c.; Messrs. Parker and Co., lightning conductor. Mr. Thomas Taylor was the architect.

Peterhead.—The Parish Home, which was initiated in the beginning of 1897 by the Parish Council of Peterhead as a commemoration of the Queen's Jubilee, has now been completed. The Home is built on the site of the former lodging-house. It has been built from plans prepared by Mr. Arthur Clyne, architect, Aberdeen, and at a cost of about £3,000, exclusive of furnishings. Provision is meantime made for 42 beds, as compared with 25 beds in the old building; and as this gives 600 cubic feet of space to each inmate it will at once be seen that the first thing that has been studied has been the comfort of the inmates. The Home has a frontage to King Street of 108ft. It is two storeys high, with projecting wings at each side, extending backwards 55ft., and a back wing of 70ft., while the width of the main building is 20ft. The home is divided into three sections, in order mainly to secure the better classification of the inmates, the east wing being reserved for the male inmates, the west wing for the female inmates, and the centre part for the governor and matron, the kitchen, dining-room, stores, and other domestic conveniences. The main entrance is in the centre of the front block. On one side of the main lobby is the committee-room, and in the other side the governor and matron's private parlour. Along the entire length of the south portion of the main building is a long passage, by which access is got to the various apartments. On the right and left are large day-rooms for the use of the male and female inmates, while in the end wings are rooms and dormitories for aged couples, probationary wards, and complete bathroom and lavatory accommodation. In the central back wing is a hall 24ft. by 19ft., which is to be used for serving meals to the inmates, and on Sundays for religious services. In this wing also is a large kitchen, scullery, pantry, larder

and numerous store-rooms. The second floor is set apart exclusively as dormitories, the males being on the east side and the females on the west, access being got by a staircase on either side of the building. It has been considered prudent not to have too large sleeping-rooms, in order to give a better measure of privacy to the inmates. As a rule three or five beds are all that are put into each, and the space between each cot is to be laid with loose carpeting, and the rooms made as comfortable as possible. A long, wide passage also runs along the south portion of the second floor, well lighted with large windows at either end, by which also good ventilation is got. In connection with either section are also sick and convalescent wards, and, as on the ground floor, complete bathroom and lavatory accommodation. The governor and matron's apartments are in the centre of the building, which is reached by a staircase for their exclusive use and the use of visitors. On the top of the main building and the back wing are large drying lofts. There are fire-places in all the apartments, but the building throughout is heated with hot-water pipes, while there is also hot and cold water circulation to the bathrooms and lavatories. At the rear of the building airing grounds are divided off for the two sexes, while along the south wall are a row of out-houses. These include the washing house and laundry, fitted up with the latest appliances, also workshop for the men and boys, and a mortuary and post-mortem room with the necessary requisites for conducting examinations.

Tregare.—The picturesque little fourteenth-century Parish Church of Tregare, near Raglan, has been reopened after undergoing repair for several months. There are few, if any, old parish churches in this neighbourhood possessing so fine an example of ancient half-timber work as may be seen in the south porch of this church, where it has been necessary to replace the old oak with but little new. The old nave roof has been made secure, and its stone tiles repegged on strong oak battens. The stone tiles on the tower roof, which had become a source of danger to passers-by, have also been rehung and the oak timbers repaired. The tower does not form a part of the early fabric, but was added during the seventeenth century, the fourteenth-century west window doing duty for a tower arch. One of the most interesting features in the church is the rood stair. The chancel arch is also of a most unusual character, taking the form of a cinquefoil above a pointed arch. A new carved teak pulpit on a stone base is the only new addition; all else has simply been a work of reparation. The work has been carried out under the direction of Mr. G. E. Halliday, F.R.I.B.A., the Diocesan Surveyor for Llandaff.

Usk.—St. Mary's Church has recentiy been reopened after undergoing reparation. The organ, until recently in use at Llandaff Cathedral, has also been cleaned, rebuilt, and tuned by Messrs. Vowles, organ builders, of Bristol. The Priory Church of Usk carries us back to the days of "Strongbow," or Richard de Clare, of the 12th century, who founded a priory for five Benedictine nuns at Usk. The Priory Church has during successive ages been the scene of such continuous demolition that now, with the exception of the Norman tower, very few traces of the early foundation remain. Succeeding ages have, however, left their mark on the nave, aisles, and porches, which form a study of 13th, 14th, and 15th-century architecture. The work now completed has been that of simple reparation. The fine 13th-century arcade has been freed of its coating of cement plaster and sham mouldings. The Norman work of the crossing has been exposed. The plaster ceiling has given place to well-designed oak barrel roofs with carved and gilded bosses. The window tracery has been restored and reglazed, and in fact the old church, or so much of it as now remains, seems to be rejuvenated to its Middle Age or 15th-century period. The entire reparation has been carried out under the direction of Mr. Halliday, F.R.I.B.A. Messrs. George Couzens and Co. were the contractors for the roofs, stalls, &c. The work has cost about £1,200.

Law Cases.

Letting Uncertificated Houses: Offences against the Birkenhead Laws.—William Hugh Edwards, builder, was summoned recently under the building by-laws for having let Nos. 89 and 97 Maybank Road, Birkenhead, without having first obtained a certificate from the surveyor as to the fitness of the same for habitation.—Defendant had recently erected the two houses referred to, and applied for certificates of fitness for occupation, which were refused on the ground that the houses were not properly completed. A second application had the same result, and on a third request for a certificate being made the premises were found completed, and had been occupied for some time. The scullery ceilings were not the proper height required by the by-laws, the sink waste-pipes were not provided with "shoes," and did not deliver on to the gulleys. The holes through which the pipes were passed had not been properly stopped up.—Defendant said he had not the least intention of breaking the by-laws.—The bench imposed a fine of 20s. and costs in each case, £2 13s. in all.

Government Contracts: the Meaning of the Word "Required."—In delivering judgment last week in the appeal case of *Stewards and Company, Limited*, v. *The Queen*, the Master of the Rolls said that this was a petition of right, in which the suppliants asked for damages for breach of contract on the part of the Crown. The sole question was as to the meaning of the word "required" in a letter from the Admiralty to the suppliants. The Admiralty wanted stone for the construction of a new breakwater, and they invited tenders for the supply of cap and roach stone in such quantities as might be required by them. The suppliants, who were stone merchants, sent in a tender, stating that they agreed to deliver cap and roach stone, approximate amount 2,000,000 tons, in accordance with specification, for the sum of 4d. per ton. That was an offer, and it was accepted by a letter from the Admiralty, stating that the suppliants' tender was accepted for the supply for the new breakwater at Portland of about 2,000,000 tons, or such quantity as might be required, of cap and roach stone, in accordance with specification. In his opinion, that meant for the supply of approximately 2,000,000 tons, or such quantity, either a little more or a little less than 2,000,000 tons, as might be required for the construction of the breakwater. He thought that the view of the Crown, that this was a contract under which one side was bound and the other was free, was unbusiness-like. He, therefore, thought that the appeal should be dismissed. Lord Justice Collins said that he did not take such a clear view of this case as the Master of the Rolls did, but he did not differ. He thought that, having regard to the fact that the Admiralty might think it their duty not to incur unnecessary expenditure, and also to the fact that the stone in question was refuse stone which the suppliants might be glad to get rid of, there were two possible views as to the true construction of the contract in question, and that either view might give a not unreasonable contract. On the whole, however, he thought that the more reasonable and the better view was that adopted by the Master of the Rolls. He therefore agreed that the appeal should be dismissed. Lord Justice Stirling thought that the contract was capable of two meanings, but, having regard to all the documents, he was of opinion that the view taken by the learned Judge at the trial and by the Master of the Rolls was right.

A Case relating to Fees for Measuring-up Work.—In the case of *Do lar* v. *Higgs and another*, heard last Friday in the Queen's Bench Division of the High Court of Justice, the plaintiff, Mr. Peter Dollar, architect and surveyor, sued Messrs. H. and H. F. Higgs, builders and contractors, for £262, money alleged to have been received by the defendants for the use of the plaintiff. The case was heard in May last before the Lord Chief Justice and a special jury, when the jury disagreed. It appeared that the plaintiff was employed in 1897 by Messrs. Pickford and Co., the well-known carriers, to prepare plans and specifications of certain stables which were subsequently erected at Tottenham. Tenders were invited for the work upon a schedule of prices. The defendants' tender was accepted, and they did the work, which was completed in October, 1897. The work was then measured up by a nominee of the defendants in conjunction with a clerk in the plaintiff's office named Preston. Before the measuring up was completed Preston left the plaintiff's service, and the plaintiff employed Mr. R. S. Wardle to complete the measuring up. Wardle was a quantity surveyor, having a separate office, who had from time to time been employed by the plaintiff when there was more work to do in the plaintiff's office than his staff could cope with. According to the plaintiff's case Wardle was employed upon the Tottenham job on the terms of receiving one-third of the plaintiff's commission. Notwithstanding this arrangement, which the plaintiff alleged was known to the defendants, the defendants, when they received the final remittance from Messrs. Pickford and Co., paid over to Wardle a sum of £262, being 2½ per cent. of the amount of the contract, which was included in Messrs. Pickford's remittance as surveyors' fees for measuring and making up accounts. The plaintiff's case was that in the course of a conversation between himself and one of the defendants, which took place before the above payment was made, the plaintiff stated that the fees for measuring up the work were payable to himself, and that Wardle was not an independent surveyor and had no authority to receive the fees. It was suggested that the defendants in paying the fees to Wardle were influenced by disputes which had arisen between them and the plaintiff relative to the plaintiff's certificate as architect. The defendants denied ever having had any intimation from the plaintiff that Mr. Wardle was not an independent surveyor, and their case was that they were justified in so regarding him. It was suggested on behalf of the defendants in the cross-examination of the plaintiff, but denied by the latter, that the receipt of the quantity surveyor's fees by the plaintiff was unknown to Messrs. Pickford and Co., and was in the nature of a secret commission. Mr. Justice Wills, in the course of his summing up, said that no one disapproved more strongly than himself of the taking of secret commissions, but he was convinced that the observations which had been made against that practice had no application to the present case. The jury found a verdict for the plaintiff. Judgment was accordingly entered for £175, credit being given for one-third of the fees which was admittedly payable to Wardle.

House Property: An Unsuccessful Claim for Damages.—On December 3rd, in the Queen's Bench Division of the High Court of Justice, the case of *Greswolde-Williams and others* v. *Barneby* was heard before Mr. Justice Wills and a special jury. This was an action brought by Mr. F. W. G. Greswolde-Williams and his trustee against Mr. W. H. Barneby, the defendant, for damages for breach of warranty in the sale of a house and land. Plaintiffs' counsel said that on July 26th, 1898, plaintiffs bought for £30,000, at a sale at Token-house Yard, a house called Bredenbury Court, in the county of Hereford, together with about 530 acres of land. The particulars of the sale of the property contained the following provisions: "The house is in first-class order throughout, not the slightest outlay being needed before occupation," and "the sanitary arrangements were thoroughly overhauled and reconstructed in 1894-95 under the supervision of the Gloucester Sanitary Association, and the drainage is carried by a good fall to 500 yds. away from the residence. There are no interior pipes, all are carried outside and are properly trapped and ventilated; in fact, everything has been done to make them as perfect as possible." A conveyance of the property was executed on December 3rd, 1898. Shortly after this it was discovered that the drainage was out of order. The plaintiffs spent a large sum of money in thoroughly overhauling and reconstructing the drainage and now claimed a portion of the outlay as damages. It was also ascertained that in 1894-95 the only work done

to the drainage was represented by a sum of £63 spent upon it in order to render the house fit for the occupation of a twelve months' tenant. Counsel contended that the paragraphs of the particulars of sale above set out amounted to a warranty. Sir Edward Clarke, on behalf of the defendant, submitted that, assuming it was correct that there was a warranty, the plaintiffs had no case, for where an agreement for purchase and sale was followed by a conveyance the terms of the original agreement were merged in those of the conveyance and could not afterwards be relied on by either party except for the purpose of interpreting the language of the conveyance, unless there were grounds for rescinding the conveyance because of fraud or for altering it because of a mistake. Plaintiffs' counsel agreed that an action could not have been maintained after the conveyance for damage for any misrepresentation not amounting to fraud. But, he contended, where there was a warranty—as he was assuming for the present purpose there was—the case was different. The warranty was a collateral obligation which did not on the completion of the contract of sale become merged in the conveyance. Mr. Justice Wills said that the plaintiffs could not maintain the action. The nett result of the cases which had been cited was that where a contract was of a preliminary character and was intended to be superseded by a formal contract, and was in fact so superseded, then the superseding contract prevailed, and the stipulation of the preliminary contract could not be relied on. That was laid down in *Leggott* v. *Barret* (15 Ch. D. 306). The plaintiffs could not, therefore, after the conveyance, sue upon the terms of a warranty in the particulars of sale under which the subject-matter of the conveyance was originally sold. If it had been the intention of the parties that the warranty should survive there was no reason why it should not have found its way into the conveyance. Judgment was accordingly entered for the defendant.

New Companies.

Muirhead & Sons, Limited.

This company has been registered in Scotland with a capital of £50,000 in £10 shares to acquire and carry on the existing business of timber importers, merchants, and sawmillers.

New Century Arc Light Company, Limited.

This company was registered on November 19th with a capital of £30,000 in £1 shares (5,000 preference) to adopt an agreement with W. G. Davis, and to carry on the business of electricians, mechanical engineers, suppliers of electricity for light, heat, power, and other purposes, &c. The first directors (to number not less than two nor more than seven) are M. Bush and A. C. Schonberg. Registered office: 28 Victoria Street, E.C.

National Artistic Company, Limited.

This company was registered on November 20th with a capital of £2,000 in £1 shares to acquire the business carried on by Signor C. Cattapani as the Artistic Terra-cotta Syndicate, with the processes invented by the vendor, for the manufacture of terra-cotta, and an imitation thereof known as pro-terra-cotta, and to carry on the business of terra-cotta and ceramic ware manufacturers, potters, &c. The first directors (to number not less than three nor more than seven) are to be appointed by the subscribers.

Consumers' Wall-paper Company, Limited.

This company was registered on November 17th with a capital of £3,000 in £1 shares to acquire the business carried on at 14 Lever Street, Manchester, as Walshaw and Co., and to carry on the business of manufacturers of and dealers in paper, paper-hanging, lead, glass, varnish, paint, oils, colours, bronze, brocades, gilt and other mouldings, &c. The first directors (to number not less than two nor more than five) are J. A. Williams, J. W. Walshaw, W. J. Johnson and E. Tate. Registered office: 14 Lever Street, Manchester.

Alex. Findlay & Co., Limited.

This company has been registered in Scotland with a capital of £100,000 in £1 shares to acquire and carry on the existing business of steel roof and bridge builders and general structural engineers. Registered office: Parkneuk Works, Motherwell.

The Auchincarroch Quarries, Limited.

This company has been registered in Scotland with a capital of £6,000 in £1 shares to acquire and work the Auchincarroch Stone Quarry, near Alexandria, Dumbartonshire. Registered office: 34 West George Street, Glasgow.

Window Blind Manufacturing Company, Ltd.

This company was registered on November 22nd with a capital of £5,000 in £1 shares to carry on at Manchester and elsewhere the business of window blind manufacturers, general furnishers, warehousemen, joiners, builders, wood and metal workers, wire manufacturers, furniture manufacturers, dealers in lace, cotton, wool, silk, and other textile fabrics, &c.

Hesketh and Son, Limited.

This company was registered on November 15th with a capital of £5,000 in £1 shares to acquire the business carried on by J. Hesketh at Regent Street, Warrington, as Hesketh and Son, and to carry on the business of house and general furnishers, furniture dealers, decorators, builders, hardwaremen, gold and silver smiths, watchmakers, jewellers, &c. The first directors (to number not less than two nor more than seven) are to be appointed by the subscribers.

Lyndhurst Electric Lighting and Traction Co Limited.

This company was registered on November 20th with a capital of £500 in £1 shares (250 founders') to construct or acquire, equip and work railways and tramways, to supply electricity for light, heat, power, and other purposes, and to carry on the business of electricians, electric and general engineers, promotors, financiers, &c. Registered office: Palace Chambers, Bridge Street, Westminster, S.W.

Continental Incandescent Gas Light Co., Ltd.

This company was registered on November 22nd with a capital of £5,000 in £1 shares to adopt an agreement with J. Boehm for the acquisition of his business relating to the sale of incandescent lighting accessories in the United Kingdom, and to carry on the business of burner, mantle and other fittings and appliance manufacturers and merchants, &c. The first directors (to number not less than three nor more than five) are to be appointed by the subscribers.

John Southey, Limited.

This company was registered on November 22nd with a capital of £15,000 in £1 shares to acquire the businesses carried on at Portsmouth and Southsea, Hampshire, by J. Southey, to adopt an agreement with the said vendor, and to carry on the business of wholesale and retail ironmongers, timber, slate, iron, and cement merchants, hardwaremen, drysalters, dealers in asbestos, fire-lighter and patent fuel manufacturers, stove lamp and filter makers, builders' merchants, &c. The first directors (to number not less than two nor more than seven) are B. K. Clarke, W. Satchell and S. H. Morgan.

Husson's Safety Acetylene Syndicate, Limited.

This company was registered on November 15th with a capital of £5,000 in 4,950 ordinary shares of £1 each and 1,000 founders' shares of 1s. each to acquire the business carried on at 28 Victoria Street, S.W., as Husson's Safety Acetylene Syndicate, and to carry on the business of manufacturers of and dealers in carbide of calcium, acetylene, acetylene and other gas lamps, burners, mantles, glasses, shades, and all gas and electrical fittings, &c. The first directors (to number not less than two nor more than five) are to be appointed by the subscribers.

Henry Boys Brick Colliery Company, Limited.

This company was registered on November 27th with a capital of £6,000 in £1 shares to carry on the business of brick, coal, and ironmasters and dealers, colliery owners, coke manufacturers, miners, contractors, &c. The first directors (to number not less than three nor more than seven) are to be appointed by the subscribers.

Leeds Art Pottery and Tile Company, Limited.

This company was registered on November 23rd with a capital of £20,000 in £10 shares to adopt an agreement with R. J. Graveson and to carry on the business of potters, tile manufacturers, kiln and oven builders and proprietors, dock and wharf owners, &c. The first directors (to number not less than four nor more than five) are W. D. Cliff, J.P., J. Holroyd and H. E. Cliff, with power to add to their number.

Chiswick Building Company, Limited.

This company was registered on November 23rd with a capital of £6,000 in £1 shares to carry on the business of builders, contractors, engineers, estate agents, auctioneers, builders' merchants, &c., and to adopt an agreement with T. Mayne of the one part and F. C. Silles of the other part. The number of directors is to be not less than two nor more than five. The first are T. Mayne and F. C. Silles. Registered office: 2 Southfields Road, Acton Lane, Chiswick, W.

Dudley Art Metal Company, Limited.

This company was registered on November 23rd with a capital of £3,000 in 1£ shares to acquire the business carried on at the Vulcan Works, Churchfield Street, Dudley, Worcestershire, and to carry on the business of art metal workers and manufacturers, ironmasters, smelters, engineers, founders, &c. The first directors (to number not less than two nor more than four) are A. Rushworth and T. Hill. Registered office: Vulcan Works, Churchfield Street, Dudley.

Mynyddislwyn Collieries, Limited.

This company was registered on November 22nd with a capital of £15,000 in £1 shares to adopt an agreement with Andrew Gray, E. J. Gray and D. Rogers, and to carry on in the county of Monmouth, in South Wales, and elsewhere, the business of colliery owners, coal merchants, ironmasters, brick and tile manufacturers and merchants, &c. The first directors (to number not less than two nor more than five) are to be appointed by the subscribers. Registered office: 54 Old Broad Street, E.C.

C. T. Baker, Limited.

This company was registered on November 22nd with a capital of £10,000 in £1 shares to acquire the business formerly carried on by the late Charles T. Baker at Holt, Fakenham and Sheringham, in the county of Norfolk, as C. T. Baker, and to carry on the business of wholesale and retail ironmongers, builders, contractors, engineers, founders, &c. The first directors (to number no less than two nor more than seven) are C. M. Baker, J. R. Scoley, W. J. Clarke and H. S. Watson. Registered office: Market Place, Holt, Norfolk.

United Railway and Trading Company, Limited

This company was registered on November 22nd, with a capital of £500,000 in £5 shares to adopt and carry into effect an agreement made between E. A. Hopkins and this company to construct and maintain telegraphs and other works in America or elsewhere; to carry on the business of civil, consulting and constructional engineers, surveyors, makers of and dealers in steel and iron girders, columns, stanchions, angle irons, bars, plates, pipes, and ironmongers' stores, fire-proofing contractors, &c. The first directors (of whom there shall be not less than three nor more than seven) are to be elected by the signatories to the memorandum of association. D. Sluter, A. D. Brown, S. Gibbs, G. C. Eedes, R. W. Blackburn, H. Yuill and R. W. Page.

Property and Land Sales.

Clearance Sale.—Wednesday next.—Without Reserve.—No. 36 North Street, Manchester Square, W.—To Builders, Cabinet Makers, and others.

MR. JOSEPH HIBBARD AND SONS have been favoured with instructions from the owner, Mr. C. F. Chesterman, to SELL by AUCTION, upon the premises as above, in consequence of alterations, on WEDNESDAY next, December 12th, at twelve o'clock, the surplus STOCK-IN-TRADE of a timber merchant, comprising well-seasoned woods, including Tabasco and Honduras mahogany in planks and boards, oak, ash, whitewood, veneers, deal boards, &c. Also good builder's cart. On view day prior and morning of sale, and catalogues had upon the premises and at the Auctioneers' Offices, 9 Walbrook, E.C., and 15 Newington Green, N.

MISCELLANEOUS.

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APPOINTMENTS VACANT.

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SHERE DRAINAGE.
CLERK OF THE WORKS WANTED.

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The person to be appointed must have had previous experience in the duties, and the salary to be paid will be after the rate of £2 10s. per week.

Applications, stating age and enclosing copies of three testimonials of recent date, together with a statement of the drainage works which the applicant has acted as Clerk of the Works for, must reach me at the Council's Offices, Commercial Road, Guildford, not later than 10 o'clock a.m. on FRIDAY, the 14th day of DECEMBER.

By order,
W. S. V. CULLERNE,
Clerk to the Council.

Offices, Commercial Road, Guildford,
November 30th, 1900.

BUILDER'S CLERK REQUIRED. A good all-round man. Good references required. State wages and experience.—GEORGE HILL, Builder, Ledbury.

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ARCHITECTURAL DRAUGHTSMAN (24) requires PERMANENT SITUATION, North of England. Expeditious draughtsman and designer. Sketch, contract, and detail drawings. Good printer &c.—JAMES G. CHIGNELL, "Wateree," Clifton Avenue, W. Hartlepool.

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ARCHITECT and SURVEYOR'S JUNIOR ASSISTANT requires RE-ENGAGEMENT. Six years' experience in borough surveyor's office. Good surveyor and leveller. Age 21.—E. W. H., 24 Townfield Street, Chelmsford.

BUILDER'S ASSISTANT or MANAGER (26) seeks ENGAGEMENT, to supervise buildings or take entire charge of same. Also general routine. Good all-round experience. Good draughtsman. Abstainer. Reliable. energetic. Highest references. — Box 1,543, BUILDERS' JOURNAL Office.

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COMPLETE LIST OF CONTRACTS OPEN.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
	BUILDING.		
Dec. 14	Bridgnorth—Post Office	Commissioners of H.M. Works and Public Buildings	H. M. Office of Works, Storey's Gate, S.W.
„ 14	Lidget Green, Bradford—Eight Through Houses	Great Horton Industrial Society, Limited	J. Drake and Son, Architects, Queensbury, Bradford.
„ 14	Great Horton, Bradford—Houses	Industrial Society, Limited	J. Drake and Son, Architects, Queensbury.
„ 14	Killarney—Lodging Houses	Urban District Council	Clerk, Council Offices, Killarney.
„ 15	Aberdeen—Ventilation		Jenkins and Marr, 16 Bridge Street, Aberdeen.
„ 15	Donegal—Infirmary	Guardians	E. J. Toye, Architect, Strand, Londonderry.
„ 15	Evesham—Cottage Homes	Union	E. Wadams, Union Offices, Evesham.
„ 17	Stocksbridge—Additions, &c., to British School		C. J. Innocent, 22 High Street, Sheffield.
„ 17	Lancaster—Shops	Co-operative Society	Austin and Paley, Architects, Castle Park, Lancaster.
„ 17	Mexborough, Yorks—Buildings	Urban District Council	G. F. Carter, Council Offices, Mexborough.
„ 17	Newbury—Engine House	Rural District Council	S. J. L. Vincent, Engineer, Market Place, Newbury.
„ 17	Ulverston—Police Station	Standing Joint Committee	County Police Office, Ulverston.
„ 18	Darwen Station—Extension of Booking Office	Lancashire and Yorkshire Railway Co.	Engineer's Office, Hunt's Bank, Manchester.
„ 19	Butterwick, near Boston—Chapel		W. Martin, Ivy Cottage, Butterwick.
„ 19	Colne, Lancs—Extensions	Markets Committee	T. H. Hartley, Town Hall, Colne, Lancs.
„ 19	Leeds—Foundations of Band Stand	Corporation	City Engineer, Municipal Buildings, Leeds.
„ 19	Great Bridge, Staffs—Chancel	St. Luke's Building Committee	J. Pearson, Market Place, Great Bridge.
„ 20	Skenfrith, Abergavenny—Dado	School Board	J. H. Farquhar, Clerk, Abergavenny.
„ 21	Belfast—Abattoir	Market Committee	City Surveyor, Belfast.
„ 21	Trawsfynydd—Alterations		W. W. Owen, British School, Trawsfynydd.
„ 24	Halifax—School	School Board	C. F. L. Horsfall and Son, Lord Street Chambers, Halifax.
„ 29	Falmouth—Police Station	Standing Joint Committee	County Police Station, Falmouth.
„ 29	Falmouth—School of Art	Committee of Science, Art and Technical Schools	Chamber of Commerce, Arwenack Street, Falmouth.
„ 31	Harrow—Extensions	J. Adamson and Co.	Johnstone Brothers, 39 Lowther Street, Carlisle.
Jan. 1	Kingston-on-Thames—Additions to Laundry	Union Guardians	J. Edgell, Clerk, Guardians' Offices, Coombe Lane, Kingston-on-Thames.
„ 10	Cricklade, Wilts—Police Station	Standing Joint Committee	County Offices, Trowbridge.
No date	Saltaire—House		H. and E. Marten, 5 and 7 Charles Street, Bradford.
	ENGINEERING.		
Dec. 14	Dublin—Boilers	General Prisons Board for Ireland	S. H. Douglas, Dublin Castle, Dublin.
„ 15	Erpington—Hot-water Extension at Engine House	Rural District Council	J. Outlaw, Clerk to Parish Council, Holt.
„ 17	Ilford—Wiring	School Board	C. J. Dawson, 7 Bank Buildings, Ilford.
„ 17	Westbury-upon-Trym, near Bristol—Sludge Press	Barton Regis Rural District Council	A. P. I. Cotterell, Scottish Buildings, 28 Baldwin Street, Bristol.
„ 17	Leigh, Lancs—Purifiers	Gas Committee	J. Foster, Gasworks, Leigh, Lancs.
„ 18	Headington, Oxon.—Bridge	Rural District Council	L. Turner, Hartfield Cottage, New Headington, Oxon.
„ 18	Longton Bridge Station, near Preston—Widening Bridge and Extending Platforms	Lancashire and Yorkshire Railway Co.	Engineer's Office, Hunt's Bank, Manchester.
„ 18	Cavan, Ireland—Scraping Water Mains	Urban District Council	T. McGuinness, Clerk, Cavan.
„ 18	Oldham—Condensing Plant	Electricity Committee	A. Andrew, Gas and Water Offices, Oldham.
„ 19	Gravesend—Boiler	Guardians	W. J. King, Town Hall, Gravesend.
„ 19	Salford—Filter Washing and Raking Machine		Borough Engineer, Town Hall, Salford.
„ 20	Bristol Electrical Plant	Electrical Committee	H. F. Proctor, Electrical Engineer, Bristol.
„ 20	London, N.W.—Electric Lighting	St. Pancras Guardians	A. A. Millward, Town Hall, Pancras Road, N.W.
„ 22	Aberdeen—Batteries	Electric Lighting Committee	J. A. Bell, Cotton Street, Aberdeen.
„ 22	Ilford—Well	Urban District Council	H. Shaw, 7 Cranbrook Road, Ilford.
„ 22	Ilford—Fire Engine	Urban District Council	J. W. Benton, Council Offices, Ilford.
„ 22	Walsall—Retort Benches	Gas Committee	B. W. Smith, Pleck Gasworks, Walsall.
„ 24	Swindon—Dynamos	Corporation	Lacey, Clirehugh and Sillar, 2 Queen Anne's Gate, S.W.
„ 25	Harrogate—Boilers	Corporation	Electric Lighting Department, 33 Swan Road, Harrogate.
„ 28	Ryde, I.O.W.—Esplanade	Corporation	C. Mathew, Engineer, Ryde, I.O.W
„ 29	Winwick, Lancs—Wiring	Asylums Board	J. S. Muspratt, County Offices, Preston.
„ 31	Llandudno, Wales—Promenade Works	Urban District Council	E. P. Stephenson, Church Walks, Llandudno.
„ 31	London, N.W.—Plant	Hendon Urban District Council	R. Hammond, 64 Victoria Street, London, S.W.
Jan. 2	Christiania—Transmission of Electric Power	Stavanger Corporation	E. Berentsen, British Vice Consul, Stavanger.
„ 2	Tooting Bec—Wiring	Metropolitan Asylums Board	Board Offices, Embankment, E.C.
„ 2	Middleton, Lancs—Superheaters	Corporation	Lacey, Clirehugh and Sillar, 78 King Street, Manchester.
„ 10	Rathmines, Ireland—Plant	Electric Lighting Committee	R. Hammond, 64 Victoria Street, London, S.W.
Feb. 1	London, S.W.—Meters	Battersea Borough Council	Town Clerk, Municipal Buildings, Lavender Hill, S.W.
„ 28	Wellington, New Zealand—Engines	Corporation	J. Duthie & Co., Limited, 23 Lime Street, London, E.C.
April 10	Rosario—Harbour Works	Argentine Government	Commercial Department, Foreign Office, S.W.
	IRON AND STEEL.		
Dec. 15	West Didsbury, near Manchester—Palisades		J. Cartwright, Peel Chambers, Market Place, Bury.
„ 17	Worthing—Iron and Steel	Corporation	F. Roberts, Borough Surveyor, Worthing.
„ 17	Wimbledon—Sewer Ventilating	Urban District Council	C. H. Cooper, Engineer and Surveyor, Wimbledon.
„ 31	Llandudno—Pipes	Urban District Council	E. P. Stephenson, Church Walks, Llandudno.
	ROADS AND CARTAGE.		
Dec. 14	Preston, Lancs—Paving	Corporation	Borough Surveyor, Town Hall, Preston.
„ 15	Northumberland—Roadstone		County Surveyor, Moot Hall, Newcastle-on-Tyne.
„ 17	Burnham-on-Crouch, Essex—Making Up	Urban District Council	Council Offices, High Street, Burnham-on-Crouch.
„ 17	Halifax—Street		G. Buckley and Son, Tower Chambers, Halifax.
„ 19	Horsham, Sussex—Materials	Roads and Bridges Committee	W. B. Purser, 31 Bedford Road, Horsham.
„ 21	Chartham, near Canterbury—Making Up	Asylum Committee	W. J. Jennings, 4 St. Margaret's Street, Canterbury.
„ 22	Witham, Essex—Granite	Urban District Council	W. Bindon Blood, Council Office, Witham, Essex.
„ 30	Nottingham—Carting	Corporation	A. Brown, Guildhall, Nottingham.
„ 31	Kettering—Footpath	Urban District Council	Surveyor, Market Place, Kettering.
Jan. 8	Acton—Road Materials	Urban District Council	D. J. Ebbetts, 242 High Street, Acton.
	SANITARY.		
Dec. 14	Durham—Sewers	Rural District Council	G. Gregson, Eastwood, Western Hill, Durham.
„ 15	Horwich, Lancs—Sewer Extension	Urban District Council	Surveyor, Public Hall, Horwich.
„ 17	Baildon, Yorks—Sewerage and Sewage Disposal Works	Urban District Council	Beesley, Son and Nichols, 11 Victoria Street, Westminster, S.W.
„ 17	Dudley—Sewering	Corporation	J. Gamage, Town Hall, Dudley.
„ 17	London, N.W.—Sewer	Hendon Urban District Council	Engineer, Public Offices, Hendon, N.W.
„ 17	Westbury-upon-Trym, near Bristol—Sewers	Barton Regis Rural District Council	A. P. J. Cotterell, 28 Baldwin Street, Bristol.

COMPETITIONS OPEN.

DATE OF DELIVERY.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	BY WHOM ADVERTISED.
Dec. 14	Swansea—Harbour Offices	£100, £50	T. Strick, Harbour Offices, Swansea.
„ 31	Malling, Kent—Steam and Hot Water Scheme	£25	J. F. Allison, West Malling, Kent.
„ 31	South Shields—Municipal Buildings	£200, £100, £50	J. M. Hayton, Town Clerk, Court Buildings, South Shields.
Jan. 18	Hindley—Public Offices	£50, £25, £10	A. Holden, Surveyor, Hindley.
Feb. 14	Ballarat, Australia—Statue		J. W. Nedwell, Hon. Sec. Soldiers' Statue Fund, Ballarat, Australia.
March 25	Basford—Sewerage Scheme		C. J. Spencer, Clerk, Public Offices, Basford.

COMING EVENTS.

Wednesday, December 12.

SANITARY INSTITUTE.—Dr. Frank Tidswell on "Some Practical Aspects of the Plague in Sydney, N.S.W.," 8 p.m.

EDINBURGH ARCHITECTURAL ASSOCIATION. — Mr. G. S. Aitken, F.S.A., on "Bothwell Castle," 8 p.m.

NORTHERN ARCHITECTURAL ASSOCIATION.—Meeting at 7.30 p.m.

SOCIETY OF ARTS.—Professor Frank Clowes, D.Sc., on "The Treatment of London Sewage," 8 p.m.

SOCIETY OF ENGINEERS.—Annual Dinner at Hotel Cecil, 7 p.m.

JAPAN SOCIETY.—Mrs. Ernest Hart on "Impressionism in Japanese Art," 8.30 p.m.

INSTITUTION OF CIVIL ENGINEERS.—Students' Visit to the Engine Works of Messrs. James Simpson and Co., 101 Grosvenor Road, Pimlico, S.W., at 2.30 p.m.

Thursday, December 13.

INSTITUTION OF ELECTRICAL ENGINEERS.—Mr. W. Duddell on "Rapid Variations in the Current through the Direct Current Arc," 8 p.m.

SOCIETY OF ANTIQUARIES OF LONDON.—Meeting at 8.30 p.m.

SOCIETY OF ARCHITECTS.—Mr. W. Cooper on "Architects' Examinations," 8 p.m.

Friday, December 14.

PHYSICAL SOCIETY.—Meeting at 5 p.m.

INSTITUTION OF JUNIOR ENGINEERS.—Mr. John H. Davy James on "The Metallurgy of Tin," 8 p.m.

ARCHITECTURAL ASSOCIATION OF IRELAND.—Technical Demonstration at the Works of the Dublin Timber Company, Ltd., 1 to 4 Lower Erne Street, Dublin. Mr. Thomas Hudman on "Timber Working Machinery, Staircase Work, Sashes and Frames, Doors, Door Frames, and Roofs," 4.30 p.m.

ARCHITECTURAL ASSOCIATION (DISCUSSION SECTION). Mr. H. V. Crawfurth Smith on "The Churchyard and its Accessories," 7 p.m.

INSTITUTION OF MECHANICAL ENGINEERS. — Mr Herbert A. Humphrey on "Power-Gas and Large Gas-Engines for Central Stations," 8 p.m.

SHEFFIELD SOCIETY OF ARCHITECTS AND SURVEYORS.—Mr. Hugh Stannus, F.R.I.B.A., on "Athenian Buildings."

Saturday, December 15.

DUNDEE INSTITUTE OF ARCHITECTURE. — Visit to new additions at West Green Asylum, 2.35 p.m.

CONFERENCE ON THE HOUSING QUESTION at Essex Hall, Essex Street, Strand, W.C., 3 p.m.

BRITISH INSTITUTE OF CERTIFIED CARPENTERS.—Visit to the buildings in course of erection at Farn Street, South Audley Street, W., at 3 p.m.

Monday, December 17.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.—Prof. Beresford Pite on "Some Tendencies of the Modern School of Architecture," 8 p.m.

SOCIETY OF ARTS.—Cantor Lecture. Prof. John A. Fleming, M.A., on "Electric Oscillations and Electric Waves."—IV.

NATIONAL INDIAN ASSOCIATION.—Imperial Institute. Mr. Nilkanth B. Wayle on "Experiences in an English Glass Factory," 5 p.m.

LONDON INSTITUTION.—Prof. Silvanus P. Thompson, D.Sc., F.R.S., on "The Tercentenary of the Science of Electricity," 5 p.m.

LIVERPOOL ARCHITECTURAL SOCIETY.—Mr. G. Hastwell Grayson, M.A., A.R.I.B.A., on "Roofs and Roofing."

Tuesday, December 18.

GLASGOW ARCHITECTURAL ASSOCIATION.—Lecture by Mr. John Keppie.

ARCHITECTURAL ASSOCIATION OF IRELAND.—Meeting at 7.45 p.m.

Wednesday, December 19.

EDINBURGH ARCHITECTURAL SOCIETY.—Mr. Andrew Muir on "The Architectural Survey."

GEOLOGICAL SOCIETY OF LONDON.—Meeting at 8 p.m

TENDERS.

BRACKLEY.—For additions to banking premises for the Bucks and Oxon Union Bank, Limited. Mr. Charles P. Ayres, architect, Watford, Herts:—

Booth	£2,027	Matthews	£1,76
Waterman	1,890	Orchard & Son, Banbury *	1,74
Hawkins	1,887		
Webster & Cannon	1,798	* Accepted.	

GLYN-NEATH.—For the erection of a mixed schoo for 320 children for the Upper Neath School Board. I. Cook Rees architect, Neath:—

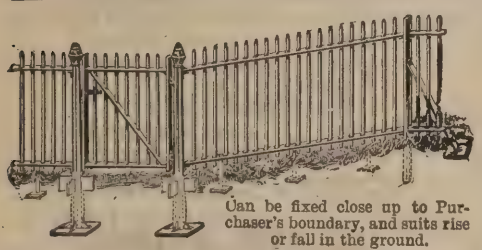
Evan Thomas, Seven Sisters	£4,476	0	0
Thomas Davies, Swansea	4,430	0	0
Thomas Watkins & Co., Swansea	4,186	0	0
Walters & Johns, Morriston	4,100	0	0
J. Goodridge & Son, Swansea	3,993	0	0
E. R. Evans, Cardiff	3,787	3	10
A. J. Howell & Co., Cardiff	3,692	0	0
T. Bevan, Cardiff	3,600	0	0
W. E. Willis, Pentre	3,583	0	0
D. Davies, * Cardiff	3,479	0	0

* Accepted. [Architect's estimate, £3,600.]

GREAT YARMOUTH.—For the erection of a new cookery centre at Gorleston for the Great Yarmouth School Board. Messrs. Bottle & Olley, architects, Great Yarmouth:—

A. E. Bond	£1,175	0	0
F. Grimble	999	10	0
Everett	970	0	0
Beech *	949	0	0
J. Moore	£946	0	0
J. Ward	936	12	0
A. Wright	880	0	0
S. & F. Smith *	880	0	0

* Accepted.



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S. Wiles	1,640		

* Accepted.

LONDON.—For the erection of offices in Grinstead Road, Deptford, for Messrs. Braby & Co., Limited. Mr. John James Downes, architect, 199 Lewisham High Road. Quantities by Mr. Henry Theobald, 6 South Street, Finsbury :—

Falkner & Co.	£6,983	H. L. Holloway	£6,434
Woodward & Co.	6,495	Thos. Sayers	5,910
J. & A. Oldman	6,479	Thos. D. Lang	5,720
Josolyn & Young	6,462	Jerrard & Sons	5,478
Johnson & Co., Ltd.	6,450		

RHYL.—For the erection of a refuse-destructor and electric light station buildings, for the Urban District Council. Mr. A. A. Goodall, surveyor, Clwyd Street, Rhyl. Quantities by Messrs. D. Howorth & Son, 22 Lord Street, Liverpool :—

Haigh & Co.	£7,990	Thornton & Sons, 88 Wellington Road, Toxeth Park, Liverpool *	£6,225
Lawrence, Marr & Co.	6,490		

* Accepted.

SOUTHEND.—For additions, &c., to Westward Ho! Westcliffe Parade, for Mrs. Hocker. Messrs. Greenhalgh & Brockbank, architects, Bank Chambers, Southend :—

		Porch.
Davey Bros., Queen's Road Works	£4,449	£89 0
Golding, Princes Street	4,286	72 0
Woodwiss, Princes Street	4,151	51 5
Gillett, Queen's Road	4,070	62 0
Shelbourne & Co., Elmer Avenue	4,050	50 0
West, Chelmsford	3,600	53 0
Davis & Leaney, Lancaster Gardens	3,525	46 0
Stubbs, Milton Street	3,525	53 15
Dupont & Co., Southchurch Road *	3,499	44 0

* Accepted.

STAINES.—For rebuilding "The Cabin," Staines. Messrs. Foulsham and Herbert Riches, architects, 3 Crooked Lane, King William Street, E.C., and Bromley-by-Bow, E. Quantities supplied :—

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W. Slark	2,540	W. H. Pearce	2,340
Adamson & Sons	2,520	Sheffield Bros. *	2,295
F. Grant	2,400		

* Accepted.

WATFORD, Herts.—For additions to the Watford Field School for the Watford School Board. Mr. C. P. Ayres, architect, Watford :—

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Reed & Saw	3,995	P. Banyard	3,660
C. Eames	3,963	Webster & Cannon	3,599
G. Wiggs	3,950	Dupont & Co.	3,545
Clifford & Gough	3,840	C. Brightman, Watford *	3,485
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Lard Oil	per cwt.	1	19	0	—		
Lead, white, ground, carbonate	do.	1	4	10	—		
Do. red	do.	1	0	4½	—		
Linseed Oil, barrels	do.	1	10	9	—		
Petroleum, American	per gal.	0	0	5⅜	0	0	6
Do. Russian	do.	0	0	5⅜	0	0	5 13/16
Pitch	per barrel	0	8	6	—		
Shellac, orange	per cwt.	2	16	0	3	0	0
Soda crystals	per ton	3	2	6	3	5	0
Tallow, Home Melt	per cwt.	1	5	6	1	6	0
Tar, Stockholm	per barrel	1	8	6	—		
Turpentine	per cwt.	1	10	0	—		
METALS.							
Copper, sheet, strong	per ton	86	0	0	—		
Iron, Staffs., bar	do.	8	0	0	10	10	0
Do Galvanised Corrugated sheet	do.	12	0	0	12	10	0
Lead, pig, Spanish	do.	16	12	6	—		
Do. do. English common brands	do.	16	17	6	17	0	0
Do. sheet, English, 3lb. per sq. ft. and upwards	do.	21	0	0	22	0	0
Do. pipe	do.	23	0	0	—		
Nails, cut clasp, 3in. to 6in.	do.	12	0	0	13	0	0
Do. floor brads	do.	11	15	0	12	15	0
Steel, Staffs., Girders and Angles	do.	8	0	0	8	5	0
Do. Mild Bars	do.	8	5	0	8	15	0
Tin, Foreign	do.	120	5	0	120	12	6
Do. English ingots	do.	124	0	0	—		
Zinc, sheets, Silesian	do.	22	10	0	—		
Do. do. Vieille Montaigne	do.	23	2	6	—		
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Laths, log, Dantzic	per fath.	4	10	0	5	10	0
Do. Petersburg	per bundle	0	0	9	0	0	10½
Deals, Archangel 2nd & 1st	per P. Std.	8	15	0	12	15	0
Do. do. 4th & 3rd	do.	—			—		
Do. do. unsorted	do.	—			—		
Do. Riga	do.	6	15	0	8	10	0
Do. Petersburg 1st Yellow	do.	14	15	0	15	0	0
Do. do. 2nd „	do.	8	15	0	14	15	0
Do. do. Unsorted „	do.	5	5	0	13	0	0
Do. do. White	do.	9	10	0	11	5	0
Do. Swedish	do.	8	10	0	13	0	0
Do. White Sea	do.	12	15	0	16	15	0
Do. Quebec Pine, 1st	do.	19	5	0	—		
Do. do. 2nd	do.	18	15	0	—		
Do. do. 3rd &c.	do.	9	0	0	9	15	0
Do. Canadian Spruce, 1st	do.	10	10	0	11	15	0
Do. do. 3rd & 2nd	do.	8	15	0	9	0	0
Do. New Brunswick	do.	7	5	0	8	0	0
Battens, all kinds	do.	7	5	0	9	5	0
Flooring Boards, 1in. prepared, 1st	per square	0	11	0	—		
Do. 2nd	do.	0	9	0	0	10	6
Do. 3rd &c.	do.	0	8	6	0	10	3

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Sealed Tenders addressed to the Chairman of the Council, endorsed "————" as the case may be, to be sent to the undersigned on or before Five p.m. on MONDAY, the 17th day of DECEMBER, 1900. The Council do not bind themselves to accept the lowest or any Tender.

HENRY HUMPHRIS,
Clerk to the Council.

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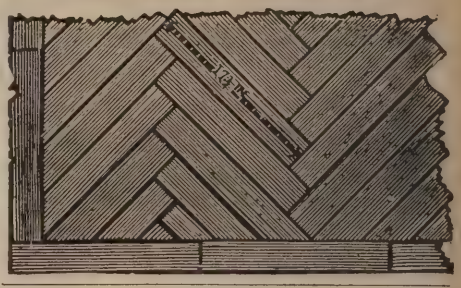
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THE BUILDERS' JOURNAL & ARCHITECTURAL RECORD

DECEMBER 19, 1900. No. CCCVI.

EFFINGHAM HOUSE, ARUNDEL STREET, STRAND, W.C.

An Architectural Causerie.

The Working Men's College. THE Working Men's College in Great Ormond Street, Queen Square, W.C., is an institution with which the names of many notable men are intimately connected. It was founded in 1854 by the late Frederic Denison Maurice (who is referred to in another paragraph), Charles Kingsley, John Ruskin and Thomas Hughes (the author of "Tom Brown's School Days"). At the outset the chief trouble was to find students, but now, as the result of the labours of the able men named—and of many others who have taken up the work they commenced—there are 800 students, a membership larger than ever before. It is felt that, notwithstanding the numerous evening classes and technical schools which have followed this first movement, the College has still an important part to play. With what regret therefore we have to announce that unless the sum of £4,000 is raised without delay the institution will be obliged to close its doors. Three years ago it was found that the buildings were in urgent need of repair, efforts were made to raise funds, and since that time half the money necessary to put the College in a sound condition has been subscribed; but the sum of £4,000 is still needed—for this is, approximately, the amount of Mr. Caröe's estimate. The object of the founders of the College was "to provide instruction for working men at the smallest possible cost in the subjects with which it most concerns English citizens to be acquainted"; and this object has been attained. William Morris was greatly interested in the institution, and Ruskin, Rossetti, Bowen and Burne-Jones were among its teachers. What a misfortune should the College be compelled to close on account of its inability to raise the comparatively small sum mentioned!

The Definition of "Construction." THE case of *Hoddinott* v. *Newton Chambers and Company, Limited* (which is reported in another column) is a striking example of the disagreement possible among the proverbial doctors. Last year the London General Omnibus Company took over some stables which had been built for them at Putney, but finding the building not quite so rigid as desired, they decided to stiffen it with some heavy iron stays, and it was whilst engaged in this work, with another workman, that Hoddinott was killed. The respondents were the contractors for the work. Judge Vernon Lushington first heard the case in the Wandsworth County Court; he dismissed the widow's claim for damages for negligence and assessed compensation under the Act of 1897. This Act stipulates that it only applies to employment "on, in, or about any building which exceeds 30ft. in height, and is either being constructed or repaired by means of a scaffolding or being demolished." The Court of Appeal reversed the decision of Judge Vernon Lushington, being of opinion that the building in which the accident happened was not being constructed or repaired, so that the respondents were not "undertakers." The House of Lords, whose judgment was given last week, have now reversed the decision of the Court of Appeal and rated them for limiting the application of the Workmen's Compensation Act. Lord Macnaghten put the case very clearly. As he pointed out, it is a strong thing to say (as Lord Justice Collins said) that when a building is once completed to the original design you cannot have anything further in the way of construction, unless the work practically means the erection of a new building. In Lord Macnaghten's opinion, "construction" cannot be limited to original construction; this would mean substituting "erection" for "construction." He preferred to rest his judgment on the broad ground that the three operations covering every varying phase in the life of a building were—construction, repair, and demolition: a decision which we think very satisfactory. The vexed question as to what constitues a scaffolding was also a feature in this case, and it will be seen by referring to the report how Lord Macnaghten emphasized that the words of the Act were not to be so narrowed down that the workman was debarred from receiving compensation.



The Old Jewellery Mart
King Street
St James Place
J Hutchings

A Much-needed Reform. REFORMS are generally the result of zealous reiteration and importunity—it could hardly be otherwise, for the introduction of new manners and methods is sure to meet with opposition from the few who benefit by the existing arrangements. Though tending to become wearisome, this reiteration is a necessity. Some of those who frequently went to hear the late Frederic Denison Morris thought that he harped too often on the one string, and tired of him, but it was this very tenacity which ultimately resulted in such remarkable success, which stirred men to prompt action in ameliorating the conditions of labour. We therefore make no apology for again referring to those huge letters which now disfigure every town in the country. These letters are on the increase, both in size and number, yet no action is taken to check the advertiser's ardour. It may be said without fear of contradiction that the letters in question are great eyesores in our streets, and that they give a restless and irritating appearance to the buildings used as supports for them. But the remedy is not far to seek. No one acquainted with the facts of the case would presume for a moment that individual shop-owners could be induced to voluntarily remove the letters, because if they did so surrounding rivals would benefit by their own letters being made more prominent by isolation. No, the change must be made by the municipal authority instituting a by-law which shall stipulate that no letters exceeding a certain size (say 2ft. high) shall be used. It is an old saying that the Englishman's house is his castle, but the particular point to notice in this instance is that the shop-owner would not lose anything by the change, while the public—or at least that portion of it possessing the least perception for harmony—would gain vastly. Comparisons are odious, but here they are useful, because if all letters were restricted to a certain size, the advertisers would be in the same position as before, the competition then raging between inches up to 2ft.—instead of to 10ft., as at present. There is no need to mention instances where these huge letters spoil the appearance of streets—they speak for themselves at almost every corner. The authorities should grasp the fact that their thoroughfares would be much enhanced by adopting the practical proposal made above. This would not be a panacea, but it would be a very salutary reform. Advertisers have been

checked in their schemes for sky-signs, the use of flash-lights and night signs has been made subject to certain restrictions (even for these we must be thankful), and the same supervision could be very beneficially exercised in regard to these street letters.

ANCIENT LONDON.

BY J. HUTCHINGS, A.R.I.B.A.

(*Concluded from page* 365, No. CCCV.)

NO article dealing, in however cursory a manner, with the London of the past can be considered complete without some mention of Stowe, the Capital's great archæological historian, to whom later writers owe so deep a debt. He was buried in the city he loved so well, and a monument still marks his resting-place in St. Andrew's Undershaft. This tomb is interesting more on account of the man himself than for any merit of its own. The design, with the exception of the pediment, is almost severe for the period, the carving being restricted to the faces of the pilasters which flank the effigy. On Stowe's account, St. Andrew's is the Mecca of archæologists, both in this country and on the other side of the Atlantic; and it is said that the quill pen with which the receptacle in the right hand of the figure is always equipped has occasionally been missed after a visit by some of our American cousins, as though it had been the very instrument with which the author penned his now famous records.

The same edifice contains a monument of more florid character to Sir Thomas Ofley and his wife, and others of more or less value. St. Andrew's, like St. Bartholomew's and St. Helen's the Great, is one of the few London churches which survived the Great Fire, and has been fortunate enough to escape the hand of the destroyer. Perhaps it owes its existence to the fact that the edifice was constructed of a durable stone, late in the Gothic period, and the site has not been required for any desirable street improvement. A lofty maypole used to stand close to the sacred edifice (hence the surname "Undershaft"), and great mayings and May games used to take place round its base. St. Andrew's Undershaft, in relation to these picturesque ceremonies, has been finely termed "that altar, for the worship of the old Springtime in London, and where rest the honoured ashes of him whose heart was as open to all the freshness and loveliness of the present as his mind was earnest and sagacious in inquiring into the past" (a church we could as ill have spared for Stowe's sake as for its own).

London abounds in retired nooks and corners where a rural peace prevails under the welcome shade of green trees, and where the ceaseless roar of the traffic is but a soothing murmur in the ears, and no longer the reflex of a passionate striving for mastery in the great battle of existence. In these retreats the poet may wander singing the praises of worthies whose monuments are all, or almost all, that are left to them, the archæologist may dream of the London of Stowe, and the artist may here find a quiet corner in which to indulge his art. St. Helen's Place is just such a spot as one of these, situate, too, where the stir and bustle of life is most concentrated. At present little beyond the old church remains of that ancient world with which we are at present concerned. Judd's Almshouses, once the property of the Skinners' Company, a formal brick structure dated 1729, occupied a site far too valuable for the maintenance of the original charity; consequently a few years ago the property came into the market, and was sold for a large sum of money. This institution for the benefit of six poor men was founded by Sir Andrew Judd, Knight, who was Lord Mayor in 1550, and a somewhat noteworthy character. Born at Tonbridge, and apprenticed at an early age to the Skinners' Company, he rose to a position of wealth and influence by the exercise of virtues of the Dick Whittington type, and four times filled the office of Master of his Company, in addition to enjoying the highest civic dignity it was possible for him to attain. Sir Andrew Judd was a patron of the new learning, and in this capacity conferred a lasting boon upon the town of his birth and the scene of his humble beginnings by founding the free grammar school.

During the rebellion of Sir Thomas Wyatt, Sir Andrew rendered valuable assistance to the cause of the Queen, his influence in the City being considerable. His bones repose in the church of Great St. Helen's, where his monument still exists.

On the side of the square facing the front of the church there used to stand some old brick buildings bearing the date 1646, and distinguished by the numbers eight and nine. They were excellent specimens of the rubbed brickwork of the seventeenth century, and though exception might justly be taken to the brick pilasters, in that age, when these features were considered indispensable, they were more pardonable. The top storey is unquestionably a later addition.

Previous to the Great Fire (1666), although the dwellings of the wealthy and the establishments of the church were constructed of stone, wood framing with plaster or brick filling satisfied the demands of the majority of householders. After that terrible visitation the Government issued a lengthy proclamation dilating upon the causes of the fire, which it attributed to Heaven, aided and abetted by the prevailing practice of building with combustible materials. It continued as follows: "And we do therefore declare our express will and pleasure that no man whatsoever shall presume to erect any house or building, great or small, but of brick or stone; and if any man shall do the contrary the next magistrate shall forthwith cause it to be pulled down, and such further course shall be taken for his punishment as he deserves; and we suppose that the notable benefit many men have rendered from those cellars, which have been well and strongly arched, will persuade most men who build good houses to practise that good husbandry by arching all convenient places."

In 1667 the Common Council passed an Act, requiring, among other things, "that the breast-summers of all the houses do range of an equal height, house with house, so far as shall be convenient, and then to make breaks by directions. And they do encourage and give directions to all builders for ornament's sake, that the ornaments and projections of the front buildings be of rubbed bricks, and that all the naked parts of the walls may be done of rough bricks, neatly wrought or all rubbed, at the direction of the builder, or that the builders may otherwise enrich their fronts as they please." Those regulations were duly sanctioned by Parliament, and in the course of time converted the picturesque metropolis of old into the brick London of the beginning of the century.

The designs of the doorways shown in the illustration of 8 and 9 St. Helen's Place are by some authorities attributed to Inigo Jones, the architect of the side portal of the church of Great St. Helen's.

The Jews' quarter in London, though infected by the modernising spirit of the times, retains a considerable amount of old property, much of



Judd's Almshouses
Great St Helen's
J. Hutchings.

it in a highly dilapidated and tottering condition. The Old Jewellery Mart is a typical example of the class that remains in the vicinity of St. James's Square, E.C., and is presumably of considerable age. The walls are warped, bulged, and out of the perpendicular, through general decay and the shrinking of the timber, unmistakable signs of the near approach of the inevitable end.

A jewellery mart was held here in the principal room on the ground floor, and a tablet over the chimney-piece bears the following inscription: "The original Plate and Jewellery Mart, established 1800, enrolled 1834." In the same apartment, in a little recess in the wall, is a board containing a list of the members of the St. James's Philanthropic Society for aiding the funds of the City of London Chest Hospital, Victoria Park.

Bermondsey remains quite a happy hunting-ground for the sketcher, with its numerous old galleried hostelries and top-heavy timber houses. It still retains its mediæval reputation for tanners and woolstaplers, but has since added numerous other industries to the category. The old warehouses in Bermondsey Street, of which an illustration is given, are most interesting examples of patchwork construction, and it is singular to compare the plastered walls and pantiled roofs with the severe, not to say bald, structures of our own day, erected to meet the exigencies of modern trade at the limit of cost compatible with strength.

One cannot without a feeling of real regret part with so many venerable and picturesque objects, the loss of which must leave the architecture of our streets the poorer.

DR. ADENEY ON THE PURIFICATION OF SEWAGE.

DR. ADENEY recently delivered an interesting address on the purification of sewage before the Architectural Association of Ireland. He stated that after several years of doubt and uncertainty, the purification of sewage had become generally recognised as a matter for its own micro-organisms to effect, and what the chemists and engineers had to do was to make provision for the conditions which had been discovered to be necessary to keep the micro-organisms of sewage healthily and busily engaged in exercising their true functions—that is, the oxidation of the polluting matters with which they were associated—and to prevent them from becoming, what they certainly would be if subjected to conditions unsuitable to their own healthy life processes—a danger to health. The necessary favourable conditions, and the amount of work which these micro-organisms were able to peform in the way of purifying large volumes of sewage had to a great extent been worked out by the efforts of a large army of investigators in this country, in America, and on the Continent, and it was gratifying to be able to state that Irish workers had borne an honourable part in advancing our knowledge of this great subject.

The Supply of Oxygen.

One condition was absolutely essential for these organisms, and that was an ample and constant supply of oxygen. The actual amount of oxygen required for the purification of a given volume of average town sewage, after the solid matters in suspension had been removed from it, could now be determined with great accuracy by a method suggested and worked out in this country. It had been shown by investigations carried out in the laboratory during the years 1890–95 that an average town sewage, after the solids in suspension had been separated from it, required one and a half times its volume of air to supply the volume of oxygen required by the micro-organisms of the sewage to effect the complete purification of the same. These figures have since been completely confirmed by experiments carried out on a large scale. It was not so difficult to supply large volumes of town sewage with the air required for their purification as might have been expected. The real difficulty had been, and still was, that of expense. One of the easiest ways of supplying the necessary oxygen to sewage was by diluting it with good river or sea water. Forty volumes of either contained an ample store of dissolved atmospheric oxygen to supply the organisms for the oxidation of the polluting matters in one volume of standard town sewage after the solid matters in it had been removed. Hence, when a populous city like that of Dublin is fortunately situated on a tidal river, with a strong ebb current to the open sea, its sewage is easily and satisfactorily disposed of, by first separating the solid matters it contains and then discharging the liquid portions on the ebb tide only, and as near to the mouth as possible. This statement would, no doubt, surprise many in Dublin, accustomed as they were to the foul state of the river Liffey, but this was because the sewage had been from time immemorial discharged into it in ignorance of all principles. If the solids were first separated and the liquid portions discharged only on the ebb tide, and near to the mouth of the estuary, it would do no more harm than had the Rathmines and Pembroke sewage, which had now been discharged into the estuary for the last twenty years. When towns are less fortunately situated the problem of the purification of their sewage became much more complicated. In addition to having to furnish the large volumes of air a large army of organisms had to be cultivated and concentrated in a small area. Both these conditions were most efficiently satisfied by

Filtration

through suitable porous land or through artificial filter beds. After the filter had been in use for a short time, organisms commenced to grow upon the surfaces of the material forming the filter; they then multiplied with enormous rapidity, and soon covered them with semi-transparent masses of organisms which oxidized, with astonishing rapidity, the organic matter in the sewage, as it passed over them in thin film-like streams, the oxygen being supplied from the air in the interstices of the filter. After a time this supply of oxygen became exhausted, and the passage of the sewage through the filter was stopped to allow the air in the interstices to be renewed. The filter might then be employed again, and so on for a long time. Besides being the most efficient means of purification, filtration was the quickest, effecting the purification in the course of a few hours. The size of the filter beds required for the purification of the liquid sewage of a given town could be easily calculated, when the volume of air required for its oxidation had been ascertained by the method above referred to, since the organisms always required like volumes of air for the purification of like volumes of similar sewage, and since the total volume of air in a filter might be taken as equal to one-third its own volume. It had been calculated from laboratory experiments that three acres of filtering bed 3ft. thick could purify 1,000,000 gallons of liquid sewage, supposing the filter to be filled three times every 24 hours. These calculations had recently been confirmed by Mr. Mansergh, President of the Institution of Civil Engineers, London, in a report to the Sheffield Corporation. The one great objection to filtration was that of cost. It was to get over this difficulty that Mr. Kaye Parry and the speaker had suggested the addition of small quantities of nitre, which could furnish



oxygen in a condensed form to the organisms as a substitute for filtration.

There was a second important question in the sewage problem, that was the separation and disposal of the solids of sewage, and this had proved in the past quite as difficult as that of the liquid portions of the sewage; but with our present knowledge of the chemical and biological principles underlying this part of the problem there was no doubt that all difficulty in its practical solution would soon be overcome. By means of the septic tank it seemed possible to satisfactorily dispose of about 50 per cent. of the solids. The septic tank was simply an open cesspit, on the surface of which the solids were allowed to accumulate until they formed thick crusts completely covering the surface, and gradually rising above it for several inches. In this condition the solids became drained and freely exposed to the air, and were then rapidly oxidized by their own organisms. But the septic tank only disposed of 50 per cent. of the solids. Mr. Kaye Parry and the speaker had, however, shown that the solids could be satisfactorily disposed of in accordance with bacterio-chemical principles, by precipitating them by means of certain compounds of manganese. The solids were then separated, and at the same time were mixed with certain oxides of manganese, which contained oxygen in a combined or, as we may term it, in a condensed form that could be utilised by the organisms. When the separated solids and oxides of manganese were stored in heaps the solids did not become offensive, but underwent slow oxidation until they were completely oxidised and could be safely used as valuable manure. Dr. Adeney said, in conclusion, that he trusted that he had said enough to show that the disposal and purification of sewage on a large scale was from beginning to end a work for its own micro-organisms to perform, and that the conditions most favourable for keeping them healthily and constantly employed, doing the maximum amount of work they could do, were all factors in the great problem of sewage purification, which were gradually becoming more and more clearly visible and attainable as the reports of each new effort to bring the organisms into operation on a large scale were published.





TWO GERMAN TOWNS.

WORMS AND FRANKFORT.

[The following particulars are given in connection with the two drawings of Worms Cathedral and Luther's House, which are published with this week's issue.]

WORMS became the capital of the kingdom of the Burgundians as early as the year 431. This old town was the residence of the Franconian kings and afterwards of Charlemagne and his successors. It was here, too, that Luther, the great reformer of Germany, defended his doctrines before the Emperor Charles V. Worms suffered terribly during the Thirty Years' War, and was repeatedly occupied by Mansfield and Tilly. In 1689 Count Mélac and the young Duc de Créqui pillaged and burned down the town, leaving only the cathedral and synagogue standing. Until 1801 the town retained its independence, and after the short-lived French supremacy was annexed to Hessen-Darmstadt in 1815. The town is now somewhat dismal; the streets are dull and the residents seem inactive. Situated in a most prominent part of the town, and standing upon the position of the old ramparts, is Luther's monument. This imposing memorial, erected in 1868, was designed and partially modelled by Rietschel, being completed, after his death, by Kietz and Dondorf of Dresden. A massive stone platform bears in the centre a large pedestal surrounded by smaller ones upon which stand statues of Luther's great forerunners —Wickliffe (d. 1387), representing England; Waldus (d. 1197), the father of the Church in the mountain-valleys of France; Huss (d. 1415), representing Bohemia; and Savonarola (d. 1498), representing Italy. The central base supports a large bronze pedestal adorned with reliefs depicting scenes from Luther's life, and medallion portraits of those of his contemporaries who contributed to the Reformation, and upon this pedestal is Luther's bronze statue, 11ft. high. He stands with his face uplifted and is holding a Bible in his left hand, and upon this his right hand is also placed; thus he forms a commanding figure. Luther's friends and contemporaries Melanchthon and Reuchlin stand at the angles at the rear of the platform, and the brave princes who befriended the Reformer, Frederick the Wise of Saxony and Philip the Generous of Hessen, are placed on either side of the front, the former holding an upraised weapon and the latter leaning on his sword, each statue being 9ft. in height. In the centre of these on three sides of the square stand allegorical figures of the towns of Germany which first embraced the reformed faith. The total cost of the monument amounted to about £17,000, and the execution and erection extended over a period of nearly nine years.

The cathedral is a building of very ancient origin, but not a particle of the original structure is now in existence. The oldest part of the present building, the western towers, date from the beginning of the twelfth century. This very striking and effectively grouped cathedral, with its four circular towers at the angles, two domes and double choir, ranks, like those of Speyer and Mayence, amongst the best specimens of Romanesque architecture in Germany. The interior has been effectually restored and is adorned by many very interesting historical objects. The Baptistry on the left side of the south portal contains some large stone high-reliefs, representing the Annunciation, the Descent from the Cross, the Resurrection, the Nativity, and the Genealogy of Christ, beautifully executed and in very good preservation, dating from 1487 and 1488. They were presented by noble families of the town and then placed in the old cloisters of 1484, upon the demolition of which, in 1813, they were removed to their present position. The font was removed from the ancient Chapel of St. John, which was demolished in 1807. A well-executed tombstone of the Knight of Eberhard von Heppenheim (d. 1559) is also in very good preservation, the noble knight being represented in a kneeling position, and clad in a coat of armour.

Frankfort-on-the-Main dates from the time of Charlemagne, he having held there a convo-

cation of bishops and dignitaries of the Empire as early as the year 798, and after the erection of a palace by Louis the Pious in 822 the town increased extensively, and reached to such a high degree of prosperity that upon the death of Louis in 876 it was considered the capital of the East Franconian Empire. It is now, from a commercial and financial point of view, one of the most important cities of Germany. The city lies in a spacious plain, bounded by mountains, on the right bank of the navigable Main. Other than the Gothic cathedral, which was founded in 1238, Frankfort has but few real architectural attractions, although the air of wealth and importance which pervades affords an indication of the vast extent of its commercial relations. Goethe's house, like Shakespeare's at Stratford-on-Avon, is still carefully preserved, and has an inscription on the front, "Johann Wolfgang Goethe was born in this house 28th August, 1749." Within a little distance of the great poet's house, and opposite



the north-east corner of the cathedral, still stands an old slate-covered house, which was once the home of the great reformer, Luther, and from which he is said to have addressed the people when on his journey to Worms. The house is now marked by the effigy of Luther, with the inscription: "In quietness and in confidence shall be your strength." The fine monument of Gutenberg and his compeers, Fust and Schöffer, was erected in 1858. The three bronze figures stand together upon a massive stone pedestal, and on the frieze below are portrait heads of fourteen celebrated printers, including that of Caxton. In the lower part of the pedestal are the arms of Mayence, Frankfort, Venice, and Strasburg, in which four cities printing was first practised. At the angles of the main pedestal are seated upon lower ones figures representing Poetry, Theology, Natural Science, and Industrial Art, and immediately below these are four drinking fountains pointing to the four corners of the globe. The monument of Goethe, erected in 1844, with the allegorical reliefs on the front of the pedestal and the figures from the poet's poems at the sides, form an imposing group.

EXAMINATIONS FOR ARCHITECTS.*

BY W. COOPER.

THE training of an architect's pupil, if carried out in the orthodox style, is somewhat as follows, varying slightly according to circumstances:—

On entering the office he practises office routine, such as copying specifications, quantities, and builders' accounts, tracing or copying drawings made by the draughtsmen of the office, and in spare time copying examples of well-known works, measuring up old buildings, studying building construction (and sometimes geometry and perspective) reading the history of architecture, and endeavouring to learn dates relating to the same; occasionally he will attend art classes and science lectures in connection with the School of Science and Art if in the provinces, or if in London, he will attend King's College, the Architectural Association classes, or other technical classes, and various private preparation classes.

Thus, if the student wishes to excel in the examinations instituted all over the world for the advance of his art, he must work diligently upon the works of other men, both in buildings and in writings, leaving no time for improving himself in any original ideas that he may be possessed of. He is induced to enter a competition for a scholarship or for a building; and how well he knows that if he does not adopt the particular style in fashion, he stands no chance of success. For instance, what assessor will now look at Gothic work?

It is needless to say that such a process of education stamps out for all time any chance of the student working in an original way; because usually his time for working out original problems has passed when he commences working in earnest professionally; yet this is the course of study which must be adopted if a man wishes to pass an examination to qualify as a member of any society of architects of standing. It is essential that an architect should have an artistic mind; he should also be a constructor, he should be trained in business matters, he should have a very thorough practical knowledge of materials and their uses, and be up to date in sanitary matters.

* A paper read before the Society of Architects on December 13th, 1900.

Art and Style.

In design absolute freedom should be allowed to the candidates. Style should be ignored, and many marks awarded for good *proportion* and consistent originality; this would save some very precious time in preparation, and anxious and worrying months comparing differences of style, periods of architecture, and details of ornament relating to the same; it would also induce a freedom not yet attained by latter-day architects. Study of former examples is well in its way, but it should be confined to the archæologist. Why go back? If progress is required the motto must be "Forward."

Some will say, "Who is to judge the artistic merit of the design, or the good proportion of the features composing it?" The reply to this is, "Who shall judge the value of a picture?" or any other work of art, such as the grouping and finishing of a design in sculpture.

Very few marks should be given for neat draughtsmanship. It is a great tax upon some art men to make finished geometrical drawings, and this has the effect of cramping the hand and injuring the eye for drawing freely. A good knowledge of freehand drawing, shading, and perspective is imperative; sufficient value is not given to these subjects, although they are all important to the art-architect.

Construction.

Unfortunately the gift of art and science is not usually very fully developed in one brain: consequently our most artistic men are bad constructors, and good constructors are invariably bad designers. Time can well be saved by requiring only a knowledge of the books in which to find formulæ for calculating strains and stresses, and other things (which are now required to be committed to memory), and how to work them out. The candidate

should therefore be allowed to have books of reference, such as architects have in their offices, but the questions should be such that the test of the study of the books is very thorough, so far as the means of finding out matter necessary to correct construction is concerned.

The anatomy of the building must be known, for as the sculptor and a painter is better qualified by knowledge of the anatomy of the subject he carves or paints, so an architect must be more proficient the more he knows of the general principles of construction. The examinations in this should be very searching. Usually there is too much theory and not enough practical knowledge required of the candidate. Foundations, and how to deal with any formations upon which a structure is to be built, should be one of the compulsory questions.

Materials.

In this paper the candidate should show a knowledge of the names and addresses of well-known experts and testers of all classes of building materials, how all kinds of building materials are employed, and the reason why they are used for particular purposes; he should also know the colour and distinguishing features of the various stones and woods. Some rough-and-ready practical tests of the materials, such as bricks, stone, cements, lime, timber, and artificial preparations should be required, but most important of all, a thorough acquaintance, by sight, of the actual materials, samples of which should be in the examination-room. To the artistic mind, committing matter to memory is usually tedious and aggravating to a degree, but to remember by sight is comparatively easy.

The Contract.—A copy of this should be placed before the candidate and it should be required of him to explain any portions of it. What is the use of committing it to memory, as is required by most examining bodies?

Prices.—A schedule of prices should be given, upon which to base the estimate of works or of the contractor's bill of extras. Values vary so frequently, and rise and fall so rapidly, they also vary in different centres so much, that it is impossible to have a thorough knowledge of them at any time.

Quantities.—A certain knowledge of quantities is necessary, both in the method of taking them off, abstracting, and billing, but few marks should be given for this, because an architect is not necessarily a quantity surveyor, but it is required of an architect to be able to check measurements and to measure his own work.

Land Surveying and Levelling.—This is wanted in a limited degree, and no examination is complete without questions upon it, because every architect who has to live by his profession, with a small practice, has problems in land measuring, and it is necessary to his success that he should know how to do it, at any rate until he can afford to keep or employ a land surveyor to set out the plan and levels of the land he proposes to develop.

Specifications.—A thorough knowledge of specifications is essential, and the candidate should be required to write a specification governing every part of his design, with the assistance of a skeleton specification to work upon.

Sanitary.—The general laws laid down by sanitary experts should be known by memory, both for a building in the country and in a town; he should know how to test drains and to check the deception practised by contractors. For weights of pipe, etc., books of reference might be allowed.

Decoration.—Without the qualification to blend colour, many an otherwise good building would be ruined. Decoration should therefore have strict attention and rigid examination.

Time for the Examination.—Two weeks, at least, is necessary to do justice to the subject. Some are much slower in their work than others; ample time should therefore be given, so that the slow and thorough should have the same opportunity as the quick.

I have endeavoured to show by this paper that I would expunge from the examinations all unnecessary questions, such as: "Where does olive oil come from?"; "Who was Xenophon?"; geography, languages (except English), mathematics (beyond that portion required in an architect's practice), dilapidations, chemistry of materials, history, and all other subjects unnecessary to the uplifting of architecture in the true sense of the word.

We are living in an age of construction unlike any that the world has ever before experienced. I mean steel construction; yet there has not been a successful attempt to apply it architecturally. Why is it so? Because architects of the present generation are trained to slavishly copy and study the works of architects in stone and wood. Under the present system of tests, the man who has the best memory holds the best position in the examination. It should be the man who answers the most practical questions best who should be given the first place.



THE BUILDING TRADES' GIFT.

MT. T. F. RIDER, past-president National Association of Master Builders, as honorary secretary to the Building Trades' Gift to the Nation, announces the following further contributions which have again come to hand:—

	£	s.	d.
West Bromwich Master Builders' Association (per Mr. Henry Smith)	19	14	3
Stockport Master Builders' Association (per Mr. R. Williamson)	12	9	0
Workmen of Messrs. G. Longden and Son (per Secretary of the Sheffield Master Builders' Association)	8	10	3
Workmen of Mr. J. M. Boekbinder, Camden Town	5	0	0
Messrs. John V. Kiddle and Son and Workmen	4	4	0
Mr. C. F. Kearley and Workmen (Kensington)	4	0	0
Mr. C. M. Schmidt and Workmen (Upper Holloway)	3	3	0
Messrs. Davis and Leaney and Workmen (South-end-on-Sea)	3	0	6
Workmen of Mr. F. Cottrell (Crouch End)	2	12	0
Workmen of Messrs. Battley, Sons, and Holness (further contribution)	1	3	6
Mr. F. Cottrell (Crouch End)	1	1	0
Mr. Chas. Rotson and Workmen (Lewisham)	0	16	6
Mr. G. A. Williams and Employees	0	9	0
F. M. (per Editor of THE BUILDERS' JOURNAL)	0	2	0

The Excavations at Silchester.—The work of excavating the Roman remains at Silchester (Calleva) has been brought to a close for the year. Among other interesting relics discovered during the past season's operations are tesselated floors, a special piece of mosaic pavement with a figure representing a dolphin, and upwards of one hundred pots of different size and shape. Some blacksmith's tools, a padlock, coulters, a bronze figure, and other articles have also been dug up. The excavations will be resumed in the spring.

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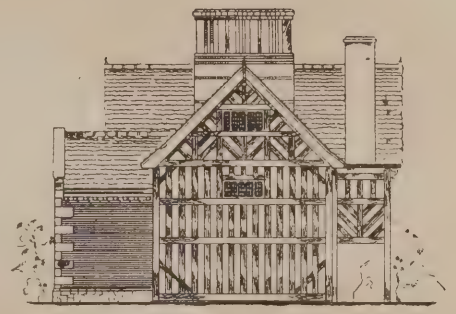
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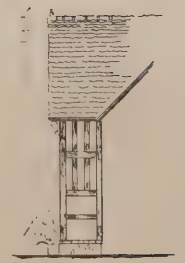
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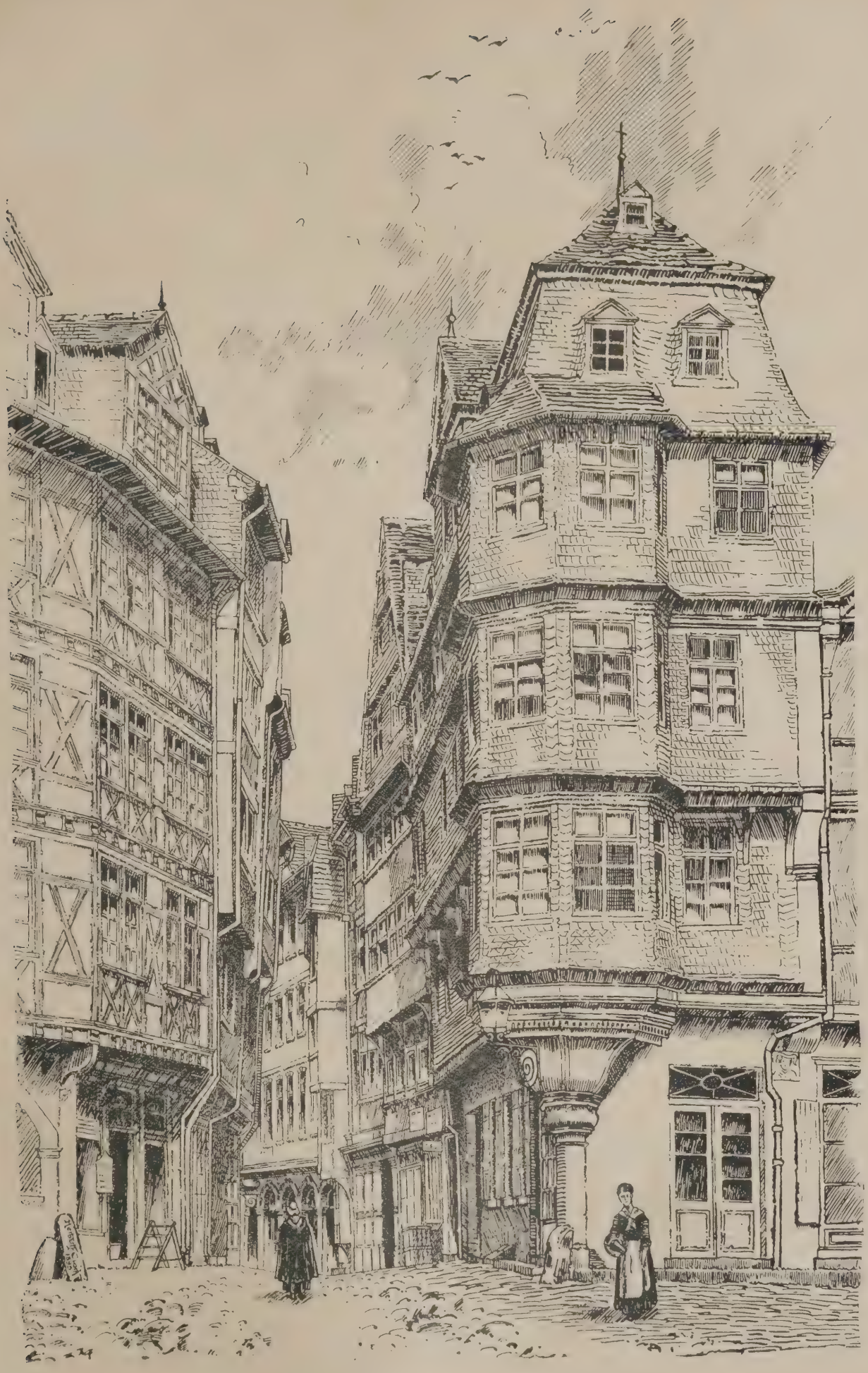


HAUGHTON HALL, NEAR STAFFORD. Measured and Drawn by HENRY W. SIMISTER.

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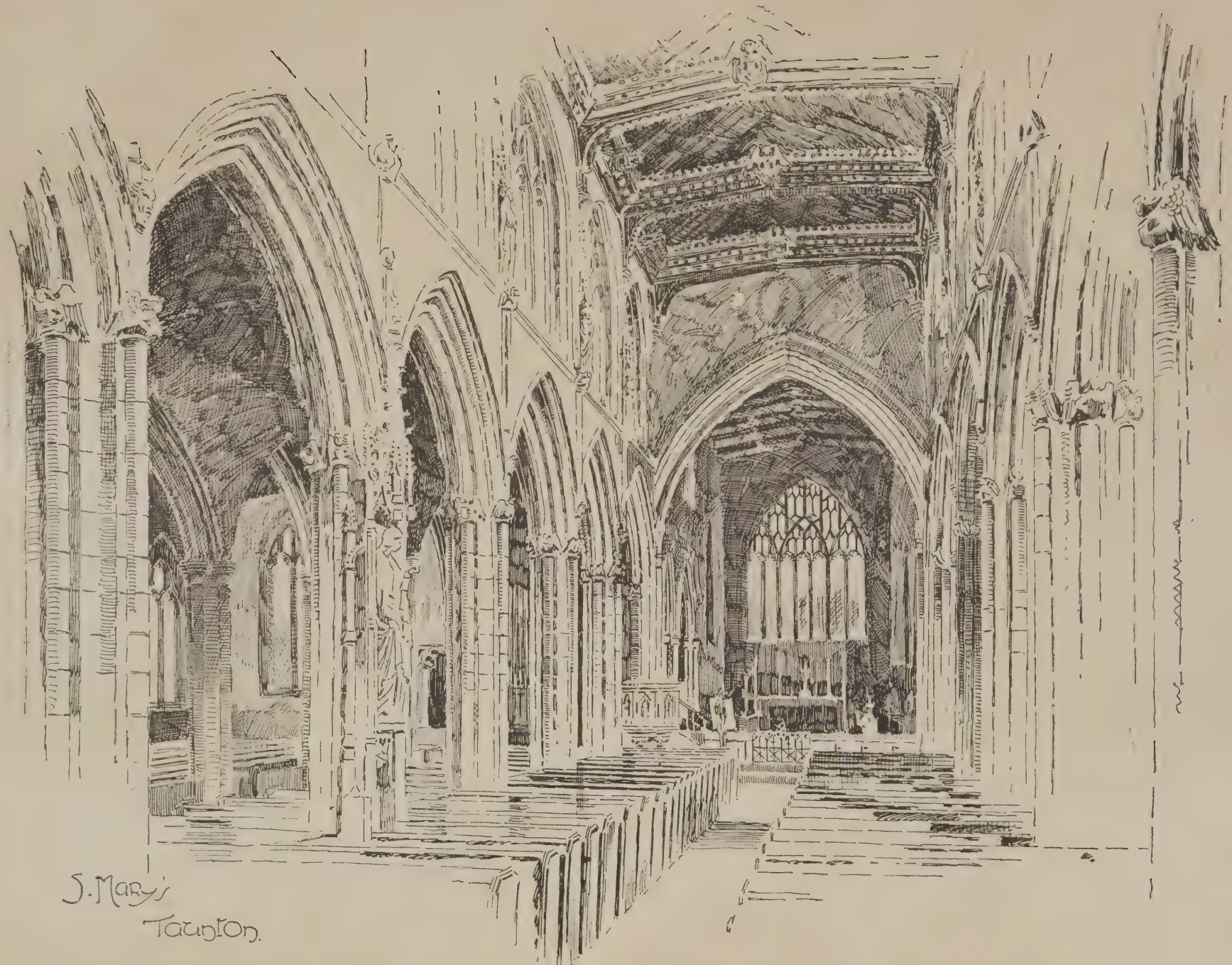


WORMS CATHEDRAL: THE WESTERN TOWERS. Drawn by H. FULLER CLARK.



LUTHER'S HOUSE AT FRANKFORT. Drawn by H. FULLER CLARK.

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Drawn by W. LEE CLARKE

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Bricks and Mortar.

APHORISM FOR THE WEEK.

The sculptures wind aloft
And lead, through various toils, up the rough steep
The hero to the skies.

(Trojan's Column).

Our Plates. SOME particulars about Worms and Frankfort will be found on page 384 of the current issue. Haughton Hall is about five miles from Stafford, on the main road to Newport, Salop. It is situated about 20ft. back from the road. New floors have lately been laid, and the interior painted throughout. The brickwork is all lime-washed, with the exception of the dairy and the chimneys. The oak studs average 6½in. wide, and are 8in. apart. They are coated with tar, and the panels between are of trowelled smooth stucco, which gives the whole a very pleasing appearance. The hall is in the occupation of Mr. J. Baker, who allowed Mr. Henry W. Simister to measure it. The church of St. Mary Magdalene, Taunton, ranks among the finest of the Somerset churches, and is of especial interest because of the beautiful tower, which has been described as one of the finest specimens of Gothic church architecture in the West. In the interior, one cannot fail to be impressed by the height of the nave, and the panelled arch of the tower, which give great grandeur to the body of the church. There are six clerestory windows on either side, each having four lights. Between the windows are elaborately-carved niches, originally intended for the reception of statues. In fact, statues (probably of the Twelve Apostles) occupied these niches, but during the fanaticism of the Reformation they were wantonly destroyed. On one of the nave piers on the north side is a very finely-carved niche, in which stands a statue of the Virgin Mary. The roof is of oak, and is a good example of mediæval timberwork. It was in a bad state of repair a few years ago, and has, comparatively recently, been thoroughly restored. Our illustration is from a drawing by Mr. W. Lee Clarke.

Cardiff's New Museum. A SERIES of sketch plans of the proposed new museum and art gallery in Cathays Park, Cardiff, by Mr. Ward, the curator, was submitted at a recent meeting of the Museum and Art Gallery Committee as a basis of the general scheme, and these plans were adopted. The new buildings are designed on the so-called gridiron type, of which the British Museum is a notable example. The honorary curators consider that the first portions of the building, if they are to meet the probable needs of Cardiff for ten years, will certainly exceed the limit of the funds estimated as available from the museum rate for building purposes, namely £12,000. The committee were anxious that a sum of at least £20,000, in addition to the £6,000 contributed by the executors of the late Mr. J. Pyke Thompson, should be placed at the disposal of the building committee.

London Housing Problem. ONE of the largest of the blocks of working-class dwellings now being erected on the Millbank estate, Westminster, will shortly be completed. The block is about 320ft. in length, is divided into four houses, and contains 85 tenements and 215 rooms, providing accommodation for 430 persons. It is proposed to acquire a site consisting of about one and a quarter acres abutting on Wedmore Street, Holloway Road, Islington, for £11,650, to be increased to £12,000 if the Council are able to obtain possession from the lessees on the completion of the purchase. The land will be used for the erection of working-class dwellings. The site originally recommended to the attention of the Housing of the Working Classes Committee consists of two portions; (1) a site in Wedmore Street, with a frontage of about 240ft. and a depth of 200ft., containing an area of about 52,600 sq. ft., occupied by a row of eight small semi-detached houses, with a large area of land in the rear; and (2) a site fronting Holloway Road, containing an area of about 11,000 sq. ft., and occupied by four houses. Having regard to the fact that the possession of Holloway Road site could not be obtained for two or three years, and that its price would be much higher than that of the Wedmore Street portion, the Committee did not consider it desirable to proceed further with this portion of the site. With reference to the Wedmore Street land, plans and estimates have been prepared, showing that block-dwellings affording accommodation for 1,050 persons in five one-room tenements, 140 two-room tenements, and 80 three-room tenements, all self-contained, could be erected without a charge on the county rate.

The Hayles Buildings. THE Hayles Trustees in Lambeth have erected six blocks of workmen's dwellings in the vicinity of the Elephant and Castle since 1887. The most recently-erected structure, opened on December 5th, has cost £11,163. It contains 126 rooms, and provides twenty-four suites of four-roomed and ten suites of three-roomed tenements in St. George's Road and Hayles Street. The average rental is about 2s. 6d. per week for the three-roomed dwellings, and 2s. 9d. for those containing four rooms. Each flat has a separate entrance, and is provided with all the conveniences of a complete dwelling. There is an ample supply of cupboards and drawers; there is to each a little scullery, with boiler, and outside the living rooms is provided a safe for food. The total accommodation now provided under the scheme is sufficient to house 1,000 persons. A nett income of about £2,700 is derived from the rentals. The land, if let on building lease, would only produce about £400. The architects are Messrs. Waring and Nicholson. The scheme devised by the trustees is acknowledged to be one of the most successful yet attempted, but no scheme yet devised provides for the poor labourers earning from 15s. to £1 per week. The Hayles dwellings are occupied chiefly by artisans, but the labourers in the district are still obliged to herd together in single-room tenements. The Board of Trade inspector has expressed the opinion that the buildings on the Hayles estate are the best of their kind in the metropolis.

National Eisteddfod, 1901: The Pavilion Architect. A MEETING of the pavilion committee of the National Eisteddfod of 1901 was held at Merthyr recently, when Mr. Thomas Roderick, of Aberdare, who has accepted the position of architect, was present. This gentleman has undertaken that in the event of the Eisteddfod being a loss, he will make no charge for his services, stipulating only for a small fee in case there should be a surplus It was explained by Mr. Roderick that the pavilion at Aberdare, the plans for which he prepared, cost £1,150, and that it contained accommodation for 12,000 or 13,000 persons. A committee was appointed to go with Mr. Roderick over the ground in Penydarren Park, where the pavilion is to be erected, in order to fix upon the exact site for the structure, the architect being authorised to prepare a rough design of the building for submission to the committee at another meeting.

Jerry-built Cottages. SAYS the "Globe": "In itself, the movement to transfer congested urban populations to suburban districts provided with adequate travelling facilities has much to commend it. Purer air, more elbow-room, and greater comfort are obtained, while the expense of travelling to and from work should be balanced by lower rent and cheaper living. There are some drawbacks, it is true, particularly the greater sacrifice of leisure time on the daily journeys, but against that loss the gain to health is a fair set-off. At York, however—possibly in other towns—discovery has just been made that better sanitation is not always secured by migration. A member of the City Council, after making personal investigation both inside and outside the urban boundaries, affirmed that the large majority of fever cases occur, not as was supposed in the town slums, but in new cottages in the outside fringe of dwellings. Most of these habitations have been brought into existence by speculative builders, and low rentals being imperative to obtain quick tenancy, the outlay on drainage had to be stinted, to provide a margin for profit to the owner. There is only one remedy for this insidious undermining of public health; before any house intended for human occupation is brought into use, the whole of the drainage and other sanitary arrangements should be certified as thoroughly efficient by competent authority. Too often official inspection is carried out in merely a perfunctory manner, with the result that imperfections are not discovered until the outbreak of some epidemic."

The Tiber Embankment. THE collapse of the embankment of the Lungo Tevere Anguillara, the sinking of the earth on the Lungo Tevere Alberteschi, and the cracks in the pavement of the Lungo Tevere dei Mellini have raised afresh the whole problem of providing for Rome a sure means of defence against the sudden floods to which the Tiber is liable. Last week the Pantheon was under water to a depth of 8ft., and the Forum was flooded. Violent accusations are being brought against the contractors and the engineers who constructed the existing embankment. Two engineers who have studied the hydrographical question of Rome have come to the reasonable conclusion that the embankment was pushed into the river by the pressure of a large mass of rain and spring water accumulated in the subsoil near the embankment. As long as the Tiber was in flood the pressure of the water against the face of the embankment counterbalanced the pressure of the water accumulated, under the soil behind the embankment; but, as soon as the river fell, the masonry and the brickwork gave way under the weight of the water and toppled over into the stream. The reason why this has never happened before is that the rainfall during November, which in ordinary winters averages about 10 centimetres, amounted this year to 34·3 centimetres. Consequently, the pressure of the pent-up water on the back of the embankment was tripled, and the structure proved too weak to stand the strain. This explanation, which everything appears to confirm, diminishes the responsibility of the contractors, who were accused of having done bad work, but increases that of the engineers, who seem to have neglected precautions against so natural a phenomenon.

Royal Academy Students' Prizes. SIR E. J. POYNTER, P.R.A., distributed at Burlington House last week the prizes won by students at the Academy Schools in the recent competitions. The President said, in opening the proceedings, that it was the opinion of the members of the Academy that the present was one of the best competitions that had been held. In antique drawings there was a very great improvement on the drawings exhibited for some years past. The drawings from the life and the painting of heads from the life were also above the average. The works of the modelling school were remarkable, and he noticed especially the excellent study of a draped figure; he did not think better work would be found in any school in Europe. The designs for the decoration of a building were of a very good average, rather higher than usual. The following were prize winners on subjects relating to architecture:—Design for the decoration of a portion of a public building (subject, a procession of the Hours), prize £40, Miss Florence Eleanor Chaplin; design in architecture (subject, a portion of a street front), travelling studentship £60, Mr. Henry Tanner; set of architectural drawings (subject, the Church of St. Mary Woolnoth), 1st silver medal, Mr. Alfred Charles Bossom; set of architectural designs (Upper School), prize £25, Mr. Bernard Hugh Webb; set of drawings of an architectural design (Lower School), prize £10 Mr. James Black Fulton; plan of a building (subject, a bank), prize £10, Mr. James Hervey Rutherford; perspective drawing in outline, open to architects only (subject, the three central bays of the front of Whitehall), silver medal, Mr. George Thow Smith.

R. I. B. A.

TENDENCIES OF THE MODERN SCHOOL OF ARCHITECTURE.

BY PROFESSOR BERESFORD PITE.

A MEETING of the Royal Institute of British Architects was held at the rooms in Conduit Street, W., on Monday evening, when the president (Mr. William Emerson) occupied the chair. Mr. Alexander Graham announced with regret the deaths of Mr. John Butler (Fellow) and Mr. J. Buckley Wilson (Fellow). Professor Beresford Pite (Mr. Pite has recently been appointed Professor of Architecture at the Royal College of Art, South Kensington) then read his paper on "Some Tendencies of the Modern School of Architecture."

In his opening remarks Professor Pite said that a generation had arisen untrained in the orders and systems of proportion of the art of architecture. The published curricula of the centres of architectural education offered no evidence of the pursuit of the Classic methods of dimension, proportion and conformity to type upon which the school of the early part of the nineteenth century based its ideals of architectural beauty. The old Classic school was dead. But it died a school, and left existing its concrete methods, its parts, proportions, principles and orders accurately systematised and available for the use of all enquirers. Its great and chief antagonist had also fallen, for but little life remained in the Gothic school that once dreamed of universal sway. But, asked the lecturer, is the Gothic Revival dying with the dignity, traditions and possibilities of renascence of the older school which it displaced? Reviewing the course of the Gothic movement, the lecturer glanced at the training and methods of the school, its standards of taste and criticism, its earnestness and enthusiasms, and the spirit in which its students sought to solve the architectural problems of their day. The student was instructed by constant and repeated observation and study to drink in the spirit of the old work, and to design his new buildings while under its exhilarating influence. The mediæval spirit as it was, as it worked, as it drew, was all of system, principle, or method that the modern architect could need; but when the change came and the lamp went out there was no residuum of framework, method, or principle, only the inchoate notion of the wild but real beauty of all old work, and a new delight in picturesque draughtsmanship. These were the two main resultants of the Gothic Revival at the time of its effective decease, and these effects have since formed the staple principles of most pursuers of the art of architecture in England.

The progress of the doctrine that all old work is beautiful has been steady, and a limit has scarcely yet been formed for juvenility of the subject of beauty. Yet it must be presumed that the quaint conceits of partial ignorance, with added charms of romantic history, ruin, decay, lichen and ivy growth, have entered unconsciously into the current estimate of the beauty of old work. Apart from these accidents, there is little that can be described as good or even tolerable design in much old work that has been considered admirable because it is charming. We have lost our way amid the beauties of English antiquity. We pursue no definite idea now, but wander aimlessly among the enchantments of quaintness, originality and unrestrained, though demoralising, freedom of design; but the lecturer expressed his conviction that under the seeming voicelessness of the new sound now in our midst there is an intelligence and a purpose of expression sincere, earnest and useful. The hardly developed tongue is one of protest against thoughtless repetition and meaningless quotation in a dead language, and a resolute endeavour underlies it to speak for itself on behalf of liberty to be free from convention in its architecture, and for its attempt to oust the affectation of style by an unaffected stylelessness of difficult simplicity. Ornament in the ordinary acceptation is an abomination to it, while architectural features, methods and terms must be scorned out of their arrogance, put away, and forsaken. An enquiry whether we shall in the course of elimination and abnegation attain to the simplicity of Stonehenge or of the Great Pyramid in our everyday architecture may indicate the danger, if not the absurdity, of striving to make a complex civilisation, as reflected in a necessary art of civilisation, unnaturally simple.

The lecturer went on to show that almost the same point had been reached by another road, namely, through the genius, the efforts, and achievements of such leaders of the Gothic school as William Burges, Edward W. Godwin, William Morris, and J. D. Sedding.

In the modern school we have the fruit of seed sown by the great architects of the Gothic movement, namely, the revival of the building and decorative crafts. The starting point of the early leaders was romance, taste and association. Pugin discovered the riches of ecclesiastical decorative art, and in vestments, furniture and altar fittings opened up a new world of form springing from natural and refined craftsmanship. With the advent of William Burges a truer insight and completer grasp of the range of mediæval art was obtained. With scholarly completeness and patience he worked away from the modern architect's standpoint down, or up, to the craftsman's level. His was a living art; any example of his works, whether in building, goldsmith's work, decoration, or furniture, would be attractive and beautiful to us now. Edward W. Godwin had a very similar genius. He took full advantage of the liberty the "Queen Anne" movement offered of release from the traditions of so-called style, and felt his way and worked as a building designer of simple villa houses and economical artists' studios with a rare and refined originality. Present day æstheticism has not carried us beyond the point he attained in his houses at Turnham Green and studios in Tite Street, Chelsea, now twenty years old.

William Morris, himself a fruit of the Gothic movement, and in the sum-total of his life-work mediæval in the truest sense to the end, represents the link between the revival in architecture and the pre-Raphaelite movement in painting. His influence and power are working at the present moment upon most, if not all, of the decorative arts. His practical alliance of artists and craftsmen, especially in early days, was an experiment which has left a permanent success as its result. Principles, however, which seemed obvious in Morris's hands when dealing with decorative art have proved difficult to carry to any extent into the practice of architectural building. Artistic enthusiasm by the craftsmen of brickwork and of masonry is, under present conditions of civil life and business, almost impossible. The attainment of a commonplace standard of honest, sound work is all the architect can hope for, and there are not as yet symptoms of any development among the craftsmen themselves of an enthusiasm for the artistic possibilities of their work which can be allied with the similar movement in the decorative arts stimulated by William Morris. Still, these difficulties have not hindered the achievement of much interesting experimental work.

Referring to the late J. D. Sedding, the lecturer said that his manifold gifts peculiarly qualified him for carrying an arts and crafts crusade into the midst of the architectural world. Practical contact with the crafts closely allied to his ecclesiastical work as an architect doubtless drew him to feel the force of Morris's teaching, and he unhesitatingly bounded towards the brilliant vision, that seems almost impossible of attainment to us, of a living revival of the building crafts as a basis for all architectural design. Holy Trinity Church, Sloane Street, is the best illustration of his methods. The crafts are contained and displayed within the architectural enclosure of the building, and in the screen wall, pulpit rails, gates, table, and other fittings assert their presence and independence vigorously.

Of the actual effect in a monumental or public building of the new teaching we have as yet no serious examples. But in a smaller class of buildings, in some interesting domestic instances, we find the enthusiastic architect more or less successfully breasting the tide and importing by the sheer force of his own character the interest of some one or other of the building crafts into his work.

The lecturer went on to give his conception of the architect's relation to the building art, *i.e.*, as the designer and master-craftsman. He trusted this was not the empty vision of an unpractical ideal, without examples or instances of achievement. There is, for those who would seek it, abundant encouragement in unlooked places; efforts, sometimes crowned with conspicuous beauty, have been made by earnest men, profoundly dissatisfied with the prevailing want of true ideal, building upon the basis of building art with simple and beautiful form, devoid of the shibboleths of style, and in many cases rising with them through the level of past art to new life and true modernity of beauty. Of architects whose work may be considered to have attained this quality, the author mentioned the late William Butterfield, Mr. Philip Webb, Mr. Norman Shaw, and Mr. Bodley, passing their works in review, and noting the distinctive merits and characteristics of each. The genius will growingly be appreciated by which Butterfield discerned and seized the essential motive of mediæval building art, and forthwith strove to think for himself and express his own thought in his material for its modern purpose, with absolute new art. In the field of domestic building Mr. Philip Webb occupies a somewhat similar position; the same aloofness from the current standards of architectural "style" characterises his work as Mr. Butterfield's. His houses in Lincoln's Inn Fields and Kensington Palace Gardens are excellent examples of his art. Mr. Norman Shaw's creations are too present to be correctly estimated. His grasp of the superficial beauty of old work has been combined with an equal internal completeness, and an amazing versatility qualifies him in later English Classic as in the earlier barbaric, crooked Gothic. He seems to know and feel for each phase alike. Why and how does this genius charm? Is it the man rather than the work? The artist-architect or the architect-builder? The building that provokes the one question is promptly answered by another of the opposite tendency, and yet all are of one spirit. Is this spirit modern, or does it rise with the charms of the spirit of a departed beauty upon our dreams; or is it a living nineteenth-century actuality, typical of our attainment in life and art? Mr. Norman Shaw's school leaves us in little doubt; its members are among the most earnest and successful exponents of the craftsmanship doctrine. In ecclesiastical art of the Modern School, Mr. Bodley, with his complete and perfect sympathy for the crafts of religious art, has been enabled to maintain a useful and effective guidance. In his work, and in that of his immediate followers, there is a sense of satisfaction with the restrained and refined development of later Gothic and Perpendicular for which he has such feeling. The charm is that of perfected fifteenth-century art, revived with the completeness of the original, and infused with its motive and spirit.

Referring, in conclusion, to our civil architecture, the lecturer said that the system of competitions had produced a habit of reckless originality, of tawdry picturesqueness, of ill-digested unscholarly design which was having an alarming influence. Here the lack of tradition and of a school of settled orders and proportions has the most damaging effect. In domestic and ecclesiastical art we have survived the Gothic Revival and its repression of classicism with some success, but in civil architecture our architects are sadly and truly demonstrating their demoralisation.

A discussion followed in which Mr. J. M. Brydon, Mr. H. H. Statham, Mr. H. G. Ibberson, Colonel Lenox Prendergast, Mr. E. T. Hall, Mr. E. W. Hudson, Mr. G. H. Fellowes Prynne and Mr. William Emerson took part. From the title of Mr. Pite's paper, said Mr. Brydon, one gathered that there was a modern school of architecture—this was something to be thankful for; and one assumed that there was a tendency—and that was encouraging. In his opinion throwing overboard all the styles, simply

for the sake of doing so, was of little use; it was better to go back and study tradition. He looked forward to a characteristic modern school in the picking up of the broken thread of English architecture where it was dropped by the late Professor Cockerell. Mr. Statham could not see what Mr. Pite was driving at, and did not quite understand what was proposed to be the line adopted for a new movement. He felt that the charm of the work of such architects as Butterfield was that it was based on a careful study of the best efforts of the past with the originality of the designer grafted on, beautifying it. As to competition designs, in his opinion it was those possessing a good plan and a tolerably conventional elevation which stood the best chance, as these were considered safe—the eccentric designs did not succeed. Colonel Prendergast thought that under our present circumstances we needed to go back to the grammar of the whole thing. We could not deal with architecture as if it were millinery. But going back to the past was, in Mr. Hall's opinion, not the proper thing to do. We should do what the thirteenth-century builders did, that is, create for ourselves a style and not become the slaves of copyism. We are not gods to create with nothing, said Mr. Fellowes Prynne, and it were better for us to take the models of the masters, to study them, to assimilate their spirit, and then evolve from them a distinctive style of our own; while Mr. Emerson pointed out that the men whose works had been so admired were those who had done this—studied the old and then developed out of it their own distinctive methods.

ROYAL INSTITUTE OF ARCHITECTS OF IRELAND.

THE annual meeting of the Royal Institute of Architects of Ireland was held at Dublin on December 6th, Sir Thomas Drew, R.H.A., presiding.

Mr. W. M. Mitchell read the report of the Council for the session 1899-1900. It stated that a representation was made to the officials of the Irish Government that in the Local Government (Ireland) Amendment Bill provision should be made that all persons appointed by county, urban, or district councils as architects, engineers, or clerk-of-works, should be duly qualified for their respective undertakings. The late Chief Secretary replied to such communication that the Institute "should bring before him instances in which improper appointments of this kind were made." They might notice the irrelevancy of such a request to the obvious duty of the framers of an act to secure efficiency of public service when pointed out, and in disregard of the experience that there was a tendency in rural councils to make appointments of persons entirely untrained and unqualified for expert service, involving waste of public funds and bad administration of public duties. The instances before the Local Government Board as conveyed by reports in the public press of the earliest working of the Act, which should have been noted by it, were sufficient. The report also alluded to the Queen's visit in April last, and claimed that the decoration of the streets made a precedent for the controlling influence of the architect over the operations of the modern contractor for city embellishment on such occasions of State. The Council recorded with gratification the knighthood of the president as a royal recognition of architecture. In reference to the subject of building contracts the Council conceived that the general conditions of contract approved by the Royal Institute of British Architects should be the basis for reformed conditions of contract, and that uniformity of usage throughout the kingdom so far as possible would strengthen the legal position of the builder especially.

On the motion of Mr. J. R. Carroll, seconded by Mr. W. Kaye Parry, the report was adopted. The President, having alluded to the conferring on him of knighthood, which he took as an impersonal recognition of the art of architecture, proceeded with his address on "The Insularity and Effacement of the Irish Architect." In the rapid change of universal society he felt bound to notice the increasing number of some architects—not of Ireland—who had to practise in their midst. Their policy, if they would turn back the tide of friendly invasion, was to play at returns, and put Irish architects more in evidence in the general affairs of the profession of the kingdom at large. The Irish architect failed to exhibit his interest and critical faculty in works of Imperial concern. He was not ambitious in communicating his works by published illustration or by exhibition to an outside world; and while the literature of architecture was every day increasingly enriched by authorship of architects in publications, the Irish architect—with no lack of sufficient ability—did nothing to add to the store, or to advertise the Scholarship in Architecture of any architects in Ireland. It might not be, perhaps, granted to the elders of their profession to see a reciprocity spring up under which the Irish architect, famous as some sort of specialist beyond Dublin, might be called in his turn to do service on the other side of the Channel. There was a hope, however, arising in the spirit of a new generation of younger architects—in the enthusiastic movement for better architectural education of an Architectural Association of Ireland, which it was the delight of their elder brethren of a past tradition to encourage and applaud—that by every legitimate means of competition a school of architects of Ireland might hold its own among the allied societies of the kingdom of the future. A new century opens with the spirit of healthy and hearty rivalry in all manner of play of "return matches." It had been his earnest advice to those who seemed in earnest in producing more proficient architects in Ireland to play up for the credit of their Irish side in architecture in matching themselves against the healthy rivalry of those schools trained elsewhere—to be better draughtsmen, better scholars, better men of a universal world. And he might add if it were necessary to be forward players too, not wanting in cool audacity or self-assertion, or confidence in their own superlative powers—why not? He had a hesitation in saying, however, knowing his young countrymen as he did, that the last advice was absolutely called for.

The following elections took place: Secretary, Mr. Parry; treasurer, Mr. Owen; council, Messrs. Ashlin, Carroll, Geoghegan, M'Carthy, Mitchell, Murray, Sheridan, O'Callaghan; auditors, Alberry and Wrenn.

Engineering Notes.

Artesian Wells.—The artesian bore has been working wonders in Australia of late years. In the Kyoona district of Queensland lately a bore was worked down as far as 2,500ft. before the precious water was struck, but once the tap was opened a steady flow of over a million gallons a day was obtained. This ought to encourage the Government to carry the artesian tapping system into every part of the colony affected by drought in the bad seasons.

Society of Engineers. — The forty-seventh annual general meeting of the Society of Engineers was held on December 10th at the rooms of the Society, 17 Victoria Street, Westminster. The chair was occupied by Mr. Charles Mason, vice-president, who announced that the hon. treasurer, Mr. George Burt, had presented to the Society a president's badge of office in gold and enamel. He also announced the premiums that had been awarded by the Council for papers read during the past session. Of these the president's gold medal goes to Mr. Henry C. H. Shenton for his paper on "Recent Practice in Sewage Disposal."

Large Gas-Engines for Central Stations.—In the course of a lecture before the Institution of Mechanical Engineers on Friday last, Mr. Herbert A. Humphrey stated that during the next few years the design and erection of large central power-stations for the generation and distribution of electric energy in bulk promise to be the most important and interesting problem with which mechanical engineers in this country will have to deal. Central-station work in this country, so far as the magnitude of the undertakings is concerned, is undoubtedly behind when compared with American and Continental practice; but the future development promises to be on an unparalleled scale. The schemes for supplying electricity "in bulk" recently considered by a Select Parliamentary Committee may be the beginning of even greater things; and it is to be hoped that the short-sighted policy of municipal authorities will not be allowed to interfere with the progress of a movement destined to become of national importance. The sale of electricity in Great Britain is now three times what it was four years ago. The great additions to our central stations in the future will not be for lighting or tramways but for manufacturing purposes. When electric energy can be generated and distributed at such a cost as to displace the use of the steam-power plants now operating in manufacturing works, the inauguration of a new era of centralisation in the supply of power will have commenced, the importance of which cannot be over-estimated. The average total cost of a unit of electricity generated by electric-supply undertakings in this country for 1898 was 2·81d., of which the expenses of generation amounted to 1·79d.; but those who know the actual cost of steam power generated on manufacturers' premises will appreciate how much this figure must be lowered, if the manufacturers are to be induced to take electric energy in bulk from outside companies. Unless the price is reduced to something like ¾d. per unit, only the smaller manufacturers will benefit by the wholesale adoption of current for power purposes supplied from central stations, and power gas and large gas-engines give the solution of the problem.

LONDON COUNTY COUNCIL.

AT last week's meeting of the Council the Housing of the Working Classes Committee submitted their report in reference to the proposed housing scheme at Norbury. Some details of this scheme were given on p. 329 of our issue for November 28th; but, briefly stated, it is contemplated to erect upon the 31 acres of land to be purchased 551 single cottages and 211 double cottages. In their report upon the financial bearings of the proposal, the Finance Committee pointed out that the total contemplated capital expenditure was £269,005, whilst the total nett rental out of which interest and sinking fund on capital outlay would have to be provided was £10,584. Upon these figures, taking interest at 3 per cent., it would appear that when all the buildings were completed there would be an estimated annual surplus of about £470. The estate would take about five years to develop. The Housing Committee now simply recommend that the Council should purchase the 31 acres of land and certain brickmaking plant for £20,000. A debate followed, which lasted nearly three hours, but eventually the recommendation of the Committee was adopted. The Parliamentary Committee advised the Council to approve the London Water (Purchase of Companies) Bill, and that a petition be presented for leave to bring in the Bill. They also recommended that the Metropolitan Water Companies (Amendment of Acts) Bill be approved. The Purchase Bill was practically the same as last year, one or two alterations having been made to meet the views of the Royal Commission. The Committee's report was agreed to. It was further resolved, on the recommendation of the Public Health Committee, that letters be addressed to the Local Government Board and the Water Companies, expressing the Council's desire to be heard at the forthcoming enquiry with regard to the amended water regulations, and that a conference with representatives of borough councils be convened. On the recommendation of the Parks Committee it was agreed that in consideration of the payment of £5,000 the Council should transfer to the Committee the portion of the Falcon Court area, measuring 1,588 sq. yds., cleared under the Housing of the Working Classes Act, for the purpose of an open space. The Council instructed the Comptroller to apply to the Treasury for approval of the expenditure of sums amounting to £27,000 on the provision of additional office accommodation at 25 Cockspur Street.

Builders' Notes.

The Northern Lock-out.—The master builders of the Hartlepools have resolved to lock out their men to-day. The employers state that they have very reluctantly come to this decision, but have been forced into the position by the action taken at Newcastle. About 300 men are affected. Some of the smaller masters are, however, stated to be holding aloof.

The Wakefield and District Master Builders' Association.—At the monthly meeting, Mr. E. A. Elvey (President) in the chair, reference was made to the death of Mr. John Newsome (of the firm of Messrs. Newsome and Johnson), a member of the Association, and on the motion of Mr. George Crook, seconded by Mr. J. B. Hesling (Messrs. Abson and Hesling), and supported by the President, a vote of sympathy and condolence with the widow and family of the deceased member was passed.

New Medical Buildings for Dundee are to be erected on the grounds of the University College. Mr. J. Murray Robertson is the architect. The site selected is that on which the old church in Small's Wynd stands, and at present utilised as a museum and for other purposes by the students. These old buildings will be demolished, and in their place will be erected a building rectangular in shape and four storeys in height. The floors will be carried on pillars, an arrangement which is understood to be conducive to the prevention of vibrations, which interfere with delicate medical instruments. It is believed that the new buildings will involve an expenditure of £15,000.

Mr. Wm. Brown, an ex-Alderman of Salford, died recently at the age of 77 years. He first entered the Salford Town Council in 1869, was elected an Alderman in 1876, and retired from municipal life in 1895. He had been a justice of the peace for the borough of Salford since 1886. Mr. Brown was the founder and senior partner of the well-known Salford firm of Messrs. Brown and Sons, builders and contractors, who secured the whole of the contract for the building of the Hotel Midland, Peter Street, Manchester. They also built the Regent Theatre, Salford, and the just completed Victoria Theatre, Broughton.

New Fire Prevention Testing Station.—Mr. E. O. Sachs, Chairman of the British Fire Prevention Committee, announces that the Testing Station will henceforth be near Royal Oak Station on the Metropolitan Railway, and within easy reach of the Great Western and the District Railways, Paddington and Praed Street Stations and the Central London Railway Station at Queen's Road, Bayswater. The Testing Station will again comprise a large, old-fashioned house with considerable grounds, and the house is being immediately arranged for the purposes of committee rooms, a museum and a laboratory, as well as apartments for the resident engineer. It is anticipated that the testing operations will again commence in the early spring, and applications for tests can now again be received at the secretary's offices, 1 Waterloo Place, Pall Mall, London, S.W.

A Solvent Bankrupt.—The estate of Mr. Charles Lewis, of Witham, painter, plumber, and builder, has been wound up most energetically and successfully by Mr. Fred Taylor, auctioneer and valuer, and estate agent, of 17 Duke Street, Chelmsford, less than four months from the date of his appointment as trustee of the property of the bankrupt, a dividend being paid of 19s. 6d. in the pound. This is almost a record in bankruptcy working, and the Committee of Inspection have passed a resolution complimenting Mr. Taylor upon the careful way he has attended to the realisation of the estate. The debtor in this case absconded, and in view of the estate turning out so well the warrant for his arrest will probably be annulled. In fact, nearly all the assets have realised more than the sums estimated, the debtor's wife and sons doing their best to help in every way. It would look as though someone was reprehensible for their action in forcing a solvent man into this position, causing on a small estate, realising only £1,915 17s. 9d., a cost of realisation of £340.

New Patents.

These patents are open to opposition until January 21st.

1899.—Bascule Lift Bridges.—23,211. J. P. COWING, 275 Prospect Street, Cleveland, Ohio, U.S.A. This bridge (which is on the same principle as the Tower Bridge) is raised by driving the rollers on which the end of each span rests.

1900.—Hospital Sinks.—641. J. SHANKS, Tubal Works, Barrhead, N.B. The sink is similar in form to a pedestal water-closet and is provided with a ledge on which bed pans can be laid for cleansing by means of a water jet. Another part of this invention relates to a scalding or sterilising sink, which can be made separate from the closet, or formed with it. A perforated steam coil is employed.

Paving.—13,363. J. BEHMER, Rademachergatan 290, Eskilstuna, Sweden. The machine which forms the subject of this invention is mounted on four wheels, and consists chiefly of a ram or hammer which is moved up and down by levers, which receive their motion from wheels and belts. The machine is adapted for ramming paving material of all kinds, and, if a chisel-shaped tool is substituted for the ram or hammer, can also be employed for working stone.

The following specifications were published on Saturday last, and are open to opposition until January 28th. A summary of the more important of them will be given next week. The names in italics within parentheses are those of communicators of inventions.

1899.—23,091, COLE, valves. 23,209, LIVERSEDGE, refuse destructors. 23,415, 23,415A, 23,415B, 23,415C, NAEF, method of and apparatus for treating solid materials applicable to the manufacture of gas and for other purposes. 23,432, KIENY, generators for the production of acetylene gas. 23,816, CHESTER AND EDWARD CHESTER AND CO., crushers for ore and other materials. 24,216, COWEY, self-closing taps. 24,480, TAYLOR, furnaces and fireplaces. 24,496, MOSELEY, means for forming a protective coating on iron and steel wire, rods, &c. 24,567, STEVENS, MAJOR, STEVENS, AND STEVENS, controlling apparatus for electric lifts. 24,568 BATLEY, lever hand-press used in brickmaking. 25,009, BOULT (*Perrier*), apparatus for the production of gas. 25,145, SHOOSMITH, wood-block flooring. 25,704, SHANKS, baths, lavatories, &c. 25,741, WURTS, lightning arresters.

1900.—422, JONES, appliance for use in drawing. 469, MILLS (*Dugon*), machine for cutting glass. 602, WINTERFLOOD, water-heaters. 1,267, BRODIE, permanent way for tramways. 1,901, MEHRTENS, firegrates for furnaces. 1,915, DE CAUDEMBERG, composition for use in paving roads, footways, &c. 2,021, HARVEY, joint for closets. 2,103, HARRISON, window fastener. 2,395, BOULT (*Sanda*), elastic packing for flanges and joints. 3,331, NÜESCH-SAXER and NÜESCH, apparatus to prevent the freezing of water in pipes. 5,788, CLIFTON, hand sawing-machines. 8,139, WINTERFLOOD, water-heaters. 12,714, LINKLETER, cowls. 12,734, WISE (*Francis*), taps or faucets. 12,782, FERGUSSON, closets and latrines. 13,029, KOEPFF, mould-box for bricks and slabs. 13,735, THOMPSON (*Jordan*), pipe couplings. 14,198, BALDWIN AND BALDWIN, stop valves and automatic valves. 14,317, BRABY, window-sash fastener. 16,699, BRITISH THOMSON-HOUSTON CO. (*Bell*), lightning arresters. 17,043, TAYLOR, combined door checks and closers. 17,499, BRUNS, moulding machine for tiles. 17,686, WADSWORTH, manufacture of prism glass. 18,207, ASHER, window-sash fasteners. 18,369, HIGGINS AND SAFETY-TREAD SYNDICATE, LTD., construction of step for staircases of all kinds. 18,433, CHARMAN, folding ladders or stages. 18,463, ROOT, lifts or elevators. 18,808, MCRAE, ventilators. 18,952, WEHLING, process for the production of mosaic pictures. 18,973, HADDAN (*Meinecke and Co.*), urinals. 19,011, PAGE (*Bacon Air-Lift Co.*), water-raising apparatus.

Quarry Notes.

A Granite Memorial.—An elaborate sculptured marble tablet, on a polished Scotch granite background, has just been erected in Paddington Chapel by the congregation in memory of the late Rev. G. D. Macgregor (who was for thirty years the pastor of the church) and of Mrs. Macgregor. The memorial has been designed and executed by Mr. E. J. Physick.

French Slate Quarries.—The French Ministry of Public Works exhibited a complete collection of its publications at the Paris Exhibition, and amongst these was a map of the French quarries, giving the output for 1898. The slate quarries are worked chiefly in the departments of Maine-et-Loire (250,000,000 slates, representing 115,000 tons) and Ardennes (130,000,000 slates, or 51,000 tons).

The Slate Industry of the United Kingdom in 1899 is summarised as follows: Production, 639,840 long tons, as against 668,859 tons in 1898; exports, £186,921 against £187,781; imports, £338,144 against £329,201 in 1898. Of the exports in 1899, Germany received the largest amount—£127,570. Of the imports, £253,976 came from the United States, as against £267,479 in 1898.

Of the Welsh Slate produced Last Year, rather more than three-fifths was from open quarries and nearly two-fifths from mines. The two largest open workings are the Penrhyn Quarry, producing 110,000 tons annually, and the Dinorwic Quarry, Llanberis, 95,000. The largest underground workings are those belonging to the Oakeley Slate Quarry, Limited, at Festiniog, with an output of close upon 55,000 tons last year.

Converting an Ordinary Bolt into a "Lewis." A device for converting an ordinary bolt into a "Lewis" for embedding in stone has recently been introduced by Messrs. Ransome and Marshall, of Tithebarn Street, Liverpool. It consists of a block of cast iron, rectangular in section and tapered, with several deep grooves cut round it. It is embedded in the same manner as a jagged bolt, and holds quite as firmly, while obviating the necessity for special forging.

Output of Belgian Quarries in 1899.—The following table gives the total output of various kinds of stone in 1899 at the quarries of Brabant, Hainaut, Namur, Liége, Luxembourg, and Limbourg:—

—	Quantities.	Value.
		francs.
Quarry stone, cubic metres ..	139 294	16,245,730
Pudding stone, cubic metres ..	200	27,000
Lime, rubble, and broken stones, cubic metres	3,238 875	13,675,125
Paving stones in number ..	114,103,900	11,182 065
Flags and paving tiles, c. metres	144,303	636,755
Marble, cubic metres	17,740	3,005,850
Slates, number	44,167,000	1,78 8,800
Slates, cubic metres	200	1,760
Stone for sharpening scythes and sickles, in number ..	82,100	70,800
Grindstone, cubic metres ..	450	13,000
Stone earth, cubic metres ..	195,505	389.780
Dolomite	56,400	99,100
Ochre, m. tons	300	6,000
Plastic earth, m. tons	291,125	1,994,840
Tufa stone, cubic metres ..	21,500	67,000
Marl and chalk, cubic metres ..	351,800	577,700
Sand, cubic metres	627,770	1,208,490
Flint for stoneware, c. metres ..	85,185	103,480
Flint, gravel, and stones for road cubic metres	258,835	609,180
Baryta sulphate, m. tons ..	25,900	181.300
Felspar, cubic metres	1,525	16.756
Phosphate of Lime, c. metres ..	193,090	1,710,900
Pho phatic chalk, c. metres ..	237,090	1,837,350
Total	—	55,448,745

This table does not include the two Flanders and province of Antwerp, which only supply *tertiary* clays for bricks, paving, and roofing tiles, and sand belonging to the same formation and employed for glass-making, &c.

This gives an increase of 2,648,815 francs on the value realised in 1899, namely 52,799,930 francs. During the year 1899, 1,601 quarries were worked almost exclusively in the Walloon district of the kingdom, 1,177 of the number being open, and 694 subterranean. The number of workmen employed was 36,931.

Enquiries Answered.

The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional, or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Protecting a House against Lightning.

LLANGOLLEN.—ELECTRIC writes; "A lightning conductor is carried up the gable-end of a house to a little above the chimney-pots. It is bent to pass the rainwater gutter at the roof level, but is kept an inch or more away from it. After entering the earth it passes underneath a gas-pipe and ends 2ft. below the surface. The rod touches the cap of the chimney, but stands clear everywhere else, copper brackets being used to hold it in position. Is this arrangement satisfactory and safe?"

The arrangement described by querist is neither satisfactory nor safe. The proximity of the conductor to the guttering is a source of danger, as it might cause divergence in the downward course of the electric fluid—through the attraction of the iron guttering—and result in an accident. Some authorities have advocated a connection from the rod itself to any adjacent ironwork so as to prevent any sudden break in conveying the discharge passing along the conductor to the earth; this is, however, attendant with some danger, as it is impossible to tell how far the electric fluid would travel before being safely dispersed. The position of the gas-pipe mentioned is decidedly too near the rod to be safe—for the same reason. It is obvious that the copper brackets should *not* be attached to the barge board, as indicated by querist. Carrying the conductor 2ft. below the earth is not sufficient; 4ft. or 6ft. is a better depth, and the rod should be embedded at its termination in, say, coke—not charcoal—the object of which is to keep the surrounding earth in the best condition for receiving a discharge. The angle of about 45 deg., at which the rod enters the ground, seems somewhat rapid. Generally speaking, it is best to carry the rod through insulators at a greater distance away from the building, say, 6in. or 8in., unless, of course, there are structural objections to this. The object of a plate at the bottom end of a lightning conductor is to diffuse the current so that it may reach the earth as quickly as possible and become absorbed in the surrounding coke, &c. According to this theory, the larger the plate the better (of course in reason). C. E. S.

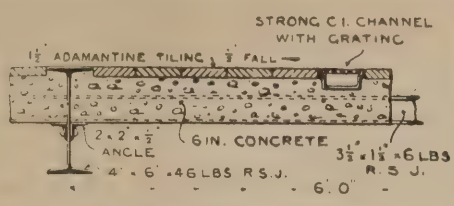
Books on Building Mechanics.

GLASGOW.—NORMA writes: "Which is the best and most easily understood book on how to calculate the strength or carrying capacity of steel joists, cast-iron columns, &c.? I do not know anything of mathematics, so I presume would require also to study this subject. Which book do you recommend?"

"Rivington's Notes on Building Construction," Part IV. (Longmans and Co., price 15s.), deals most clearly with calculations for building construction, and has the advantage of avoiding as far as possible the use of advanced mathematics. The methods are explained chiefly by the drawing and measuring of lines, and in order to understand them the calculations given require but a very slight knowledge of mathematics, which we presume our correspondent possesses. He would do well, however, to study elementary algebra, mechanics, and trigonometry from such books as Hall and Knight's "Elementary Algebra" (Macmillan and Co., 4s. 6d.), Briggs' and Bryan's "Elementary Text-book of Mechanics" (Clive and Co., Booksellers' Row, Strand W.C., 3s. 6d.), and Lock's "Elementary Trigonometry" (Macmillan and Co., 4s. 6d.).

Joists for Stable Floor.

HEXHAM.—X. Y. Z. writes: "I have a stable floor to lay on the first floor, and I purpose to put a steel joist every 6ft., that is, to every stall; the span is 23ft. What would be a



JOISTS FOR STABLE FLOOR.

proper section for the joists, and would it be necessary to put lighter joists between; also, what thickness of cement-concrete would be necessary for the floor? The floor beneath is divided into stalls, similarly to the first floor, and the stall posts would afford some support to the main joist."

$23 \times 6 \times 2 = 276$cwt. $= 13\,8$ tons, say $14 \times 6 \times$ 46lbs. rolled steel joists, 6ft. apart, with cross joists $3\frac{1}{2} \times 1\frac{1}{2} \times 6$lbs., 2ft. 6in. centre to centre. Concrete of Portland cement and ballast, 1 to 5, 6in. thick, resting on $2 \times 2 \times \frac{1}{4}$ angle-irons riveted to main joists. HENRY ADAMS.

Yellow Deal and Yellow Pine.

NEWBRIDGE, CO. KILDARE.—JUNIOR writes: "What is the difference between yellow deal and yellow pine? Which is the more generally used for flooring?"

The following is a list of the synonyms used by the timber trade for the class of timber known variously as fir, pine, and deal:—

Baltic Fir Baltic Pine Northern Pine Scotch Fir Red Deal Yellow Deal	All refer to the wood of *Pinus sylvestris*	Both European trees.
Spruce Norway Fir White Deal	To the *Abies excelsa*	
Canada Pine Red Pine American Deal	To the *Pinus resinosa*	Both American trees.
Yellow Pine Weymouth Pine White Pine	To the *Pinus strobus*	

Surveyors' Institution Examinations.

LONDON, W.—T. D. W. writes: "What knowledge should I have to acquire to pass the examination of the Surveyors' Institution? I am a bricklayer by trade holding a position as clerk of works. What is the examination fee?"

Apply to the Secretary of the Surveyors' Institution at Great George Street, Westminster, S.W.

Books on Architectural Details.

HESSLE, YORKS.—X. Y. Z. writes: "I am anxious to know of a good book on measured drawings of architectural details, particularly church architecture. Can you name one?"

"Details of Gothic Architecture" measured and drawn by J. K. Colling, £2 2s. nett; "Abbey Square Sketch Book," £3 nett; "The Architectural Association Sketch Book" (several volumes have been issued at £1 1s. each). These books can be obtained from Mr. B. T. Batsford, 94 High Holborn, W.C.

Mathematics Self-taught.

SHEFFIELD. — ARCHITECTURAL STUDENT writes: "Is it possible or advisable for a person to study mathematics by self-instruction, and if so what books would you recommend?"

It is quite possible to work up mathematics by oneself, but it requires perseverance. Bridge's "Algebra for Beginners," if still in print, is cheap and simple. Higgs' "Algebra Self-taught" (Spon 2s. 6d.) is also suitable for a beginner. After these any school algebra may be taken; then Adams' "Practical Trigonometry for Engineers, Architects and Surveyors" (Whittaker, 2s. 6d. nett). Also work up practical geometry and Euclid.

HENRY ADAMS.

Strength of Loaded Beam.

ILKLEY.—R. F. writes: "A beam 24ft. long loaded with 5 tons at 6ft. from one end, 6 tons in the centre, and 8 tons at 10ft. from the other end. Find by graphic statics the equivalent weight at the centre of the beam. (This question was set at the R.I.B.A. Final Examination held last June.)"

The equivalent weight in the centre of beam means the central load that will produce the same maximum bending moment. To find the bending moments proceed as follows:—Draw diagrammatic elevation of beam as Fig. 1 to scale of 8ft. to 1in, and number the spaces as for ordinary reciprocal diagrams. Draw the load line 1, 2, 3, 4, in Fig. 2, making the distances equal to the load applied between the respective numbers on a scale of say 5 tons to 1in. Select a pole at any convenient distance from the load line and about opposite to its centre, say 20ft., to the same scale as Fig. 1. Join the pole to the points on the load line by vectors as shown by full lines. Produce the force lines as shown by thin lines. Across space 1 in Fig. 1, and parallel to vector from point 1 in Fig. 2, draw the first line *a* of Fig. 3. From its end draw line *b* parallel to vector 2, continue with *c* and *d* parallel to vectors 3 and 4, then join the outer ends of *a* and *d* by line *e*. Parallel to line *e* of Fig. 3 draw a vector, 5 in Fig. 2, then 1-5 and 5-4 will be the reactions at ends of beam, and Fig. 3 will be the diagram of bending moments throughout the beam. To find the equivalent central load to produce the same maximum bending moment, draw the lines *f* and *g* in Fig. 3, and parallel to these draw the vectors *m* and *n* in Fig. 2; then *m n* scaled off will give the equivalent central load as 15 tons. HENRY ADAMS.

Fig. 1

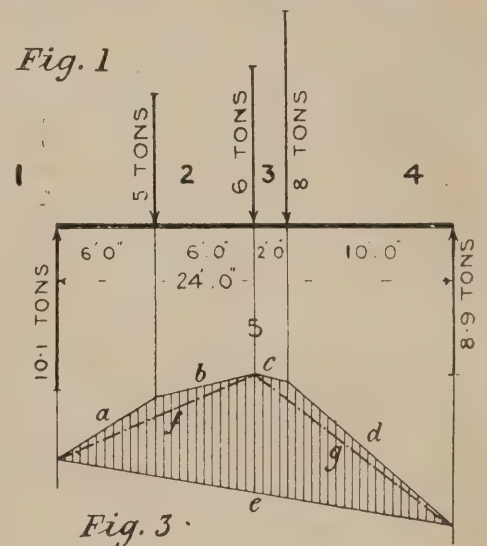
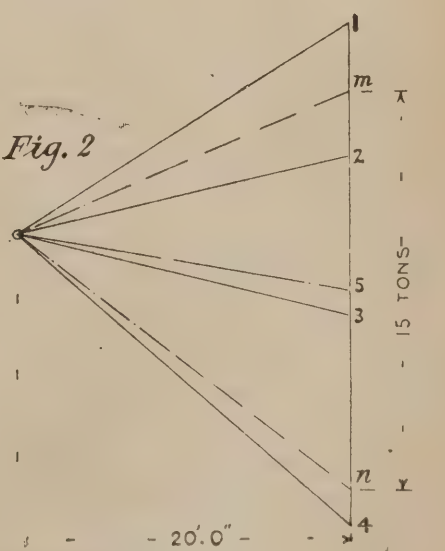


Fig. 3

Fig. 2



SCALES

FOR DISTANCES — 8 FEET TO 1 INCH

" LOADS — 5 TONS TO 1 INCH

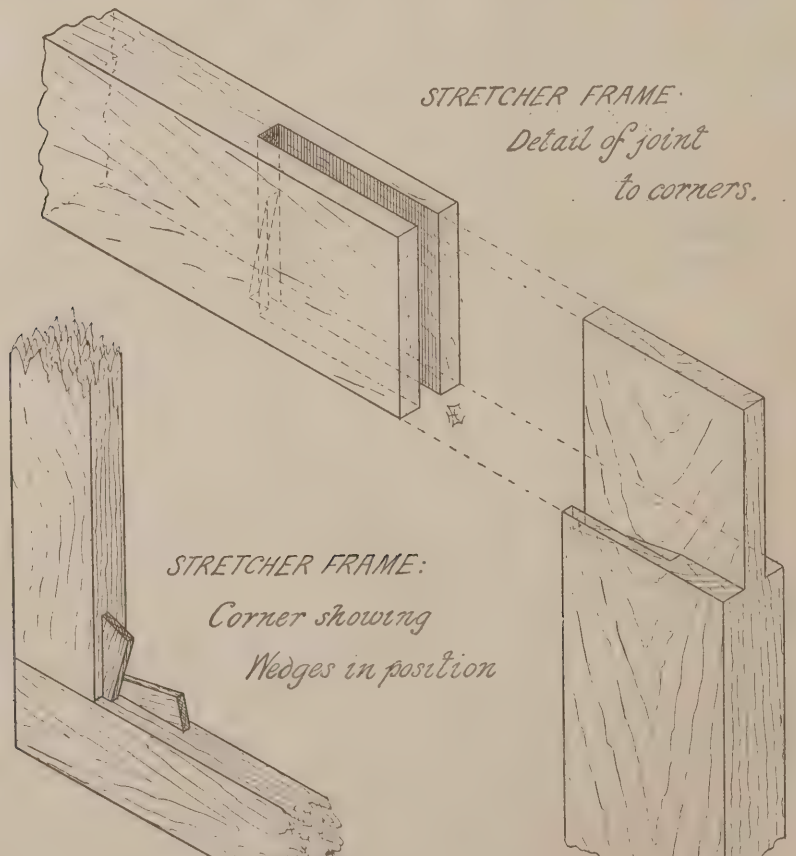
" MOMENTS — 5 × 20 = 100 FT. TONS TO 1 INCH

STRENGTH OF LOADED BEAM.

Stretcher Frames: and How to Mount Drawings on Them.

NEWCASTLE ON-TYNE.—B. P. writes: "I should be glad to know how strainers should be constructed, and how the drawings should be mounted on them."

The accompanying sketches illustrate the construction of stretcher frames. The material usually employed is yellow pine, though any other wood may be used. The method of jointing the corners is, as will be seen, by a plain mortice and tenon, the joint being merely an easy fit and left unsecured in any way. In order to provide for the stretching of the material with which the frame is to be covered, tapering mortices are cut as shown—one being a continuation of the jointing mortice, and the other being cut at one side of the tenon. After the material is tacked on to the frame, a couple of hardwood wedges are inserted in opposite directions in each corner, and the action of driving home these wedges causes the frame joint to open, thereby slightly increasing the external dimensions of the frame, and thus drawing its covering quite taut. The sectional dimensions of the frame stuff must be governed by the superficial measurement of the frame, the depth of the stuff being to the width as 3 to 1; 1½in. by ½in. pine is suitable for a frame about 18in. by 12in. Wedges (of beech) for a frame of this size may be about 2in. by ¾in. by ½in. For very large frames one or more muntins should be provided, and wedges should be fitted to the end of each on opposite sides, that is (say) right-hand side at top and left-hand side at bottom. No wedges would, of course, be necessary for the intermediate mortices—only to the tenons To mount drawings upon the frames the first necessity is something to mount them upon, and what this "something" is will be regulated by the size and value of the drawing which it is required to mount. For mounting plans, stout unbleached calico is very suitable; good brown holland would serve for a better class of work; whilst for valuable work, or for large areas, a close-woven canvas or "duck" would be necessary. Stretch the material tightly over the frame, and secure it by tacks to the back (*not the edges*) of the panel; then, further stretch it by driving home the wedges, and give its face a coat of size. When dry, the drawing may be mounted. Starch is the best mountant, but for heavy papers it might be advisable to add a little glue. To make the mountant, rub up sufficient of the best starch with as little cold water as possible to make a thick cream of even consistency; then add, stirring all the time, boiling water until the mass jellies and becomes semi-transparent, using as little water as will bring about the desired change. Set the starch aside to cool; when cold, remove the skin covering it, and it is ready for use. If lumps are present—the result of want of care in mixing—the mass must be squeezed through muslin. Damp the drawing slightly and allow it to stretch, then apply the mountant thinly and evenly; lightly paste the mount also, and then press the drawing to its support with a soft clean cloth. If it is desired afterwards to varnish the drawing, starch again (but much thinner than as used for mounting) will make the best "size" for the purpose. Tracings may be mounted by first attaching to the mount a sheet of white paper; ordinary white lining is suitable. Tracings, being usually coloured at the back, are somewhat awkward to manage without causing the colours to run; but it can be done by pasting the mount with the stiff starch and applying thinner starch with a flat camel-hair brush to the tracing, but the secret of preventing the colouring matter from rising is *not to touch any part a second time with the wet brush*, and to do the pasting lightly and expeditiously. Laying down the tracing is a two-handed job, and it should first be lowered at the shortest side, being then carefully dabbed into position; after being once laid it must not be moved or smudges of colour will be the result. Waterproof colours and waterproof ink are preferable for tracings which have to be mounted; but if these are not available, and it is known previous to colouring that the tracing is to be mounted, it is much the better plan to defer the colouring, which can then be done on the front, until after the mounting operation. It is easier to avoid raising the colours when the starch is used as size, as the sizing can be completed in two operations, the second application—after the first has dried—filling the voids left by the brush at the first time. H. E.



DETAILS OF STRETCHER FRAMES.

Examination Questions, Science and Art Department.

DULWICH.—X. writes: "Where can I obtain the answers to the questions set in advanced stages of machine construction and geometery, Science and Art Department? The answers required are for 1898 and 1899."

The writer supplied worked answers for many years to "Science and Art," a paper published by Messrs. Chapman and Hall, but now defunct. The connection was afterwards transferred to "The Technical World," published by Messrs. Whittaker and Co, but the writer has lost sight of it for the last three or four years, and no other published solutions in these subjects are known. HENRY ADAMS.

Darkening and Staining Oak Panelling.

DERBY.—EXCELSIOR writes: "Please explain how to stain and wax-polish new oak panelling in imitation of old oak."

Oak that is to be darkened and wax-polished is not usually stained by the application of a pigment in solution, but is subjected to the fumes of ammoniacal gas in a room, compartment, or box previously rendered air-tight by having all openings or crevices carefully pasted up. A small room or cupboard in which the work can stand upright, and from 6in. to 12in. off the floor, is preferable, as, if the articles to be fumigated are supported face downwards on bearers in a box, the marks of the bearers will show in the finished work. Upon the quantity of gas liberated, and the size of the fumigating apartment, will depend the depth of colour obtained, but if a sufficient depth is not secured at the first fuming it can be deepened by a repetition of the process, although less liquor ammonia will be required, *pro rata*, if the fumigation is completed at one operation. With a room about 12ft. by 12ft. by 8½ft. high, packed pretty full of oak joinery, we have allowed three Winchesters of liq. ammon fort. 0 880, and have found 24 hours later the whole of the gas to be spent and the work of a beautiful dark colour, the gas fumes having penetrated the surface of the wood about $\frac{1}{16}$in. The chief advantage of fumigation is the evenness of colour obtained without the grain of the wood being raised in the slightest. For superficially-applied stains Vandyke-brown mixed with liquor ammonia and thinned with water is commonly used, as is also a solution of bichromate of potassium in water; but all water stains raise the grain more or less, and a stain of burnt-umber paste, thinned with raw linseed oil and applied with a sponge, will be found far superior. Wax-polishing is performed by applying to the work, with brush or rag, a solution of beeswax in turpentine, which should be of the consistency of butter during moderately warm weather. After the wax is applied the work should be left for the turps to evaporate, and then polished by means of a moderately stiff fine-haired brush, a final rub being given with a soft woollen cloth. Some polishers prefer a proportion of resin in the polish, but it is best without. Shred pure yellow beeswax and pour turpentine over it, then stand aside till dissolved. Standing the vessel in hot water will facilitate matters, if the polish is required quickly. Oak which is to be wax-polished is frequently given a preliminary coat of "glaze," and it is perhaps a wise provision, when the stain is secured with pigments, there being less likelihood of the coating being removed by the polishing brush. French-polishers' glaze is an article of commerce, but it may be compounded by dissolving 6 to 8 oz. of *best* gum benzoin in a pint of methylated spirit. Apply with a soft wide brush. H. E.

Book on Hot-water Systems.

STAINES.—A. C. N. writes: "Kindly recommend me a trustworthy book on hot-water systems."

"Hood on Warming Buildings;" published by E. and F. N. Spon, Ltd., 125 Strand, W.C., price 15s.

Professional Practice.

Belfast.—The intention of the architects (Messrs. Graeme-Watt and Tulloch, Belfast) in carrying out the design submitted in the recent competition for an assembly hall and offices, and illustrated on this page, was to face the work with Ruabon brick and Scotch stone dressings and to roof the building with Broseley tiles. The joiner's work throughout to be executed in best English oak, the halls to be panelled to a height of 8ft., and the walls above to be finished with enriched fibrous plaster. The grand staircase to be in marble, and the entrance and principal corridors to be paved with Roman marble mosaic. The floors throughout of fireproof constructon, and to be laid with parquetry. The general arrangement of the offices, &c., is shown on the accompanying plans. The shops facing Howard Street are in direct communication with and have access to a street in the rear. The approximate cost of the buildings as designed is £30,000.

London, W.—The Apollo Theatre is now being erected for Mr. Lowenfeld, from designs by Mr. Lewin Sharp, in Shaftesbury Avenue. The new house (which is proposed to be opened in February) will hold about 1,100 persons comfortably seated—that is to say, within about 100 of the capacity of the Haymarket Theatre. Behind the scenes the available space is made the most of. There will be a good-sized pit in the usual place and an unusually spacious gallery. The tiers being constructed on the cantilever principle, there will be no pillars to obstruct the view of the stage. In other respects the comfort of the audience has been carefully considered. In order to provide plenty of head room for the large gallery the ceiling has been "raked" down in the direction of the proscenium, but regarded from any other part of the auditorium the "rake" is not apparent. At dark numbers of small coloured windows in the front will be lighted up.

Petersham.—The Ellen Walker Memorial Church Room, which has been erected on the Bute House Estate, is a red-brick building, Grecian in style. Mr. Councillor Hasler, of Richmond, is the builder, and Mr. John Kelly, of London, the architect. The cost is estimated to be about £10,000. There is a large hall with seating capacity for about 600 persons, and a stage for theatrical performances, &c. There are four large class rooms—two rooms on each side of the large room—from which they are divided by folding screens which can be removed, making the central hall and the class rooms one hall. The ceiling of the large hall is boarded and panelled, and light is afforded by windows with folding and ventilating casements. Adjoining the large hall is a gymnasium and institute, while there are also retiring rooms, such as bath rooms, lavatories, &c., which, with the passages, are all walled with Cliff's glazed green-cream bricks, relieved with dado in brown glazed bricks. Living rooms have been provided for the caretaker. The ceilings are all boarded and painted in cream colour. The floors of the gymnasium, bath room, and lobbies are of wood blocks on concrete. Red and black tesselated floors are in vogue in the bath rooms and lavatories. The architraves of the doors and windows, &c., are of moulded red bricks, made specially for the purpose from the architect's designs. The roof of the building is covered with Westmoreland slates, and on the roof of the gymnasium is a pinnacle covered with lead. The floors of all the basement are finished in granitic cement. The fittings of the windows, casements, &c., are all in gun metal. Teale's heating and ventilating grates are in use in all the rooms. A building, adjacent to the main structure, is in process of erection for the generation of electricity, which will be used for lighting the building, while gas can also be used at any time. The entrance to the building comprises a Narthex porch, with three wide doors, which have been arranged to open outwards. A smoking room opens into the gymnasium. The gymnasium is a large octagonal room.

Portslade.—The Upper Portslade Industrial School, now being erected for the London and Brighton School Boards, will, when completed, afford ample accommodation for about 250 boys. The putting in of the foundations has almost been completed, and some of the walls are going up. The school will stand in its own grounds, 26 acres in extent, and these are being laid out by Messrs. Cheal and Son, of Crawley. A portion of the grounds will be utilized as a kitchen-garden, while another part will be used for sports. The school will be half-a-mile from the village of Upper Portslade, and overlooking Southwick, from which it is about a mile distant. The school stands back towards the south, from the Mile Oak Road, and will be approached by a new carriage way, which will also encircle the building. The outside of the latter will be 400ft. by 300ft., with a quadrangle in the centre, 119ft. by 150ft. This will be used as a playing ground by the boys, and will be surrounded by a covered-way, connected with all the corridors, and furnished with a covered playing shed on the north side. The rooms on the south side will comprise the dining-hall, school-room, class-room, reading-room, office, and the Superintendent's quarters. On the east side will be the tailors' work-shops, laundry, needle-room, wash-house, stores, larders, kitchen, scullery, &c. On the north will be the gymnasium, 50ft. by 24ft.; the swimming bath, 40ft. by 20ft., and 4ft. deep; the boiler-house and coal stores. The rooms on the west side will comprise the carpenters' and painters' work-shop, band-hall, shoemakers' work-shop, private baths, lavatory, the labour-master's sitting-room, and the schoolmaster's sitting-room. Mr. George Butt is the clerk of the works. The architects are Messrs. Thomas Simpson and Sons, of Brighton.

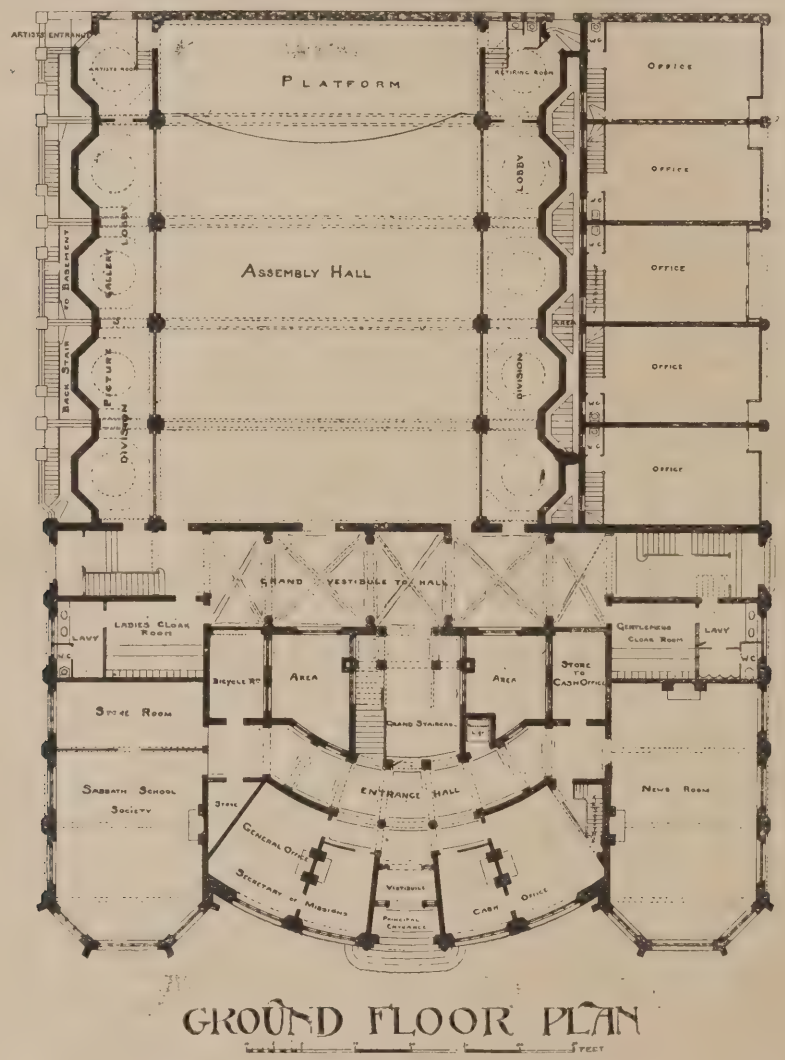


DESIGN FOR ASSEMBLY HALL AND OFFICES, BELFAST. GRAEME-WATT AND TULLOCH, ARCHITECTS.

The Next Issue of "The Builders' Journal" (dated December 26th) will be on sale throughout the Kingdom on Monday, December 24th.

Law Cases.

Claim for Building Extras.—At the Leicester County Court Messrs. Jones and Newitt, builders, recently sued Albert Buswell, a coal-dealer, for £31 13s. 10d., for work done. Defendant admitted owing £6 15s. 6d. Plaintiffs' case was that they entered into a contract with defendant's aunt and uncle to build a house, which was to become defendant's property, for £480. If any extra expense was incurred, defendant was to pay it, and, according to plaintiffs, defendant agreed to this. Extra expense was incurred to the amount claimed. Plaintiffs had offered to have the case submitted to arbitration, but defendant refused. The defendant's case was that some of the things charged for were never ordered, and others formed part of the contract. Judgment was given for plaintiffs for £26 12s.



DESIGN FOR ASSEMBLY HALL AND OFFICES, BELFAST.
GRAEME-WATT AND TULLOCH, ARCHITECTS.

What is a Summer House?—At the Hove Police Court on December 10th Emily Sarah Wride was summoned for contravening by-laws 9 and 62 in respect to a new building at 28 Hove Park Villas. Mr. Woolley, solicitor to the Corporation, said the building in question was 20ft. by 12ft. by 15ft., and was constructed of corrugated iron and wood. It was of great importance that the erection of improper buildings should not be permitted, and he did not think it could be seriously contended that this building conformed to the by-laws. The only possible defence might be that it was an exempted building, but, having regard to the reading of by-law 2, it could not be contended that it came within the definition of a summer house. Mr. Henry Morris, of Southampton, an architect and surveyor of 40 years' standing, expressed the opinion that the building came within the exemption in the by-laws, on the ground that it was a summer house. No less than 940ft. of air space had been left between the main building and the new structure. The magistrates were of opinion that the building did not come within the exemption clause, and they imposed a fine of £1 and costs for the contravention of by-law 9. Mr. Robson asked the magistrates to state a case, and the application was granted.

What is "Rubbish?"—The further consideration of the case of *Benjafield* v. *Wall* came on for argument on December 4th. The case was reported on page 344 of our issue for November 28th. It will be remembered that the action was brought for breach of contract in the delivering and carting away of material from the Archway at Highgate. The plaintiff was the executrix of the late Allen Albin Benjafield, who, it appeared, had in his contract with the defendant made use of the word rubbish, and in the course of the performance of the contract the meaning of the word "rubbish" was raised. The rights of the parties under the contract were affected according to the construction put upon that word, and when the case came on for hearing a large body of expert evidence was given on either side. The President of the Probate Division (the Right Hon. Sir Francis Jeune) in giving judgment for the defendant, said that the plaintiff's contention that "rubbish" in the building trade meant "brick rubbish and hard core" was not sustained by the evidence. He thought the evidence showed that the term was used by the trade in the sense of that which was inherently useless, and accordingly there was judgment for the defendant with costs. The plaintiff, however, on December 4th, moved that he was entitled to judgment even if his contract were strictly construed according to the wording of the learned Judge's judgment. The argument was then reopened, and the plaintiff contended that he was entitled to the declaration he prayed for and to damages. The President, after dealing with the arguments of counsel with great care, said that he did not think the plaintiff's contention was made out, and there would be judgment for the defendant with costs.

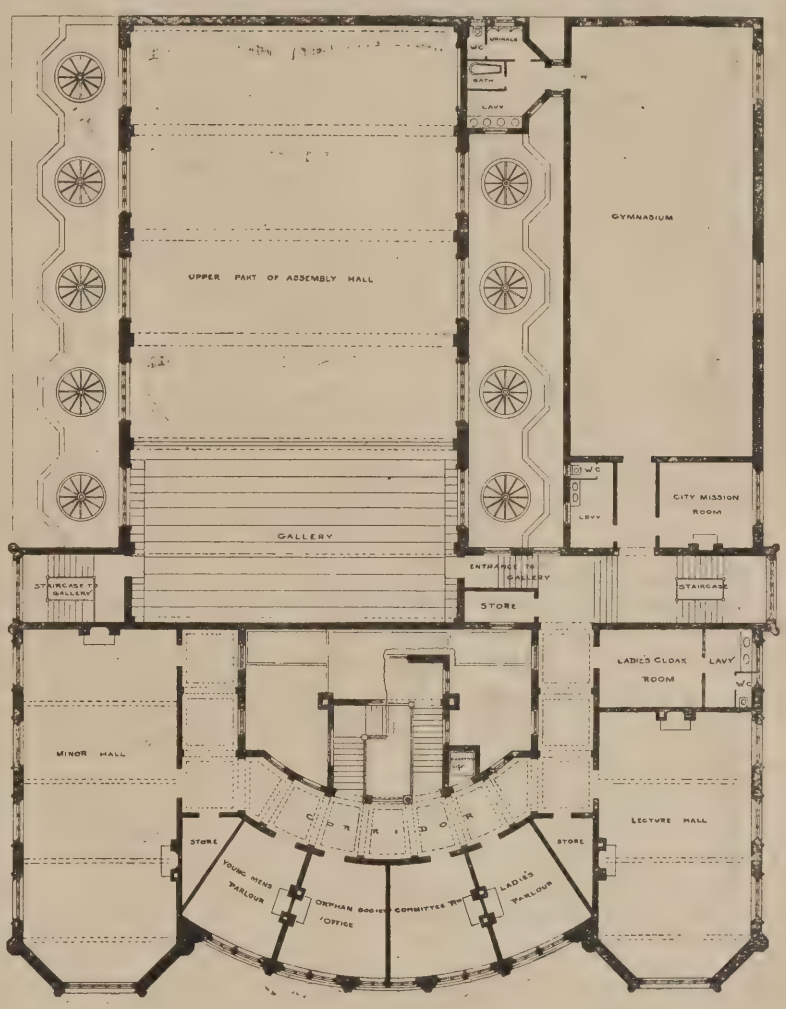
Workmen's Compensation: A Planing Machine. At a special meeting of the Canterbury County Court, held before his Honour Sir W. L. Selfe, Henry Simpson, joiner, of South Hackney, recently claimed £50 18s. 6d. from Messrs. Gann and Co., builders and contractors, of Whitstable, as compensation under the Workmen's Compensation Act, for injury received. Plaintiff said that on May 31st he was engaged at a planing machine, his duty being to feed the wood into the machine, while a man named Austin took the finished planks out at the other end. The planing caused a lot of shavings to get into the cogs and lever, owing to one side of the cutters not being cased in. Whilst clearing the machine, believing it was fully stopped, his finger was caught in the cogs and wound up as far as the knuckle. He called for assistance, and the machine was stopped. His medical bill amounted to £1 1s. He had been earning 45s. a week, and he claimed from June 1st to October 10th £49 17s. 6d., which with the guinea made £50 18s. 6d. His Honour, in giving judgment, said the plaintiff's claim was of course based upon negligence, and his allegation was that there was a defect in the machinery—that it was out of order, and that it had started off, after he had stopped it for the purpose of clearing away the shavings. He found it was a fact that the way the accident happened was not through the machinery having stopped and started off again, but from the fact that the strap on the loose pulley never came off properly on to the fixed one, and for that reason the machine never properly stopped at all when plaintiff began to clear out the shavings. He came to the conclusion that the lever had never been properly forced home, but worked itself right home shortly afterwards. That being the way the accident happened, what negligence could be attributed to the defendants? It was in fact quite clear to him that the plaintiff must be "non-suited" at the outset. He therefore gave judgment for the defendants.

North Wales Counties Asylum: Mr. Emerson's Award.—For some time legal proceedings have been going on in connection with the dismissal of Messrs. G. O. Ellison and Son, architects, of Liverpool, for the extension of the North Wales Counties Asylum buildings. The committee of visitors representing the five counties in the Union and the subscribers were served with a writ, a claim of nearly £3,000 having been made by the architects for alleged wrongful dismissal and for commission due on account of work done. The case was entered for trial at Liverpool Assizes in July. A counter-claim was made by the Asylum Committee through its clerk on account of the alleged negligence of the plaintiffs in carrying out and supervising the work, and also for the alleged wrongful detention by the plaintiffs of certain documents. At the desire of both parties the case was referred to Mr. William Emerson, the president of the Royal Institute of British Architects, who in September sat at Chester for over a week to hear the case. He has now issued his decision. He awards that the plaintiffs are entitled to recover against the defendants on their claim the sum of £915 1s. 6d., that the defendant is entitled to recover against the plaintiffs on his counterclaim the sum of £100, that the costs of the plaintiffs be taxed and paid by the defendant, that the costs of the defendant in the counterclaim be taxed and paid by the plaintiffs, that on payment by the defendant to the plaintiffs of the said sum of £915 1s. 6d. and of the costs plaintiffs must deliver to the defendant all drawings, specifications of the general contract, quantities and prices of articles upon which the contractor based his estimates, measurements for certificates on account, memoranda of extra work ordered and variations for the specifications authorised, adjustment of variations, and detailed quantities showing measurements upon which quantities are built up; that each of the said parties

shall pay his own costs of the referee and that each shall pay one-half of the cost of the award—namely, £365.

Damages for Nuisance due to a Stable.—An action for damages for nuisance was recently brought in the Nisi Prius Court by James Sissons, joiner and cabinet-maker, of Leeds, against Herbert Whitaker, the owner of adjoining property. The defendant, according to the statement of plaintiff's counsel, owns 1,640 sq. yds. of land adjoining the plaintiff's house, and upon it are several stables which he lets. According to the plaintiff, the stables are not properly drained, so that refuse flows towards the plaintiff's property. Nuisance is also complained of from a manure pit on the defendant's land. The nuisance is said to have caused considerable illness in Mr. Sissons's family. It was further stated that although the defendant's attention had been called to the nuisance he took no steps, and the Sanitary Department of the Corporation were communicated with in order that the nuisance might be abated by the interference of that authority. Evidence was given by the plaintiff, Mr. Thomas Winn, architect, Leeds, Mr. Spinks, lecturer on sanitary science at the Yorkshire College, and Mr. D. Dodgson, architect, Leeds. Mr. W. F. Laycock, analytical and consulting chemist, Leeds, was also called, and said that in the basement kitchen of plaintiff's house, on part of the concrete floor, he found a dark brown liquid to a depth of a couple of inches. There was a fetid odour, which by analysis he found to be due to stable sewage. Mr. Wallace, for the defence, said the field in question had been in the possession of defendant's family for many years, and the stables had been there for 30 or 40 years without any complaint. The case for the defendant was that the nuisance complained of did not arise from the stables at all, but from water flowing from an altogether different source. The new house, built by the plaintiff two years ago, was situated at the foot of an incline, down which water flowed to the Meanwood Beck, and the defendant contended that the plaintiff in digging to a depth of seven or eight feet for foundation caused a disturbance that resulted in the annoyance complained of. The judge (Mr. Justice Grantham), in his address to the jury, reminded them that the case had been tried before, and that the Court of Appeal had sent it back for re-trial on the ground that the Court did not quite understand what the learned judge had ruled in the court below. "I am," said his Lordship, "not at all surprised at that. I have said before, and I say again, that it is one of the faults of our legal system that in our Courts of Appeal nothing is known of what has taken place in the court below." The jury returned a verdict for the plaintiff, and the learned judge granted an injunction, execution to be stayed until January 13th next. Judgment was also given for the plaintiff for £25, the amount of damages agreed upon between the parties.

The Difference between Constructing and Erecting a Building.—In the House of Lords on December 10th the case of *Hoddinott (pauper)* v. *Newton, Chambers and Co. Ltd.* was heard. This was an appeal from a judgment of the Court of Appeal, and it arose under the Workmen's Compensation Act. The action was originally brought in the County Court under the Employers' Liability Act, 1880, by the widow of Benjamin Hoddinott, a riveter employed by the respondents, contractors, Westminster, to recover compensation for the loss of her husband, who was killed through alleged negligence. One Parker, a builder, had under contract completed the construction of a building in Lower Richmond Road, Putney, which was used as stables by the London General Omnibus Company. After the completion of the building the company employed the respondents to fix certain iron stays in the ground floor from girder to girder to stiffen or strengthen them. The work was performed by Hoddinott and another man on a scaffold about 8ft. or 9ft. from the ground, which was put up in the morning and taken down at night. The buildings or stables were more than 30ft. in height. On August 19th, 1898, as one of the stays was being lifted, it tilted, and striking Hoddinott threw him off the scaffold on to some bricks, and he died from the injuries he received. The County Court judge held that the scaffold was not insufficient, and that the accident was not caused by any insufficiency of the scaffold, and he gave judgment for the defendants. Counsel for the plaintiff then applied for compensation under the Workmen's Compensation Act, and after taking further evidence the judge held that the plaintiff was entitled to damages under that Act, and he awarded her as compensation £245 14s. The Court of Appeal reversed that decision, and gave judgment for the respondents, mainly on the ground that, in the words of the statute, the man was not employed on a building that was being constructed or repaired, but on a building that was being added to or altered. Lord Macnaghten, in now giving judgment, said that all the learned judges concurred in holding that the building in which the accident happened was not at the time being constructed nor being repaired, and that the respondents were not undertakers within the meaning of the Act. The ground of their decision was stated very clearly by Lord Justice Smith: "Were the ironfounders," he asked, "who put in these stays constructing the building? That cannot be," said his Lordship, "for it had already been constructed, and what was then done was only an addition to that which it had originally been contemplated would be wanted. How could it be said that the man was employed in a building which was being constructed? The construction was at an end, but some strengthening was afterwards needed to be done." He did not think that construction could be limited to the original construction. That would be in effect substituting "erection" for construction. Construction, repair, demolition—these covered, he thought, the varying phases in the life of a building from its beginning to its end. He preferred to rest his judgment on this broad ground, but he could not help thinking that something narrower would lead to the same result in the present case. One would say with the strictest propriety that a building was in the course of construction when it was being reconstructed in order to make it what it was intended to be, a firm substantial structure, capable of resisting the action of the wind. He thought that in this case the learned judges of the Court of Appeal had taken too narrow a view. If they construed the words of the Act so narrowly as to exclude one of the commonest operations of the building trade, the alteration of a building already erected, and so debarred a workman engaged in that operation from all benefit of the Act, they would, he ventured to think, violate the letter as well as the spirit of the Act. The appeal ought to be allowed with costs in the Court of Appeal, and with such costs in this House as were allowed in pauper cases, and the order of the County Court judge ought to be restored, and he moved their Lordships accordingly. Lords Shand and Lindley took a contrary view, and thought the appeal should be dismissed. The other noble and learned Lords concurred with Lord Macnaghten. The appeal was accordingly allowed.



FIRST FLOOR PLAN

DESIGN FOR ASSEMBLY HALL AND OFFICES, BELFAST.
GRAEME-WATT AND TULLOCH, ARCHITECTS.

A Cabmen's Shelter at Burton has been erected at a cost of £72 at the Bridge End, Newton Road, from plans by Mr. T. Jenkins, architect. Mr. H. Edwards was the builder.

New Liberal Club at Sunderland.—New premises for the Sunderland and North Durham Liberal Club have been built on the site of the old club in Fawcett Street, Sunderland, at a cost of £23,000.

Keystones.

Mr. Alfred Gilbert, R.A., has been elected Professor of Sculpture at the Royal Academy.

Competition for Police Courts and Fire Station at Blackburn.—Messrs. Briggs and Wolstenholme and Messrs. Stones and Stones, both of Blackburn, are the authors of the accepted design in this competition.

The Burton Workhouse Infirmary is proposed to be enlarged by the addition of two new day rooms with outside verandahs, new pantries, and enlargement of kitchen and dispensary, at a cost of £1,178. Mr. T. Jenkins is the architect.

The Tower of St. Saviour's, Dartmouth, is proposed to be repaired. The tower is stated to be in such a state that it is not possible, without danger, for the bells to be rung. It is anticipated that from £500 to £600 will be required.

Bristol Police Courts.—A Local Government Board enquiry was held recently into an application by the Town Council for sanction to borrow £12,450 for the purchase of land for purposes of street improvement, and £5,025 for the purchase of land for the extension of the police courts.

All Saints' Church, Publow, which was originally built by the monks of Keynsham Abbey, and possesses one of the most beautiful towers in Somersetshire, is to be repaired and restored. The late Sir Arthur Blomfield examined its condition, and reported that a sum of £1,750 would be needed to put it in order.

Archæological Discoveries in Greece.—The ship which was sent out to make archæological researches in the sea near the island of Cerigo has returned to Athens with the first lot of antiquities brought up by the divers. These antiquities consist of two headless marble statues, fragments of marble and bronze statues, and a bronze pugilist's head. The divers also recovered various other objects. All these antiquities are in a very damaged condition, except in the case of one hand belonging to a colossal bronze statue. The searches are continuing.

Appointment of Consulting Architect to the Government of Bombay.—The President of the Royal Institute of British Architects wishes to announce that he has been desired by the India Office to assist them in the appointment of a Consulting Architect to the Government of Bombay. The salary would be 1,600 rupees a month (*i.e.* £1,900 per annum in India, or £1,300 in England), and in all probability offices would be provided. The officer selected should be competent to assist the Government in designing and reviewing plans of important buildings. He would be required to enter into an agreement for a term of either three or five years; the engagement to be capable of extension thereafter, if so desired, and to be terminated with six months' notice on either side. Applications are to be sent in to the President not later than December 31st.

Lincoln's Inn Fields.—Mr. A. Waterhouse, R.A., writes: "There is probably no spot in London where the charms of woodland in connection with surrounding architecture can better be seen and appreciated than they are in Lincoln's Inn Fields. The London County Council discovered this, and lately purchased the rights of the surrounding proprietors in order to throw the central space with its magnificent plane trees open to the public. Much of the sun and air which comes to this central space is derived from a spacious forecourt 32ft. wide in front of the houses on the south side of the square. It is, I understand, in contemplation to bring forward the new offices of the Land Registry (60ft. high with two storeys in the roof) to within 4ft. of the public footway, that is to say, projecting into the forecourt 28ft. beyond the general building line. This would, undoubtedly, in itself materially interfere with the public gardens in the centre of the square, and would, I conceive, pave the way for the owners of all the other houses on the south side to do the same thing, and so reduce the value of the gardens as a sunny and breezy recreation ground."

A new Church at Nailsworth, Gloucestershire, has been consecrated. Accommodation has been provided for six hundred worshippers. The erection of the chancel and tower has been postponed. The portion already built has cost £7,000.

The Blackburn Exchange Hall, with the Exchange Hotel and other property, was last week purchased for about £20,000. The whole block is to be cleared away and shops, clubs, arcades, &c., will be erected on the site. Messrs. Briggs and Wolstenholme are preparing the plans.

Archæological Discovery in Cleveland.—While excavating on the north side of the Cleveland Hills some labourers of the Nunthorpe Brick Company recently unearthed the lower portion of an effigy of a knight in armour in excellent condition. It seems probable that it is an effigy of one of the Bruces—most likely that of Peter de Brus, who was a Crusader. The Bruce crest and the dragon suggest such a probability, especially as the seat of the Bruces then was Skelton Castle, no great distance from Guisborough Abbey.

Bristol Society of Architects.—The monthly meeting was held at the Fine Arts Academy, Queen's Road, Clifton, last week, Mr. Frank W. Wills in the chair. A paper was read by Mr. J. Atwood Slater on "Architecture considered from the higher practical and ethical standpoint." A vote of thanks was proposed by Mr. H. Dare Bryan, seconded by Mr. Joseph Wood. Mr. Mowbray Green, of Bath, supported the motion, which was put by the president and carried unanimously.

The new Royal Camden Theatre at the corner of Crowndale Road and High Street, Camden Town, N.W., is to be opened at Christmas. It has a stone frontage to High Street with a large dome surrounded with statues representing the various arts. Above the dome is a turret carrying a gas beacon. The body of the building is of red brick. There is to be seating accommodation for about 4,000 people. The cost of the building has been estimated at £60,000. Mr. W. G. R. Sprague is the architect. The decorations are by Waring's, of Sloane Street, S.W.

"Some Principles of Design."—The usual meeting of the Glasgow and West of Scotland Technical College Architectural Craftsmen's Society was held on Friday, December 7th, when a paper was read by Mr. Thomas S. Fraser on "Some Principles of Design." The paper was written to help craftsmen to intelligently appreciate the beauties of architecture. Artistic design was, he said, the use of architectural precedent having regard to certain principles, viz.: fitness of application, expression, proportion, repetition, variety, symmetry, gradation and contrast, these principles being applied with the designer's individualism. A discussion, opened by C. Ernest Monro, followed.

The British Archæological Association held its third meeting of the session on the 5th inst., Mr. C. H. Compton, vice-president, in the chair. A paper by Mr. T. Cann Hughes, M.A., entitled "Rambles in South Devon," was read in his absence by Mr. S. Rayson, sub-treasurer. A curious feature of the church of Totnes is a large buttress at the south-east angle of the chancel which formerly had a way through it, now blocked up. From time to time considerable discussion has taken place as to the object of this curious passage, but it is still an unsolved problem. One suggestion made is that it formed a place of deposit for the bodies of persons seized for debt. The church, which is dedicated to St. Mary, possesses, according to Mr. Harry Hems, one of the finest examples of a stone rood screen. The screen is 60ft. in length, with parcloses of a rather unusual design. It is full of light tracery and rich with niches and tabernacle work. The screen is groined only on the west side, all the tracery in the fan groining being pierced through. It was erected to the order of the Corporation of Totnes in 1460. The chief features of Dartmouth, Ashburton, one of the old Stannary towns created by Edward I. in 1285, Berry Pomeroy, Kingsbridge, Abbotskerwell, Ipplespen, and other places were also described.

Mr. James Buckley Wilson, architect, of Swansea, died on December 6th at the age of fifty-four years.

A Drill Hall at Twickenham is to be erected at an estimated cost of £2,120, towards which the Middlesex County Council has promised to give £1,412.

The Forthcoming Winter Exhibition at Burlington House will be confined to pictures and drawings made during the last 50 years by British artists now deceased.

The Victoria Hospital, Folkestone, is being warmed and ventilated by means of the patent Manchester stoves supplied by Messrs. E. H. Shorland and Brother, of Manchester.

Workmen's Cottages at Merthyr.—The District Council have applied to the Local Government Board for sanction to borrow £15,000 to erect a number of workmen's dwellings. The rental of each cottage will be 18s. a month.

The Death is Announced of Mr. Francis Chambers, of London, at the age of seventy-one. He was elected a Fellow of the Royal Institute of British Architects in 1865, and was a member of the Council for some time. He had an extensive practice in the metropolis.

Liverpool Housing Association.—Under the auspices of this Association, a lecture was delivered last week by Mr. John Edwards on "The Common Lodging Houses in Liverpool." A series of lectures is being given in various places in the town, the object being to advocate the erection by the municipality of healthy and comfortable homes for the people. The lecturer, who is president of the Housing Association, remarked that Huddersfield was the first city in England which had undertaken the building of model lodging-houses.

An Imperial Memorial to the Soldiers who fell in South Africa is proposed to be erected in London. At a meeting of members of both Houses of Parliament, Colonial representatives, and others, it was agreed that steps should be taken to erect a building to commemorate the names of all the dead, of every rank, from every part of the British Empire, who have fallen in the South African campaign, by sickness, by wounds, or in battle. A discussion as to the exact form and site which the memorial should take was postponed until the next session of Parliament.

Correspondence.

"Ancient London."

To the Editor of THE BUILDERS' JOURNAL.

NEW BARNET.

SIR,—Speaking of Christ's Hospital in the article on "Ancient London" (see last week's issue) the author mentions the figure of the founder, King Edward VI., which occupied a niche over the entrance gate, as still remaining. Allow me to say that the statue and a portion of the gate were removed to the new home of the boys in Sussex about three months ago.—Yours truly. A. J. WATERFIELD.

A Question of Light.

To the Editor of THE BUILDERS' JOURNAL.

EDINBURGH.

SIR,—The reply to "J. S. B.," Paisley, on page 374 of your last issue, is evidently by an Englishman to a Scotsman. Scottish law is not the same as English law. There are no ancient lights in Scotland. An owner, to acquire a right of light over adjoining land, must have a servitude in his deeds conferring that right. The church windows could be built against by "J. S. B." even though they had been there a hundred years. I have had to do it often, and covered up twenty the other day. Every man is entitled to the full use of his own land. The best way to bring the trustees to the point is for "J. S. B." to fix a wooden fence on his own ground so as to obstruct the church windows, and then stand by and witness the result.—Yours truly,

EDINBURGH.

COMPLETE LIST OF CONTRACTS OPEN.

DATE OF DELIVERY.		WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
		BUILDING.		
Dec.	21	Belfast—Abattoir	Market Committee	City Surveyor, Belfast.
"	21	New Maud, Aberdeen—Police Station	County Council	J. M. Pirie, 229 Union Street, Aberdeen.
"	21	Trawsfynydd—Alterations		W. W. Owen, British School, Trawsfynydd.
"	22	Llandilo, Wales—Alterations, &c., to House	Dr. R. D. Evans	D Jenkins, Architect, Llandilo.
"	22	Nottingham—Police Station, Fire Station, Mortuary and Cottages	City Council	A. Brown, City Engineer, Guildhall, Nottingham.
"	22	Salterhebble, Yorks.—Three Houses		R. Horsfall and Son, Architects, Halifax.
"	22	Belfast—Premises		Graeme-Watt and Tulloch, 77a Victoria Street, Belfast.
"	24	Halifax—School	School Board	C. F. L. Horsfall and Son, Lord Street Chambers, Halifax.
"	24	Bradford—Electric Tramcar Shed	Corporation	City Architect, Chapel Lane, Bradford.
"	24	Lynton, Devon—Market House, &c.	Urban District Council	W. H. Chowins, Surveyor, Town Hall, Lynton.
"	24	Sunderland—Rebuilding Hotel	Robert Deuchar, Ltd.	B. F. Simpson, 12 Grey Street, Newcastle-on Tyne.
"	29	Whitchurch, Salop—Lining Church with Stone	Rev. C. R. Pembridge	G. Hancock and Son, 6 Bargates, Whitchurch, Salop.
"	29	Falmouth—Police Station	Standing Joint Committee	County Police Station, Falmouth.
"	29	Falmouth—School of Art	Committee of Science, Art and Technical Schools	Chamber of Commerce, Arwenack Street, Falmouth.
"	31	Harrow—Extensions	J. Adamson and Co.	Johnstone Brothers, 39 Lowther Street, Carlisle.
"	31	Balby, Doncaster—Infants' School	School Board	F. W. Masters, 11 Priory Place, Doncaster.
Jan.	1	Kingston-on-Thames—Additions to Laundry	Union Guardians	J. Edgell, Clerk, Guardians' Offices, Coombe Lane Kingston-on-Thames.
"	1	Dover—Alterations, &c., to Boiler House	Town Council	H. E Stilgoe, Borough Engineer, Town Hall, Dover.
"	1	Friskney Eaudikes—Double Cottage		The Vicar, Friskney, S.O., Lincs.
"	1	Leicester—Premises	National Union of Boot and Shoe Operatives	Harrison and Hattrell, 34 Friar Lane, Leicester.
"	7	Rochford—Isolation Hospital	Rural District Council	C. and W. H. Pertwee, Architects, Chelmsford.
"	10	Lambourn, Berks—Fire Engine House	Parish Council	H. J. Maberly, Clerk, Market Place, Lambourn.
"	10	Cricklade, Wilts—Police Station	Standing Joint Committee	County Offices, Trowbridge.
"	17	Preston, Lancs.—Extension of Police Station	Corporation	Borough Surveyor, Town Hall, Preston.
"	25	Branksome, Dorset—Repairing, Painting, &c., Police Station	Standing Joint Committee	County Surveyor, County Council Offices, Sherborne.
		ENGINEERING.		
Dec.	21	Salford—Heating Apparatus	Union Guardians	Farm Superintendent, Sheds, Hope, near Eccles.
"	22	Manchester—Tramway Bonds	Tramways Committee	J. M. M'Elroy, General Manager Tramways Department, Town Hall, Manchester.
"	22	Aberdeen—Batteries	Electric Lighting Committee	J. A. Bell, Cotton Street, Aberdeen.
"	22	Ilford—Well	Urban District Council	H. Shaw, 7 Cranbrook Road, Ilford.
"	22	Ilford—Fire Engine	Urban District Council	J. W. Benton, Council Offices, Ilford.
"	22	Walsall—Retort Benches	Gas Committee	B. W. Smith, Pleck Gasworks, Walsall.
"	24	Swindon—Dynamos	Corporation	Lacey, Clirehugh and Sillar, 2 Queen Anne's Gate, S.W
"	24	Brighton—Electric Cables		F. J. Tillstone, Town Clerk, Town Hall, Brighton.
"	25	Harrogate—Boilers	Corporation	Electric Lighting Department, 33 Swan Road, Harrogate.
"	28	Ryde—Esplanade and Sea Wall	Corporation	C. Mathew, Borough Surveyor, Town Hall, Ryde, I W.
"	29	Winwick, Lancs—Wiring	Asylums Board	J. S. Muspratt, County Offices, Preston.
"	31	Llandudno, Wales—Promenade Works	Urban District Council	E. P. Stephenson, Church Walks, Llandudno.
"	31	London, N.W.—Plant	Hendon Urban District Council	R. Hammond, 64 Victoria Street, London, S.W.
"	31	Leeds—Electric Lighting Plant	City Council	H. Dickinson, 1 Whitehall Road, Leeds.
"	31	Worthing—Switchboard	Corporation	Burstall and Monkhouse, 14 Old Queen Street, S.W
Jan.	1	Thetford, Norfolk—Electric Wiring and Fittings	Town Council	J. Houchen, Town Clerk, London Road, Thetford.
"	2	Christiania—Transmission of Electric Power	Stavanger Corporation	E. Berentsen, British Vice-Consul, Stavanger.
"	2	Tooting Bec—Wiring	Metropolitan Asylums Board	Board Offices, Embankment, E.C.
"	2	Middleton, Lancs—Superheaters	Corporation	Lacey, Clirehugh and Sillar, 78 King Street, Manchester.
"	4	Manchester—Twenty-two Electric Cranes	Ship Canal Warehousing Company, Ltd.	W. H. Hunter, 41 Spring Gardens, Manchester.
"	5	Baltinglass, Ireland—Iron Pump, &c.	Rural District Council	J. R. Dagg, Clerk, Baltinglass.
"	7	Glasgow—Superstructure of Central Station Extension	Caledonian Railway Company	Engineer, Buchanan Street Station, Glasgow.
"	10	West Bridgford, Nottingham—Refuse Destructor, &c.	Urban District Council	W. Pare, Surveyor, George Road, West Bridgford.
"	10	Rathmines, Ireland—Plant	Electric Lighting Committee	R. Hammond, 64 Victoria Street, London, S.W.
"	15	Wolverhampton—4½ Miles of Tramway Track	Tramways Committee	J. W. Bradley, Borough Engineer, Town Hall, Wolverhampton.
Feb.	1	London, S.W.—Meters	Battersea Borough Council	Town Clerk, Municipal Buildings, Lavender Hill, S.W.
"	11	Edinburgh—Gasworks, Plant, &c. (10 Contracts)	Gas Commissioners	W. R. Herring, Manager Gasworks, New Street, Edinburgh.
"	28	Wellington, New Zealand—Engines	Corporation	J. Duthie & Co., Limited, 23 Lime Street, London, E.C.
April	10	Rosario—Harbour Works	Argentine Government	Commercial Department, Foreign Office, S.W.
		IRON AND STEEL.		
Dec.	27	Rangoon—2 000 Tons of Iron Water Pipes &c.	Municipality	Ogilvy, Gillanders and Co., Sun Court, 27 Cornhill, E.C.
"	27	Dublin—Stores	Alliance and Dublin Consumers' Gas Co.	F. T. Cotton, Secretary, Company's Offices, D'Olier Street, Dublin.
"	28	London, S.W.—Safety Chains, Springs, Brackets, &c.	Uganda Railway Committee	Crown Agents for the Colonies, Downing Street, S.W.
"	31	Llandudno—Pipes	Urban District Council	E. P. Stephenson, Church Walks, Llandudno.
		ROADS AND CARTAGE.		
Dec.	21	Chartham, near Canterbury—Making Up	Asylum Committee	W. J. Jennings, 4 St Margaret's Street, Canterbury.
"	22	Witham, Essex—Granite	Urban District Council	W. Bindon Blood, Council Office, Witham, Essex.
"	22	Felixstowe—Road Works	Urban District Council	G. S. Horton, Surveyor, Town Hall, Felixstowe.
"	22	Oadby, Leicestershire—Road Works	Rural District Council	J. Turner, Surveyor, Saffron Lane, Glen Parva, near Leicester.
"	24	Edmonton—Asphalt Footways and Tarpaving	Urban District Council	G. E. Eachus, Surveyor, Town Hall, Lower Edmonton.
"	25	Hertford—Road Works	Corporation	J. H. Jevons, Borough Surveyor, Hertford.
"	27	Salford—Paving &c.	Corporation	Borough Engineer, Town Hall, Salford.
"	28	Southgate—Making-up Streets	Urban District Council	C. G. Lawson, Surveyor, Council Offices, Palmers Green, N.
"	28	Exeter—Cricket Ground and Road		Ellis, Son and Bowden, Surveyors, Exeter.
"	30	Nottingham—Carting	Corporation	A. Brown, Guildhall, Nottingham.
"	31	Kettering—Footpath	Urban District Council	Surveyor, Market Place, Kettering.
"	31	Ilford—Seven One-horse Tip-wagons	Urban District Council	J. W. Benton, Clerk, Council Offices, Ilford.
"	31	Pemberton, Lancashire—Setts and Kerbs	Urban District Council	P. Partington, Clerk, Pemberton.
Jan.	1	Hailsham, Sussex—Road Works	Rural District Council	J. Huxley, 9 Wellington Terrace, Hailsham.
"	2	Felling, Durham—Broken Slag and Whinstone	Urban District Council	H. Miller, Surveyor, Council Offices, Felling.
"	2	Litherland, Lancs—Roadmaking, &c.	Urban District Council	W. B. Garton, 25 Sefton Road, Litherland.
"	5	St. Annes-on-Sea—Making-up Streets	Urban District Council	T. Bradley, Clerk, Council Offices, Park Road, St. Annes-on-Sea.
"	8	London, W.—Materials	Acton District Council	D. J. Ebbetts, 242 High Street, Acton, W.
"	8	Acton—Road Materials	Urban District Council	D. J. Ebbetts, 242 High Street, Acton.
		SANITARY.		
Dec.	21	Ardsley, Yorks—Pipe Sewers and Purification Works	Urban District Council	T. S. McCallum, 52 Corporation Street, Manchester
"	24	Long Ditton—Drainage of Churchyard	Churchwardens	A. J. Henderson, Council Offices, Thames Ditton.
"	29	St. Annes-on-Sea, Lancs—Pipe Sewers, &c.	Urban District Council	H. Bancroft and Son, 83 Mosley Street, Manchester.
Jan.	1	Kessingland, near Lowestoft—Sewerage System	Mutford and Lothingland Rural District Council	F. Peskett, 157 London Road, Lowestoft.
"	2	Litherland—Pipe Sewer, &c.	Urban District Council	W. B. Garton, 25 Sefton Road, Litherland.
"	28	Dartford—Stoneware and Iron Pipe Sewers and Pumping Station	Rural District Council	G. H. Tait, Engineer to Council, Lowfield Street, Dartford.

COMPETITIONS OPEN.

DATE OF DELIVERY.		DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	BY WHOM ADVERTISED
Dec.	31	Malling, Kent—Steam and Hot Water Scheme	£25	J. F. Allison, West Malling, Kent.
"	31	South Shields—Municipal Buildings	£200, £100, £50	J. M. Hayton, Town Clerk, Court Buildings, South Shields.
Jan.	18	Hindley—Public Offices	£50, £25, £10	A. Holden, Surveyor, Hindley.
"	28	Tanfield, Tantobie, 3- and 4-roomed Workmen's Cottages	£10, £5	R. Heslop, Surveyor to Urban District Council, Dean View, Burnopfield
Feb.	14	Ballarat, Australia—Statue		J. W. Nedwell, Hon. Sec. Soldiers' Statue Fund, Ballarat, Australia.
March	25	Basford—Sewerage Scheme		C. J. Spencer, Clerk, Public Offices, Basford.

Surveying and Sanitary Notes.

The Holborn to Strand Street.—A beginning has been made with the final clearance of the Strand north frontage for the County Council's Holborn to Strand new street, nine houses, from the corner of Catherine Street eastwards, having been boarded up. Some twenty more remain, going eastwards towards Newcastle Street, but their leases do not expire for some few months yet. The walls of the older houses are plentifully adorned with the "fire-marks" of fire insurance companies, many of them long since extinct. These badges are of embossed leaden plates, originally coloured and gilt, and will be carefully preserved by the London County Council, to form part of the collections towards a future municipal museum.

A new System of Paving.—The Bingham patent paving is a combination of stone and wood, the granite and wood blocks being laid close together and grouted together with pitch by the same method as ordinarily adopted. The wood is laid at the sides and ends of the granite setts, the blocks varying with one depth of the granite blocks. The wood which has been found most suitable is Tasmanian stringy brak (Eucalyptus obliqua), a well-known hardwood, having the especial advantage of toughness. By the use of wood in combination with stone the difficulty arising from the contraction and expansion of the wood is avoided altogether. The paving has been tested in Sheffield, and is stated to be non-slippery, very durable, and cheaper than wood, and, ultimately, far cheaper and less noisy than granite. The cost of maintenance is claimed to be less than that of any other. It is also cleaner than granite or hardwood. Further information can be obtained from Mr. R. Davidson, M.I.C.E., 37 Surrey Lane, Sheffield, or from Mr. E. T. Scammell, 37 St. Mary Axe, London, E.C.

The State of London Streets.—Before the London County Council rises for the Christmas vacation it will be asked to consider an important report on the condition of London streets. The report is the outcome of the two conferences of London local authorities held to consider this subject at the County Hall, Spring Gardens, the first having been held in June and the other in November last. Since the last conference a sub-committee of the London County Council General Purposes Committee has been considering how best to give effect to the several decisions arrived at. It is proposed to communicate the resolutions of the conference in regard to improved methods for cleaning streets and collecting refuse to the City Corporation and the new Borough Councils. All the other subjects which engaged the attention of the conference are recommended for reference to one or another of the Council's committees in order that by-laws may be framed to carry them out.

New Companies.

Gas and Mechanical Speciality Company, Ltd.

This company was registered on December 6th with a capital of £5,000 in £1 shares (500 deferred) to carry on the business of gas engineers, manufacturers of gas, electric, and other lighting appliances and other machinery, &c. The first directors are S. Worsley, T. G. Marsh, and R. W. Paterson.

Laundries Construction and Supply Co, Ltd.

This company was registered on December 6th with a capital of £6,000 in £1 shares (1,000 founders') to carry on the business of designers and builders of laundries, dyeworks, &c. The first directors (to be not less than three nor more than seven) are to be appointed by the subscribers. Registered office: Post Office Chambers, Middlesbrough.

Outwood Plastic Brick and Terra-Cotta Co, Ltd.

This company was registered on December 3rd with a capital of £10,000 in £1 shares to adopt an agreement with T. Statter, to acquire the business carried on by the said T. Statter at Outwood, Lancashire, and to carry on the business of brick, tile, and terra-cotta manufacturers, clay, sand, gravel, and shale merchants, &c. The first directors (to number not less than three nor more than five) are T. Statter (governing director) and Mrs. Louisa Statter.

United Newry Granite Company, Limited.

This company was registered on November 27th with a capital of £75,000 in £1 shares (50,000 preference) to acquire the businesses carried on at Manchester and at Newry as W. Chandley and Co. and the Newry Granite Company, and to carry on the business of granite and other stone and slate merchants, quarry owners, manufacturers of setts and kerbs and other forms of stone and slate, &c. The first directors (to number not more than seven nor less than three) are Thomas Wilson (chairman), Samuel Duncan, Michael J. McCartan, Herbert Watson and Wilson Chandley.

Elders, Walker and Company, Limited.

This company was registered on December 6th with a capital of £15,000 in £1 shares to adopt an agreement with A. Elders, M. Elders, C. Walker, J. Elders and T. Elders, for the acquisition of the business of paint, colour and varnish merchants carried on at Lime Street, Newcastle-on-Tyne, as Elders Bros., and an agreement with C. Walker and A. Elders for the acquisition of the business of paint, colour, varnish and glass merchants, glass silverers and painters' outfitters, carried on at High Street, Gateshead, and at Belle Vue Crescent, Tyne Dock, Durham, as "C. Walker and Co." The first directors (to number not less than three nor more than seven) are A. Elders, C. Walker, M. Elders and T. Elders.

Empire Plate-glass Insurance Company, Ltd.

This company was registered on November 29th with a capital of £5,000 in £1 shares to insure against loss arising from damage to plate-glass or otherwise, and, generally, to carry on any kind of insurance business, except insurance upon human life. Registered office: Coleridge Chambers, Corporation Street, Birmingham.

Excelsior Stone Company, Limited.

This company was registered on November 28th with a capital of £7,000 in £1 shares (250 founders') to adopt an agreement with G. F. Thomson and to carry on the business of artificial stone, tile, enamel and cement manufacturers and merchants, stone merchants, paving contractors, &c. The first directors (to number not less than three nor more than seven) are R. Affleck, H. C. Smith, and G. F. Thomson.

Farnworth and Widnes Brick and Tile Co., Ltd.

This company was registered on November 28th with a capital of £10,000 in £1 shares to adopt an agreement with J. G. Walton and T. Wood, and to carry on the business of brick and tile manufacturers and merchants, clay workers, potters, terra-cotta, stoneware and plastic material manufacturers and merchants, &c. The first directors (to number not less than three nor more than seven) are to be appointed by the subscribers.

T. B. Heal and Sons, Limited.

This company was registered on November 27th with a capital of £15,000 in £5 shares to acquire the business carried on by T. B. Heal, at Orkney Street, Battersea, and at Axminster, Devon, as T. B. Heal and Sons, and to carry on the business of timber and mahogany merchants, cabinet makers, wood turners, joiners, builders, carpenters, &c. The first directors (to number not less than two nor more than five) are T. B. Heal and H. J. Heal.

J. W. Greaves and Sons, Limited.

This company was registered on November 22nd with a capital of £250,000 in 10,000 preference shares of £10 each and 1,500 shares of £100 each to adopt and carry into effect an agreement made by this company with J. E, E. S., and R. M. Greaves for the acquisition of the business of slate merchants, &c., carried on under the style or firm of J. W. Greaves and Sons, at Portmadoc and Llechwedd Quarries, Blaenau Festiniog; and generally to carry on in all or any of their respective branches the businesses of slate and other quarry owners, slate merchants, dealers in stone, and other minerals of all kinds. The first directors (of whom there shall be not less than two nor more than five) are J. E, E. S., and R. M. Greaves.

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HIGHEST HONOURS EVERYWHERE.

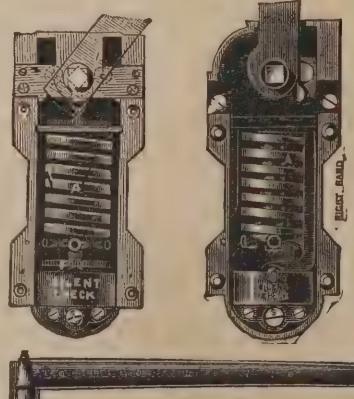
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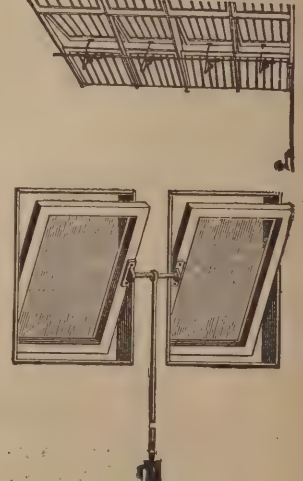
FAN OPENERS.

GEARING.

BOLTS.

CASEMENTS.

&c.



65 & 67 NEWINGTON CAUSEWAY, LONDON.

Morgan, Wakley, & Company, Limited.

This company was registered on November 26th with a capital of £75,000 in £10 shares (2,000 preference) to acquire upon the terms of an agreement made by this company with C. M. Morgan and W. J. Wakley as a going concern the business of coal merchants and factors, timber manufacturers, ironmasters, timber merchants, dealers in pitwood and general merchandise, builders and contractors, &c.; also as brick and tile makers, patent fuel manufacturers, &c. C. M. Morgan and W. J. Wakley are permanent governing directors. Registered offices: 53 Mount Stuart Square, Cardiff.

Marsden Tiles, Limited.

This company was registered on November 28th with a capital of £50,000 in £5 shares (5,000 preference) to acquire the business of the Marsden Tile Company, Limited (incorporated in 1899), and, generally, to carry on in all or any of their respective branches the businesses of manufacturers of and dealers in plaques, slabs, tiles, and similar articles for hearths, grates, walls, ceilings, floors, and other purposes, either decorated or undecorated; as pipe and earthenware manufacturers, china makers, clay workers, &c. The first directors (of whom there shall be not less than five nor more than seven) are J. Newton, C. Billington, G. A. Marsden, J. Mawdsley, C. Billington, jun., T. Robinson, and J. Emery.

TENDERS.

Information from accredited sources should be sent to "The Editor." Results of tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the Work.

BROMLEY, Kent.—For the execution of road works, Babbacombe and Lansdowne Roads, for the Urban District Council. Mr. S. Hawkings, surveyor:—

Babbacombe Road.

Geo. Wilson	£1,125	J. Mowlem & Co., Westminster*...	£1,026

Lansdowne Road.

Geo. Wilson	£2,220	J. Mowlem & Co., Westminster*...	£2,086

* Accepted.

CROYDON.—For the erection of a pumping-station at Waddon Fields, Beddington, for the Corporation of Croydon. Quantities supplied:—

Foster Bros.	£1,519	Stewart & Son*	£1,458

* Accepted.

DOVERCOURT.—For the erection of a villa, Marine Parade' for Mr. H. Gurney. Mr. J. W. Start, surveyor, Colchester:—

H. Linzell	£1,880 0 0	Newton	£1,660 0 0
F. Dupont	1,769 0 0	E. West	1,628 0 0
Smith & Beaumont	1,691 10 0	E. Saunders, Dovercourt* ...	1,590 8 0

* Provisionally accepted.

GT. THURLOW, Suffolk.—For two pairs of cottages at Dull Hill, for the Hon. W. F. D. Smith, M.P. Mr. Charles P. Ayres, architect, Watford, Herts:—

Smith & Son	£2,575	Mason & Son, Haverhill *...	£1,980
Dupont & Co.	2,049		
S. Wiles	1,935	* Accepted.	

HARROW, Middlesex.—For the construction of roads, sewers, flushing-tanks, manholes, gullies, &c., on the Northwick Park Estate. Mr. R. T. Wreathall, F.S.I., surveyor, 5 St. Martin's Place, Trafalgar Square, W.C.:—

G. Wimpey & Co. ...' ...	£3,267	E. W. Hollingsworth ...	£2,650
Neave & Son	3,244	Clift Ford	2,542
Dunmore	3,219	Saunders & Son*	2,480

* Accepted.

LEEDS.—Accepted for the extension of the electric lighting works, Whitehall Road, for the Corporation. Messrs. Milnes & France, architects, 99 Swan Arcade, Bradford:—

Masonry and Bricklaying.—Paul Rhodes, Leeds ...	£42,977 17
Joinery.—Moulson & Son, Bradford	4,000 0
Ironwork.—Phœnix Foundry Company, Derby ...	17,975 0
Slating.—Atkinson & Son, Leeds	880 0
Plumbing, &c.—Geo. Thompson, Leeds	3,359 0
Plastering.—Cordingley & Sons, Bradford	527 0
Concreting.—A. & S. Wheater, Calverley	3,296 0
Painting.—J. W. Walton, Bradford	478 16
	£72,948 13

LONDON.—For the erection of board-room and offices in Harrow Road, for the Paddington Guardians. Mr. F. J. Smith, architect, Parliament Mansions, Victoria Street, S.W. Quantities supplied:—

Foster Bros.	£24,492	B. E. Nightingale ...	£20,368
Leslie & Co.	23,416	G. Neal	20,369
Hill & Co.	21,900	F. J. Chinchen	20,247
Willcock & Co.	21,875	W. Wallis	19,997
J. Appleby	21,286	Bottrill & Sons	19,745
Martin, Wells & Co. ...	21,100	Stimpson & Co.	19,480
Barker & Co.	20,990	Smith & Co.	19,321
Johnson & Co.	20,960	F. G. Minter	18,790
A. Bush	20,451		

LONDON.—For the erection of disinfecting chamber at Mile End, E. Mr. J. M. Knight, architect, 35 Bancroft Street, Mile End Road, E. Quantities by the architect:—

Gibb & Co., ...	£1,389	Wood & Co.	£1,055
W. Gladding	1,165	Foster Bros.	1,033
Perry & Co.	1,097	Harris & Wardrop	1,031

MERTHYR TYDFIL.—For erection of large infants' school, Merthyr Tydfil, Glamorganshire, for Merthyr Tydfil School Board. Mr. J. Llewellin Smith, architect, Aberdare. Quantities by architect:—

J. Williams	£5,980 0 0	S. Hawkins	£5,667 5 0
W. Brown	5,837 5 1	J. Lloyd	5,480 0 0
J. Jones	5,780 0 0	J. Williams	5,000 0 0
Watkins & Co.	5,689 9 9		

MERTHYR TYDFIL.—For the erection of a large schoolBrecon Road, for the School Board. Mr. J. Llewellin Smith, architect, Aberdare. Quantities by the architect:—

A. J. Howell	£4,670 0 0	David Davies, Cardiff *	£4,425 0 0
Lloyd & Tape ...	4,629 11 0		
W. E. Willis	4,467 8 11	* Accepted.	

ROMFORD, Essex.—For new infants' schools at the Albert Road Schools, for the Romford School Board. Mr. James Kennedy, architect, 25 Bedford Row, W.C.:—

Gibb & Co.	£5,828	J. S. Kimberley	£5,139
F. Wilmott	5,799	A. W. Robins	5,100
Foster Bros.	5,666	Hammond & Son	4,997
E. West	5,575	P. Ranyard	4,850
A. Reed	5,362	Bell & Son	4,815
Martin, Wells & Co. ...	5,358	T. Bruty	4,553
Thomas & Edge	5,297	Coulson & Lofts	4,200
S. Parmenter	5,289		

SURBITON.—For St. Matthew's Church Schools, Surbiton. Mr. A. Mason, architect, 82 Victoria Road, Surbiton:—

Lee	£2,696	Wheatley & Sons	£2,240
J. W. Brooking	2,687	Lane & Sons	2,217
Kirk & Kirk	2,520	Gaze & Sons, Kingston*	2,169
F. Hawkey	2,460		
F. & H. F. Higgs	2,250	* Accepted.	

WATFORD.—For the erection of technical school, Queen's Road, for the Urban District Council. Mr. W. H. Syme, architect, 4 High Street, Watford:—

Banyard	£7,998	Tonge	£7,500
Reed & Saw	7,989	Waterman	7,484
Clark Bros.	7,895	Tyler	7,250
Brightman	7,668	Eames	7,198
Dupont	7,600	Wiggs, Watford*	6,923

* Accepted.

CURRENT PRICES.

FORAGE.

		£ s. d	£ s. d.
Hay, best	per load	4 0 0	4 7 6
Sainfoin mixture ..	do.	3 10 0	4 10 0
Clover, best	do.	4 5 0	5 0 0
Beans	per qr.	1 9 0	—
Straw	per load	1 8 0	1 18 0

OILS AND PAINTS.

Castor Oil, French ..	per cwt.	1 10 0	1 11 6
Colza Oil, English ..	do.	1 11 3	—
Copperas	per ton	2 0 0	—
Lard Oil	per cwt.	1 19 0	—
Lead, white, ground, carbonate	do.	1 4 10	—
Do. red	do.	1 0 4½	—
Linseed Oil, barrels ..	do.	1 1 0 7½	—
Petroleum, American ..	per gal.	0 0 5½	0 0 6
Do. Russian ..	do.	0 0 5⅝	0 0 5 13/16
Pitch	per barrel	0 8 6	—
Shellac, orange	per cwt.	2 19 0	—
Soda, crystals	per ton	3 2 6	3 5 0
Tallow, Home Melt ..	per cwt.	1 4 6	1 5 6
Tar, Stockholm	per barrel	1 8 6	—
Turpentine	per cwt.	1 9 0	—

METALS.

Copper, sheet, strong ..	per ton	86 0 0	—
Iron, Staffs., bar	do.	7 15 0	10 10 0
Do Galvanised Corrugated sheet ..	do.	12 0 0	12 10 0
Lead, pig, Spanish ..	do.	16 0 0	16 2 6
Do. do. English common brands	do.	16 10 0	—
Do. sheet, English, 3lb. per sq. ft. and upwards	do.	21 0 0	22 0 0
Do. pipe	do.	23 0 0	—
Nails, cut clasp, 3in. to 6in.	do.	12 0 0	13 0 0
Do. floor brads ..	do.	11 15 0	12 15 0
Steel, Staffs., Girders and Angles	do.	8 0 0	8 5 0
Do. Mild Bars	do.	8 5 0	8 15 0
Tin, Foreign	do.	117 15 0	118 5 0
Do. English ingots ..	do.	123 0 0	—
Zinc, sheets, Silesian ..	do.	22 10 0	—
Do. do. Vieille Montagne	do.	23 2 6	—
Do. Spelter	do.	18 12 6	—

TIMBER.

SOFT WOODS.

Fir, Dantzic and Memel ..	per load	3 0 0	4 0 0
Pine, Quebec Yellow ..	do.	4 7 6	6 0 0
Do. Pitch	do.	2 18 0	3 6 0
Laths, log, Dantzic ..	per fath.	4 10 0	5 10 0
Do. Petersburg ..	per bundle	0 0 9	0 0 10½
Deals, Archangel 2nd & 1st	per P. Std.	12 15 0	17 0 0
Do. do. 4th & 3rd	do.	—	0 11 5
Do. Riga	do.	6 15 0	8 10 0
Do. Petersburg 1st Yellow	do.	14 15 0	15 5 0
Do. do. 2nd „	do.	8 15 0	14 15 0
Do. do. Unsorted „	do.	5 5 0	13 0 0
Do. do. White	do.	9 10 0	11 5 0
Do. Swedish	do.	8 10 0	13 0 0
Do. White Sea ..	do.	12 15 0	16 15 0
Do. Quebec Pine, 1st ..	do.	19 5 0	—
Do. do. 2nd	do.	18 15 0	—
Do. do. 3rd &c.	do.	9 0 0	9 15 0
Do. Canadian Spruce, 1st	do.	10 10 0	11 15 0
Do. do. 3rd & 2nd	do.	8 15 0	9 0 0
Do. New Brunswick ..	do.	7 5 0	8 0 0
Battens, all kinds ..	do.	7 10 0	8 0 0
Flooring Boards, 1in. prepared, 1st ..	per square	0 11 0	—
Do. 2nd ..	do.	0 9 0	0 11 3
Do. 3rd &c. ..	do.	0 8 6	0 10 6

HARD WOODS

Ash, Quebec	per load	3 17 6	4 10 0
Birch, Quebec	do.	3 12 6	3 17 6
Box, Turkey	per ton	7 0 0	15 0 0
Cedar, 1in., Cuba ..	per ft. sup.	0 0 3	0 0 3½
Do. Honduras ..	do.	0 0 3 3/16	—
Do. Tobasco	do.	0 0 3¼	—
Elm, Quebec	per load	0 12 6	5 10 0
Mahogany, Average Price for Cargo, Honduras ..	per ft. sup.	0 0 4 8/16	—
Do. African ..	do.	0 0 3 13/16	—
Do. St. Domingo	do.	0 0 6 3/16	—
Do. Tobasco ..	do.	0 0 3½	—
Do. Cuba ..	do.	0 0 3½	—
Oak, Dantzic and Memel	per load	3 15 0	5 7 6
Do. Quebec	do.	4 12 6	5 0 0
Teak, Rangoon, planks ..	do.	8 5 0	13 10 0
Wainscot, Riga (Baulk)	do.	3 15 0	5 15 0
Do. Odessa Crown	do.	3 15 0	5 15 0
Walnut, American ..	per cub. ft.	0 3 1	—



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COMING EVENTS.

Wednesday, December 19.

EDINBURGH ARCHITECTURAL SOCIETY.—Mr. Andrew Muir on "The Architectural Survey."

GEOLOGICAL SOCIETY OF LONDON.—Meeting at 8 p.m.

Thursday, December 20.

SOCIETY OF ANTIQUARIES OF LONDON.—Meeting at 8 30 p.m.

INSTITUTION OF ELECTRICAL ENGINEERS.—Meeting at 8 p.m.

CHEMICAL SOCIETY.—Meeting at 8 p.m.

CARPENTERS' COMPANY TECHNICAL INSTITUTE.—Distribution of prizes by the Lord Mayor and Lady Mayoress at the Town Hall, Stratford, E., 7.30 p.m.

CRYSTAL PALACE SCHOOL OF ENGINEERING.—Award of certificates, 12 p.m.

Friday, December 21.

GLASGOW AND WEST OF SCOTLAND TECHNICAL COLLEGE ARCHITECTURAL CRAFTSMEN'S SOCIETY.—Lectures of "Conditions of Contract": Mr. Robert Aitkenhead on "Mason"; Mr. J. A. Ferguson on "Joiner"; and Mr. Isaac Low on "Plumber," 8 p.m.

ARCHITECTURAL ASSOCIATION OF IRELAND.—Technical Demonstration at the works of the Dublin Timber Company, Ltd., 1 to 4 Lower Erne Street, Dublin. Messrs. Hudman and Tickell on "Hardwoods and Hardwood Floors," 4.30 p.m.

INSTITUTION OF CIVIL ENGINEERS (Student's Meeting).—Mr. C. E. Inglis, B.A., on "The Use of Geometrical Methods in Investigating Mechanical Problems," 8 p.m.

Thursday, December 27.

ROYAL INSTITUTION.—Sir Robert Stawell Ball on "Great Chapters from the Book of Nature."—I., 3 p.m.

Friday, December 28.

LONDON INSTITUTION.—Professor W. B. Bottomley, M.A., F.L.S., on "Flowers: I.—Structure and Colour," 4 p.m.

Saturday, December 29.

ROYAL INSTITUTION.—Sir Robert Stawell Ball on "Great Chapters from the Book of Nature."—II., 3 p.m.

Monday, December 31.

LONDON INSTITUTION.—Professor W. B. Bottomley, M.A., F.L.S., on "Flowers: II.—Insect Visitors," 4 p.m.

Tuesday, January 1.

ROYAL INSTITUTION.—Sir Robert Stawell Ball on "Great Chahters from the Book of Nature."—III., 3 p.m.

Thursday, January 3.

ROYAL INSTITUTION.—Sir Robert Stawell Ball on "Great Chapters from the Book of Nature."—IV., 3 p.m.

LONDON INSTITUTION.—Professor W. B. Bottomley, M.A., F.L.S., on "Flowers: III.—Unbidden Guests," 4 p.m.

CIVIL AND MECHANICAL ENGINEERS' SOCIETY.—Mr. W. B. Esson, M.I.C.E., M.I.E.E., on "The Case of Electric Power Distribution," 8 p.m.

Friday, January 4.

ARCHITECTURAL ASSOCIATION.—Messrs. Beresford Pite and R. Weir Schultz on "Hints on the Preparation of Studentship Drawings," 7.30 p.m.

ARCHITECTURAL ASSOCIATION OF IRELAND.—Technical Demonstration at the works of Messrs. J. and C. McGloughlin, 47 Great Brunswick Street, Dublin. Mr. John McGloughlin on "Forging Iron," 4.30 p.m.

Saturday, January 5.

ROYAL INSTITUTION.—Sir Robert Stawell Ball on "Great Chapters from the Book of Nature."—V. 3 p.m.

SANITARY INSPECTORS' ASSOCIATION (Carpenters' Hall, E.C.).—Annual Address by the Chairman, 6 p.m.

CONTRACTS OPEN.

BOROUGH of RYDE.
ESPLANADE AND SEA WALL.

The Corporation are prepared to receive TENDER for the CONSTRUCTION of an ESPLANADE and SEA WALL.

Plans can be seen, and bills of quantities obtained, at the Office of the Borough Surveyor, Mr. CHARLES MATHEW, A.M.I.C.E., on payment of £3, which will be refunded on the receipt of a bonâ-fide Tender, with priced bills of quantities complete.

Tenders, endorsed "Esplanade," to be delivered at my office not later than NOON on FRIDAY, the 28th inst.

Neither the lowest nor any Tender will necessarily be accepted.

(Signed) CHAS. G. VINCENT,
Town Clerk.

Town Hall, Ryde, I.W.,
December 1900.

COUNTY BOROUGH OF PRESTON.

The Corporation invite TENDERS for the EXTENSION of the POLICE STATION BUILDINGS, Lancaster Road and Earl Street.

Plans and specification may be seen at the Borough Surveyor's Office, Town Hall, Preston, and bill of quantities and form of tender may be obtained at such office on payment of £2 2s., which sum will be returned on receipt of a bonâ-fide Tender.

Sealed Tenders, endorsed "Tenders for Police Station," to be sent to me not later than 12 o'clock at noon on MONDAY, the 17th day of JANUARY, 1901.

The Corporation do not bind themselves to accept the lowest or any Tender.

By order,
HENRY HAMER,
Town Clerk.

Town Hall, Preston,
December 1900.

RURAL DISTRICT COUNCIL of DARTFORD.
CRAYFORD SEWERAGE.

The above Council are prepared to receive TENDERS for the CONSTRUCTION and COMPLETION in the Parish of Crayford of about 12,150 yds. run of STONEWARE and IRON PIPE SEWERS, varying in internal diameter from 7 to 15 in., with all necessary Manholes, Lampholes, Flushing Tanks, Ventilators, and subsidiary work complete. Also for the ERECTION of a PUMPING STATION, with Pumps and about 747 yds. run of 9-in. Iron Rising Main and necessary Gas and Electric Engines. Also for Adams's Sewage Lifts and their buildings, and for all other specified works.

The drawings, specifications, and conditions may be seen on and after FRIDAY, 28th inst., at the Office of Mr. G. H. TAIT, M.Inst.C.E. Engineer to the Council, in Lowfield Street, Dartford, on any weekday between TEN and ONE and also from TWO to FIVE, except on SATURDAYS.

Copy of quantities and form of Tender will be supplied on a deposit being made of £5, which deposit will be returned on receipt of a bonâ-fide Tender.

Sealed Tenders to be delivered on or before MONDAY, JANUARY 28th, 1901, at FIVE p.m. addressed to the undersigned at the Sessions House, Dartford, Kent, and distinctly endorsed "Tender for Crayford Sewerage."

The Council do not bind themselves to accept the lowest or any Tender, but any contractor whose offer may be accepted will be required to provide such sureties for due completion of contract as the Council may deem necessary.

J. C. HAYWARD,
Clerk to the Council.

Sessions House,
Dartford, Kent.
December 1900.

COUNTY OF WILTS.
STANDING JOINT COMMITTEE.

Builders disposed to CONTRACT for the work of BUILDING a COUNTY POLICE STATION at Cricklade, in the County of Wilts, for the Standing Joint Committee, can see the revised plans and specification at the County Offices, Trowbridge, between the hours of HALF-PAST NINE a.m. and FIVE p.m.

Copies of the revised bill of quantities can be obtained from the County Surveyor, on written application, accompanied with a deposit of £1 1s. which will be returned on receipt of a bonâ-fide Tender.

Sealed Tenders endorsed "Tenders for County Police Station, Cricklade," may be sent to the County Surveyor on or before the 10th day of JANUARY, 1901, but no pledge is given to accept the lowest or any Tender.

Builders wishing to view the site can do so by application to the Police Inspector at Cricklade.

CHARLES S. ADYE,
County Surveyor.

County Surveyor's Department,
County Offices, Trowbridge,
December 1900.

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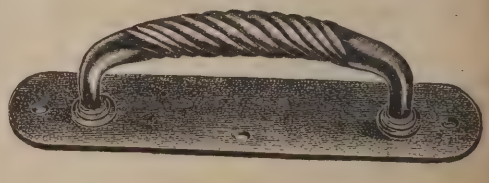
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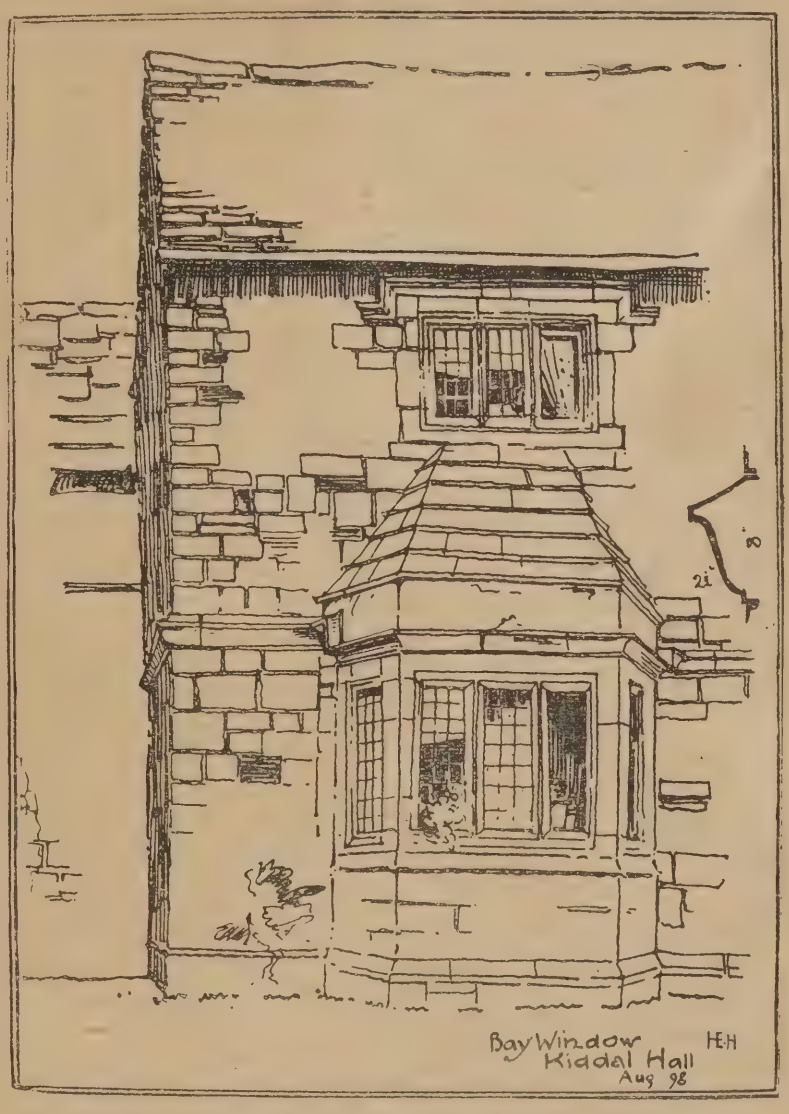
EFFINGHAM HOUSE, ARUNDEL STREET, STRAND, W.C.

An Architectural Causerie.

A Christmas Digression: with Apologies to Mr. Dunne.

"I SEE by th' papers," said Mr. Dooley, leaning on his chair, "that th' ar-rchitects across th' whater are havin' a high time with callin' each other lhiars an' decavers." "Architects?" asked Mr. Hennessy; "what's they?" "Ah!" said Mr. Dooley, "'tis a fine question y're puttin', Hinnissy. Yer see there's two kinds. Some ar-rchitects builds houses; others only drames an' dhraws pictures iv thim. Th' wan has so much to do in lookin' after his business, dictatin' letters, havin' dhrinks with chlients, an' sich like, that he don't find time to dhraw pictures. Now th' ither wan is not throubled with anny sich embarassmints, which ties down th' speerit iv genus, an' so he dhraws an' dhraws an' dhraws; an' as nowan wants to build his houses he's free again there. Pat O'Heary has read a book on th' subjict an' he knows all about ivirything. He says to me, 'Dooley,' he says. 'That's me,' I says. 'Well,' he says, 'th' commercial speerit iv th' age is th' rhuin iv ar-rchitecture.' 'But,' I says, 'there's O'Hagan's new saloon to conthradict it. 'Tis a fine Gothic wor-rk,' I says. An' so yer see Hinnissy, 'tis all well with ar-rchitecture so long as O'Hagan lives. But as I was sayin', they're havin' high jinks across th' whater. Th' ither week they hild a grand meetin' when wan ar-rchitect jumps up an' says: 'Mr. Prisidint, Chairman, Gintlemin,' he says, 'th' phublic is a vile thing in our sight, a thing devoid iv onny appreciation f'r thrue beauty.' 'Right,' says th' Prisidint. 'Thin, we'll iducate th' vermin,' he says. 'we'll tache 'em.' ''Tis all agreed?' asks th' Prisidint. 'I put it to this meetin' iv assembled ar-rchitects.' 'Right,' they says to a man, an' they passes a resolution callin' upon Parliamint to tache th' phublic ar-rchitecture or die. Thin another says: 'What is th' relation betwane th' ar-rts?' he says. 'None' says th' Prisidint. [A voice: 'Lhiar.'] 'Ohrder,' says th' mimber; ''Tis combination we're wantin'. Let th' sister ar-rts an' th' brother ar-rts an' all th' rist iv thim jhoin hands,' he says. 'Right,' says th' Prisidint, 'I put it to this meetin' iv assembled ar-rchitects; so they passed a resolushion callin' on ivirybody to jhoin hands. 'Th' hope iv ar-rchitecture,' says anither, 'what is it?' 'Dunno,' says th' Prisidint. 'Well, I'll tell ye,' he says, ''tis castin' all styles under our feet an' thramplin' on thim,' he says. [A voice: 'Thit's what y're doing now.'] 'My frind's a lhiar,' continues th' mimber. 'Let us sphurn all styles. O'Brien did it, an' are we greater than O'Brien, who built the candy-shop in 946th Street? I calls on ye in th' sachred name iv ar-rchitecture to do this much.' 'Right,' says one. 'Nivir,' says anither. 'By th' vintilator on th' top iv St. Paul's Cathedral,' he says, 'I'll not be pharty to sich bhlasphemy. Th' styles 've bin my bist frinds,' he says, 'an' I'll not disirt 'em,' he says. ''Tis copyism y're after,' says anither. Thin th' Prisidint rose in 'is chair, an' says that as they was all so much iv wan mind he would propose that Parliamint be called upon to see that iviryone got his share. 'Right,' says all, an' th' meetin' conchludes. Then away goes th' mimbers in cabs and 'busses to forgit all they said till th' next meetin'. Hinissy, 'tis a terrible difficult thing to make an ar-rchitect." "How's that, 'tis only drawing?" asked Mr. Hennessy. Mr. Dooley looked thoughtful for a few moments; then he replied: "Ye've hit it Hinnissy, ye've hit it. That's just what I siys to O'Heary. 'Th' thrubble,' he says, 'is in th' trainin' iv th' animiles. Do ye know,' he says, 'how they breaks in a young ar-rchitect frish f m th' stable?' 'I do not,' I says. 'Well,' he says, ''tis primal causes does it. Whin th' bhoy gits to be a rigular nuisance th' father considers what shall be his distiny. 'Th' bhoy,' he says, 'is a genus,' he says; 'see what a fine drawin' he made iv th' tool-house at th' back iv th' ghardin.' Thin he meets a friend who calls himsilf an ar-rchitect an' has a big brass plate at th' bottom iv some stairs. 'Me son,' says th' father, 'is a genus, an' if ye doubt it I'll show ye th' picture he dhrawed iv our tool-house, which looks bheautiful onny way up.' 'Right,' says the ar-rchitect, 'he is a genus, an' it only wants a premium iv three hindred pounds to make him a greater genus.' So th' father pays th' money an' th' bhoy begins to be an ar-rchitect. He goes to th' office with a b'g box iv strange tools an' a swilled head, an' if th' atmosphere isn't proper his head gits bigger an' bigger, which is generil. An' at this office he larns all sorts iv handy things, smokin' an' leanin' out iv windows an' sittin' in easy chairs an' sich like; perhaps in his spare momints he larns to dhraw lines an' circles, an' wince in a while he may make a picture iv a house, but this is sildom done now. Afhter a few years iv this he naturally becomes viry clivir an' can earhn nearly a pound iviry week. By an' bye his time is up, but th' architect says 'Me bhoy,' he says, 'you're a genus, an' I wuddn't f'r worrl's hamper ye by engaging ye to stop on' 'Right,' says the bhoy, 'I'll put a brass plate up f'r mesilf.' An' he does, but somehow or ither he can't git people to let him build houses f'r thim.' Thin he says that th' ar-rt iv ar-rchitecture has perished. But wan fine day he makes a picture iv a public-house at th' corner iv a street, with a lot iv gold letters, splindid big lamps as tall as yersilf, an' bheautiful carving over ivirthing an' ivirybody. Then all goes well afther that until ivintually he becomes a rheal ar-rchitect, builds hotels and things, dictates littirs, an' thin, as I hive said already, he hasn't time to dhraw houses hisself, so he keeps a tame man upstairs in th' back room to do this triflin' job f'r him: while all th' buddin' genuses romps about in th' rhoom below." "But what about this new street they're to make in London?' asked Hennessy. "Well," said Mr. Dooley, "I met a man only this mornin' who has bin readin' all about it. An' he says there's a fine to do over this street. Some wants to have shops an' bridges an' sich like all over th' place—Hinnissy, that's the speerit iv commercialism—but th' others won't have nothin' iv th' kind, but wants all quiet an' restrained, like O'Hagan's saloon. An' it was only whin th' chairman iv th' County Council threatened to shoot th' mimbers that they come to a decishion." "But what would ye do?" asked Hennessy. "Lave it to th' bricklayers," said Mr. Dooley. "'Tis th' spontaneous efforts iv th' bricklayers we're wantin'. There's O'Hagan's saloon to phrove it. An' if onny man calls me a lhiar——" "Half a minute," said Hennessy, "here's Mrs. Hogan with th' dinner, so let's lave it till afther th' Christmas puddin'." "Right," said Dooley, "but I must tell ye how O'Hagan's saloon was built."

R. R. P.



DRAWN BY HAROLD E. HENDERSON.

a stout piece of oak inside let into holes in the stonework and called a "stang."

There was always a large iron drop handle of varying design and ornamented with chisel-marks and foliation. Door knockers came into use at the end of the seventeenth century; before this time they were formed with a length of rope or a chain with a knob at the end. In one or two cases in Yorkshire the "thirling-pin," or rasping-pin, has been found. This consists of a length of twisted iron with a piece to slide on it to make a rasping sound. In earlier days the more important houses had a bell in a small cote over the door with a rope to pull it.

In some cases there was found in the door a squint grating, this being a small door about 6in. square protected with a close wrought-iron grille. This squint door was always opened upon the summons from the thirling-pin announcing the arrival of a comer, and if he was a welcome person the stang was drawn and he was admitted; if otherwise, he was told so. It was a very honest way, and it is a pity that it is not followed now, thus preventing the footman endangering his soul with the polite lie, "Not at home, sir."

A Short Description of the Buildings Illustrated.

Swinsty Hall, Fewston.—Up the valley of the Washburn, not far from Leeds and one mile from the village of Fewston (anciently Fuystone), stands the ancient Hall of Swinsty. Approached in the evening twilight over a wide stretch of moorland, with its dark gorse and stagnant pools of slimy green water, the home of the frog and the haunt of Will-o'-th' Wisp, or Jack-a-lantern, it has an appearance full of quaintness and mystery; indeed, this is fully carried out in its history, for its builder and his doings are both forgotten. This mystery is not only felt in the deepening gloom of evening, but is still experienced in the bright daytime. Tradition says that the Hall was built by a gentleman with not very conscientious scruples, who, visiting London during the time of the Plague, hoarded money by robbing the dead and pilfering the houses of the citizens who had died from the horrible disease; then returning to his native village he built a house at Swinsty. His former companions kept him at a respectful distance, either caused by their disgust at his manner of amassing wealth, or by fear of contagion from the foul disease. One very curious thing is the absence of a road to the house, nor is there any semblance of there ever having been one.

The projecting porch is beautiful in its severe simplicity, its rather steep gable with finials on the footstones, its rows of stone-mullioned windows and its elliptical-arched doorway making a fine composition. The door is of oak studded with iron spikes. Entering through this massive door up a few steps you enter the oak room, panelled with dark oak of the sixteenth century with a richly-carved frieze. The panes to the large mullioned window bear the initials H. R. G. 1627. A stone staircase leads to the upper chambers. One little thing worth noticing is the wrought-iron kettle-crane with finely-wrought scrolls and heart-shaped ends. There is also one of these cranes in the inn at Fewston of similar design, undoubtedly the work of the same smith. The large barn or granary, with thatched roof, where you can still hear the blows of the flail thrashing the corn, is adjacent to the Hall.



SWINSTY HALL, NEAR OTLEY (1537): GROUND PLAN.

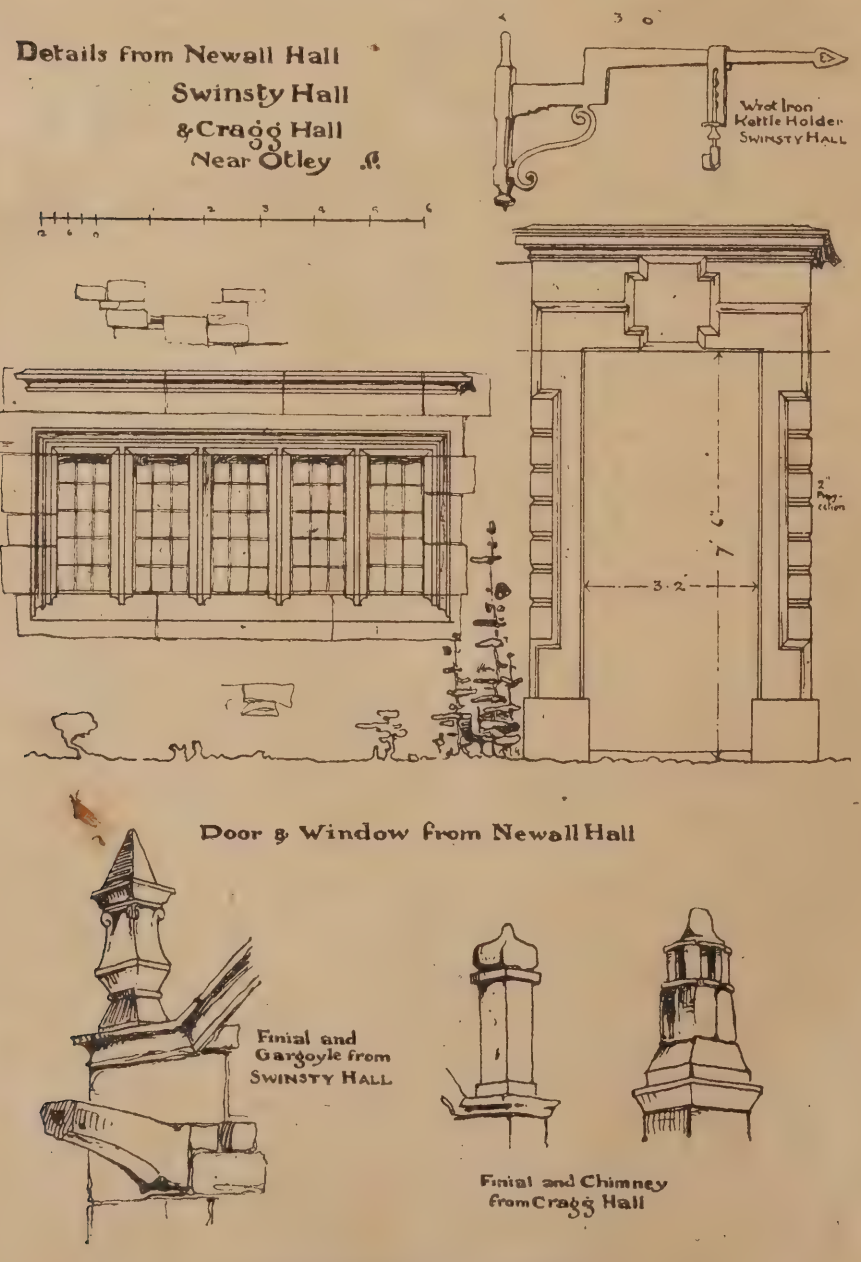
Cragg Hall.—Not far from Fewston is Cragg Hall, nestling in a clump of trees. Grainge says: "The large grey craggs which gave name to the Hall still peer out on the steep hill-side by the road leading to Fewston." It is of the same date as Swinsty Hall—in fact, it is in some points similar—for instance, in the window moulds and the chimneys.

Oakwell Hall, Birstall.—Set back and surrounded by a low wall enclosing the garden planted with holly trees and firs you cross by a paved path to the porch with a moulded stone seat and diamond-shaped piece of ornamental plasterwork; you pass through the iron-studded oak door into the spacious vestibule of delicately yellow-washed walls, and from there into the hall. This fine room is panelled on all sides with oak and goes up two storeys, with an ornamental plaster ceiling. At both ends of the hall are galleries with balustrades of curiously-turned oak balusters. The large window has thirty lights, and is filled with diamond panes with leads 1in. wide. In one corner of the hall is the staircase, which winds upward to the galleries above and is shut off by a small dog-gate—a feature very seldom seen now, its use being to prevent the dogs from climbing the stairs.

The schoolroom is also a fine room, being panelled up to the ceiling. The chimney-piece is of stone with oak overmantel. The mullioned windows, filled with small panes, are well placed and nicely proportioned. Oakwell Hall is the original of "Fieldhead" in Charlotte Brontë's "Shirley," and is much visited in consequence. The old moat is still to be seen filled with green-looking water, the home of the toad and the water-rat.

Kiddall Hall (Barwick in-Elmet).—Portions of this Hall date back to the fourteenth century, as evidenced in the tracery in some of the windows. It was anciently called Kidd Hall, and was the home of the Ellis family, who came into this neighbourhood in the twelfth century. The chief point of interest in this fine old manor-house is the beautiful bay window added in the fifteenth century. It looks as if it had been taken from its original position in the old chapel (now demolished) and planted in its present position. It is filled with diamond panes with painted glass shields, containing armorial bearings. An inscription as follows runs in a frieze below the battlement: "Orate pro ai-bus Thom Elys et Anna uxoris sue qui istei fenestra fecerunt Anno Dni MCCCC." There are crocketted pinnacles at the corners. Below the inscription is a trailing pattern of vine-leaves very conventionally treated.

On the east side of the house is a very fine bay window, long and low, with splayed mullions and roofed with stone in graduated splayed courses. Note may be made of the clever way in which the cornice of the bay is mitred with the string-course of the house, which is on a higher level than the bay cornice. The stable buildings are excellent—the laithe especially, its massive timber reaching up into the blackness of the roof.



DRAWN BY HAROLD E. HENDERSON

RECENT BUILDING IN MANCHESTER.

A FURTHER CRITICISM.

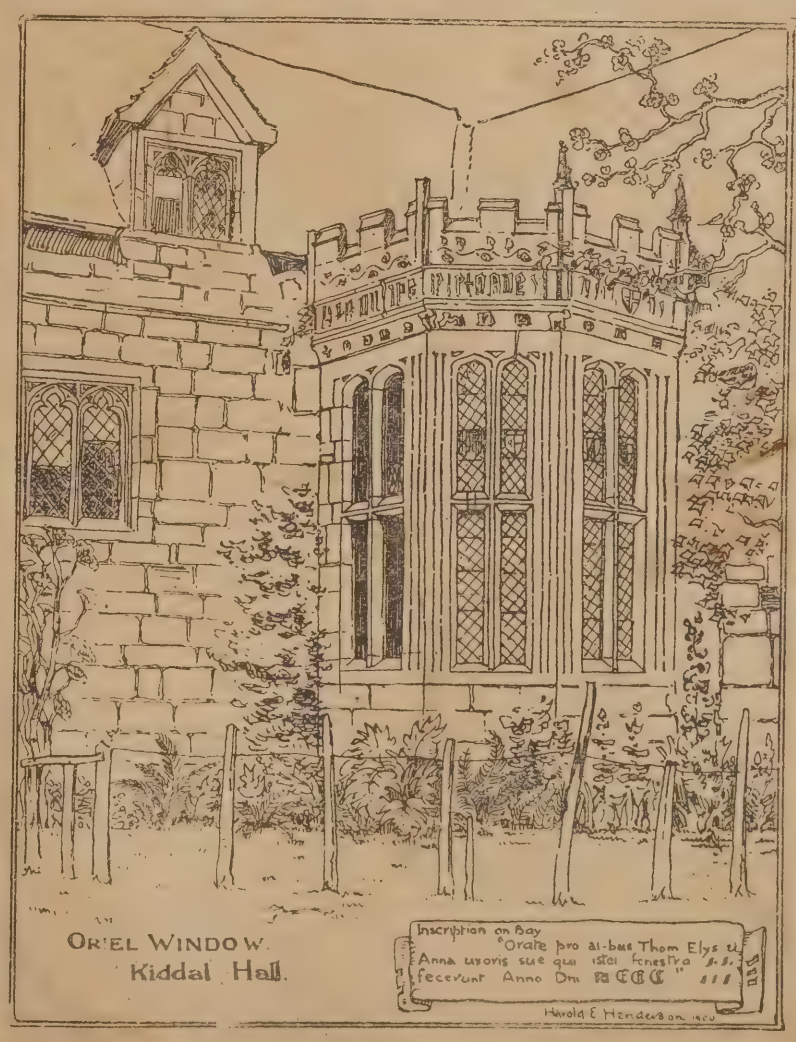
IN our issue for November 14th we reprinted from the "Manchester Guardian" a criticism of buildings recently erected in that city. The following further criticism has since appeared, which we take the liberty of using.

In Market Street the Merchants' Dining-rooms present a very good street front, much of it of fresh vigorous design and possessed of that kind of originality that comes of exceptional requirements worked out by an able hand. The shadow of the deeply-recessed arch is obtained without the effect of weakness; and the tie bar, necessary for strong construction, is satisfactorily masked. Instead of the aching void seen in most shop fronts, there is here good and artistic treatment. We should do better if we were more courageous in facing difficult problems. If an iron beam is necessary, why be ashamed of it? Why cover it up and pretend that it is something that it is not? Treat it as a friend, treat it well, and it will be found something to be proud of. Not seldom a very tolerable façade is injured or spoilt by some minor feature weakly treated. "True greatness is shown by care for little things." Even that effective and well-designed set of offices in Pall Mall is spoilt—in a degree—by the want of proper places for names, businesses, and so forth. This should always be arranged beforehand and form part of a design, as is the case, for instance, with the shops under the Royal Exchange. Or look at St. Mary's Hospital, now rising fast in Oxford Street; the name or title of the building occupies a properly conspicuous place. It forms part of the design. It gives in bold characters the needful information, and at the same time is a decoration. The monograms, too—of the Blois palace kind—are appropriate and effective. In the great warehouse hard by, the partners' names over the door—which are also raised letters in terra-cotta—are unhappily treated, being seated uneasily on uncomfortable curves. Yet in the cornice above (so high up that you may easily miss seeing it at all) the name of the firm is so treated as to leave nothing to desire.

In a general way this big building arrests attention as one of the most imposing piles in modern Manchester. It is no small merit to have the water-side front of corresponding dignity with those to the streets. The cornices, pillars and other features are bold and effective. It successfully suggests the idea that it is the place of business of a great and prosperous firm. But there are minor faults. For instance, the main central gable to Oxford Street, seen in passing from north or south, stands up alone as if more or less of a sham. The chimney at the south-west is quite unworthy of such a building. The iron railing as a cresting at the top is an excellent idea, but it is mean in design, and so is not a worthy or consistent finish. With all its merits—and they are not few—the great artistic fault of the building remains. This is a *stone* design modelled and carried out in burnt clay. This is an error for which there is no valid excuse. If a man has the imaginative faculty without which he cannot be an architect of the highest, or of a high, class, he should be able to invent the way of designing to suit the materials selected. Moreover, if our architects would devote more—and much more—time to travel and study, the gain to their reputations and to the architecture of our streets would be enormous. Sites and local conditions should be always studied. A man would not then fall into the mistakes made in the exterior of the Rylands Library, and at the west end of the Cathedral. In both cases it is as if ingenuity had been taxed to provide, regardless of expense, lurking places and abiding homes for as much dirt as possible. The main outline of the Library is effective enough, but that very intricate and minute detail is a mistake in such a city as ours. The site, too, is too small and confined for a building which represents £300,000. It was a happy boldness that set the building askew with the line of the street, and the play of the lines of the front, as seen in passing up or down Deansgate, is very good. The front railing and lamps are beautifully executed, but in looking at them closely the feeling is engendered that the details, if not the design, are from the hand of the metal worker's draughtsman rather than from that of the architect. It is inside chiefly that the poetry of architecture is realised. There is a charm possessed by very few modern buildings—a sort of superfluity of magnificence, a graceful homage paid to intellect and culture. "A room without books is as a body without a soul." Was there ever before such a beautiful body clothing such a soul? The warm soft colouring—the best sort of colouring too, that of nature—adds much to the effect of the beautiful forms. In such a palace of delight criticism seems out of harmony, yet one may wish that the designer had in some cases allowed himself a little more variety; for instance, the monotony of the pattern of the gallery fronts is a little tiring, if not irritating. Two or three patterns alternating in some way would have been a great relief.

At Old Trafford a great transformation has been going on during the last few years. Enormous piles of building have arisen, and are arising, in the neighbourhood of the Ship Canal. The engineer's work, which is chiefly inside, seems to be designed with great ability, beautifully executed and well fitted for what it has to do. As regards the outside architectural presentation it is impossible not to feel disappointment. It is a great opportunity. So far no one has risen to it. With little exception, there is no outward expression of the various purposes for which these buildings are erected; and the architecture—if by courtesy we call it so—is at the best poor and commonplace. It is not a question of more or less expense. Buildings for such purposes should be simple, and may properly be even severely plain. That, probably, is where the difficulty comes in. It needs a man of power to express





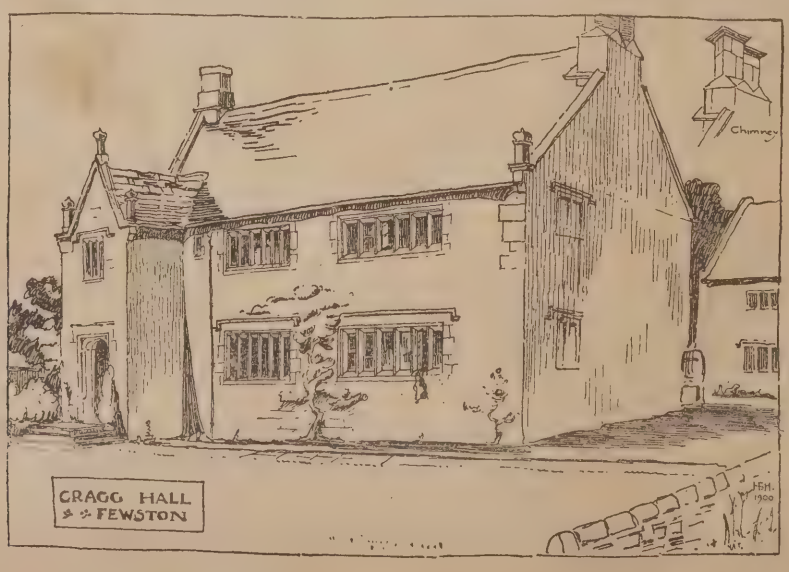
ORIEL WINDOW.
Kiddal Hall.



himself eloquently in simple dignified language. The great six- or seven-storey building of the Liverpool Warehousing Company does, more than most of its neighbours, express its purpose, and with more careful design in three particulars might have been a success. Had the example of St. Mary's Hospital been followed and a suitable panel or place been arranged for the name, "LIVERPOOL WAREHOUSING CO., LD.," with well-designed letters, this alone would have gone a long way to redeem the plainness and set off the whole. The second missed point is that the offices, or whatever they are, under the "salt pie" roof on the east side, are tacked on anyhow—not designed, as they should have been, to assist or make the effect of the whole pile. The third point missed is in the chimneys, which are, as usual, inferior, in two senses of the word. A little further to the west, and on the other side of the road, are the Lancashire Dynamo and Motor Company's works and offices, with a very red, an unrelieved red front, manifesting no idea of properly characteristic terra-cotta and brick treatment—a design that might with equal propriety, or impropriety, be carried out in almost any material. Even the chance afforded by the offices on the easterly side has not been utilised. They just butt up to the main building; they are not welded on to it. It is worse and worse when we come to the west side, which is of common brick, mean and poor in every way. The design and treatment have no relation to the front. Yet the conditions and requirements obviously lend themselves to a very effective building.

All over Manchester—and in every other modern-built town, for that matter—one's eye is offended at every turn by the meanness of a smart or costly front with uncomely sides and back. Yet often the sides of a house are more seen than the so-called front, and so the offence is magnified. The sight of such buildings offends the eye, as the paltry meanness which they suggest does the mind. If the cheaper and the more costly materials were mixed, and mixed well, and spread over so-called front and sides, the vulgarity would disappear. If the buildings in question were designed in perspective, the offence we denounce would be less often committed. The Mercantile Bank at Old Trafford—an unpretending one-storey building—has its bricks and stone well distributed. The detail, too, is good, and of the educated sort. But it wants incorporated in the design a better place for the name of the bank. The conditions and requirements of the Empress Brewery afford an opportunity for very picturesque and effective design without lessening the utilitarian qualities which should of course prevail. To put over the gateway an Imperial crown is a good idea, but it was surely bad judgment to make the crown (so to speak) only doll's size. The building in Market Street adjacent on its east side to the Merchants' Dining-rooms invites a word of notice. There is no vulgarity about it, but a sort of homely commonplace. This, again, is an illustration of the want of inventiveness in the use of terra-cotta. That material is an excellent servant; it should not be allowed, as it so often is, to be master.

The pavilion on the new Owens College athletic grounds has a picturesque south front. It can hardly have been designed in perspective, though, and it probably looked better on paper than in execution. Good design should go all round a building. That there should be a combination of red brick and "black and white" is good, but is it in this case quite a happy marriage? The eaves of a building in such a style as this should project well; here they are close-cropped, suggesting an effect similar to that produced by the absence of eyebrows. We have also a repetition of the fault of very red roofs upon very red walls. Purple or brown-red tiles would have made a great difference for the better. Walls and roof should never be of the same tone or the same colour. This sounds like an elementary rule. So it is; yet few keep it.



Blind School at Leatherhead.—The School for Indigent Blind is shortly to be transferred from London to Leatherhead. A site, bordering on the Highlands Road, originally forming part of the Vale Lodge Estate, has been purchased by the committee of the Corporation for the erection of a block of buildings to accommodate the 230 blind persons who are under the direct care of the Corporation. The site comprises 15 acres of land situated in the most healthy part of Leatherhead, and surrounded by some of the most picturesque scenery in the county. Although the plans have not yet been adopted, the land has been partly staked out by the architect, and building operations will commence at the beginning of the new year, and it is hoped will be completed by June, 1902. Provision will be made for an entrance lodge abutting on the main road, contiguous to which will probably be the principal's house, the main school buildings being in the centre of the site. Other buildings will comprise a chapel, sanatorium, gymnasium, baths, workshops and offices, and at the extreme boundary a 40ft. road will be formed.

RECENT LAW CASES AFFECTING PROFESSIONAL PRACTICE.*

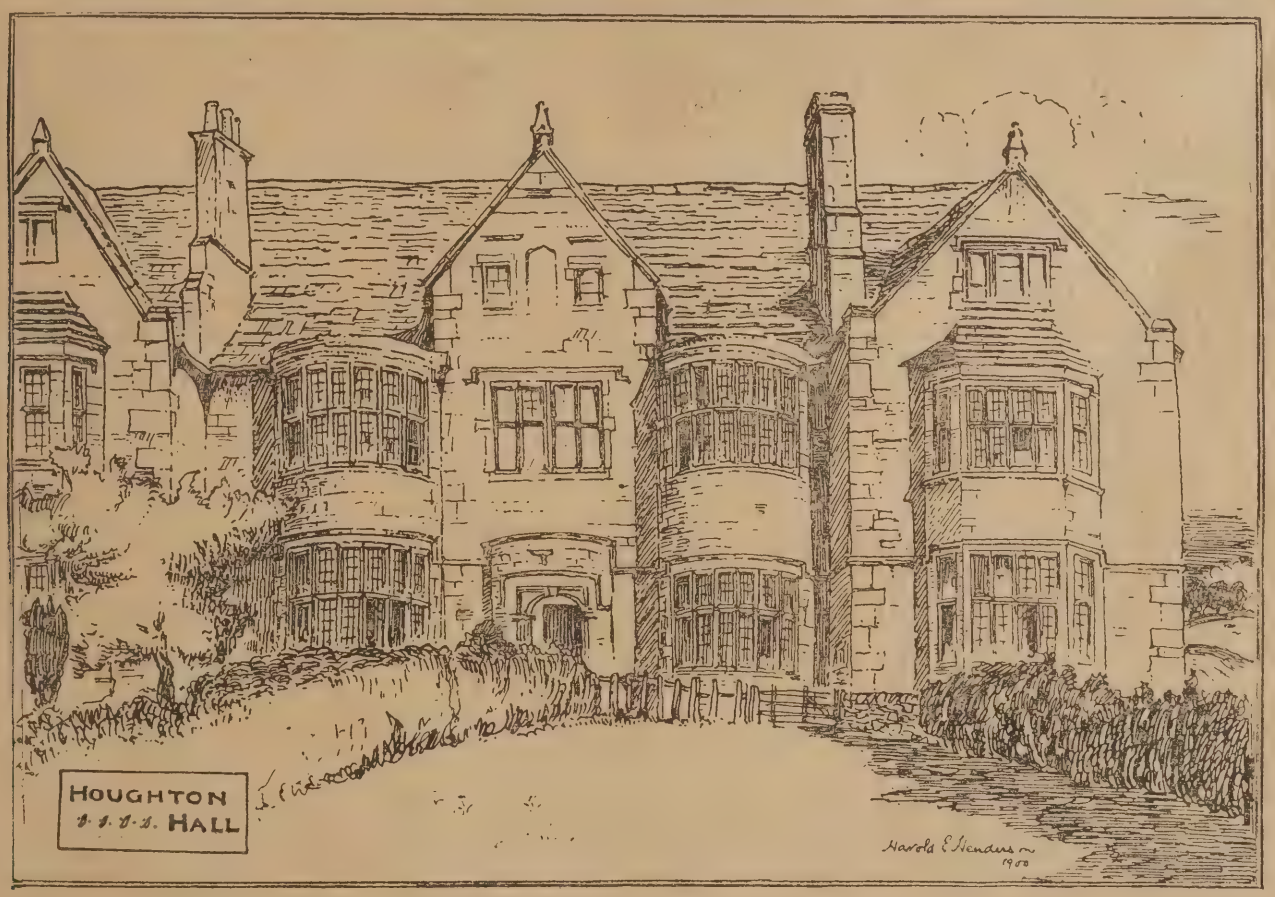
BY JAMES CROCKER, F.R.I.B.A.

THERE are two or three classes of cases affecting us as a profession; such as actions for the recovery of fees, actions for alleged negligence in the fulfilment of duties, actions arising out of the withholding of certificates, and for penalties; besides other litigation having a bearing on building operations, although not directly as between architect and client. I shall endeavour to place a few of these before you, giving only the leading facts and results, and classifying them as well as may be possible.

I take first the case of *Burrough Hill* v. *G. A. Barnard*, in which the plaintiff (an architect) claimed from the defendant (also an architect) the sum of £8 8s. 8d., balance of an account for attending court and giving evidence in support of the present defendant's claim for fees against his client, in which, after a three days' hearing, he had succeeded with costs. Plaintiff maintained his claim to £5 5s. a day in a County Court, stating that for expert evidence of this kind he was accustomed to receive £10 10s. a day; and the judge in giving judgment expressed surprise that the claim should have been resisted. In the case of *Hutton* v. *Chorley* (heard before Mr. Justice Channell and a jury) the plaintiff claimed £147 for preparing plans, specifications and quantities for altering and rebuilding an hotel to cost £1,800 or £2,000. The lowest tender came in at about £1,200 in excess of the sum alleged to have been limited, and the defence was that defendant did not care whether the place was rebuilt or altered, so that it did not cost more than £1,800 or £2,000. Judgment for £118 11s. 3d. *Phipps and Jackson* v. *Brownrigg* was a curious claim for £526 5s. prosecuted by the widow of the late C. J. Phipps and his partner, Mr. Arthur Blomfield Jackson, for plans and drawings of a proposed theatre in the Haymarket, and, in the alternative, damages by reason of the defendant's failure to get the plans approved by the London County Council. The chief argument of counsel for the defence was that the approval of the plans was inseparable from that of the area on which they were to be carried out, and that as the site had not been finally approved, it could not be said that the plans had been. His Lordship said the matter had been shipwrecked by the action of the Council in rescinding their approval of the site; but, as that prevented the approval of the plans coming before the Council, he reluctantly gave judgment for defendant without costs, expressing an opinion that some satisfaction should have been given. *Whipham* v. *Everitt*, before Mr. Justice Kennedy in the Queen's Bench, is worth recording because of its bearing upon the scale of the Royal Institute of British Architects. Plaintiff brought an action to recover £169 16s., being 3 per cent. on £5,660, the amount of a single tender for plans and specifications for the erection of a villa at Saltburn. The defence was twofold; (1) that there was a verbal agreement that if work was abandoned the charge would be only for time occupied; and (2) that the sum claimed was excessive and unreasonable. Judgment was given for £125 and costs, being at the rate of 2½ per cent. on £5,000; the ½ per cent. for obtaining a tender being disallowed.

After quoting *Williams* v. *Edeyrnion R.D.C.*, in which plaintiff was non-suited because of the disapproval of the plans by the Local Government Board, notwithstanding their approval by the R.D.C. (his direct employers), Mr. Crocker passed on to summarise as briefly as possible the facts connected with the recovery of fees in two or three quantity cases; taking that of *Mellor* v. *Britton* for £411 before Mr. Justice Bigham, and also that of *Arthur Crocker* v. *C. J. Head* for £24 15s. 6d. In the former case the employer had employed plaintiff to take out the quantities, but when the first instalment became due to the builder it could not be met, whereupon the builder took over an assignment of all the building owner's liabilities, present and to come, and sought to argue that the fee was to have come out of a particular fund which had never come into existence; therefore he was not liable. Judgment for the full amount. In the case of *Crocker and Head*, the plaintiff had, as usual, received his instructions from the architect, it was said with the full concurrence of the defendant, but the latter denied this. The work was suddenly abandoned when the estimates came in, and the defendant settled his architect's account, but refused to entertain that of the quantity surveyor. He had, however, to pay it in full. This is not an uncommon contingency in the course of practice, and appears to prove that if an architect's instructions are to obtain tenders, he may do what is reasonably necessary in order to get them. Speaking broadly and generally, it is seldom that a recalcitrant client can escape liability for work done by an architect when there is nothing of the nature of a speculative agreement between them. On the other hand, it is by no means certain that the 3 per cent. scale can be maintained for work abandoned after the tendering stage.

In the matter of "light and air," I will refer to two cases of a typical character, which may indicate how dangerous it is under certain conditions to take away even a small portion of that in which a man enjoys the same right as he does in his freehold. May I say, first, that "air" is generally erroneously mixed up with "light," and no action can be maintained for air unless it be so interfered with as to amount to something like positive contamination, rendering it injurious to health. After quoting at length the facts connected with *Seymour* v. *The Palace of Varieties Co., Ltd.*, at Plymouth, in which plaintiff was awarded £500, the case of *Brown and Others* v. *Collings* was dealt with. The *locus in quo* was in the High Street, Bromley, Kent. The width across from the window in question to the obstruction was about 60ft., and the windows themselves were between projecting wings. Old sheds of defendant's building gave light over an angle of 12deg. The new buildings were proposed to go up to about 32deg., still leaving 58deg. of sky surface, whilst the loss of light would be 20deg. An injunction was applied for and an interim injunction granted in November, 1896. The case came before Mr. Justice Romer in (I think) June, 1897, but he would not decide, and asked for both sides to agree to have a report from an architect. This was done, and Mr. Gruning sent a report, saying, in brief, that under 45deg. no obstruction was as a rule caused, but in this case, owing to a certain window being so much recessed by back buildings, he fixed the angle of obstruction



* Summary of a paper read before the Devon and Exeter Architectural Society on December 6th, 1900.

at 33deg., and as defendant did not go so high he considered that plaintiff had no case. The judge accepted this report, and the defendant completed his building; but on appeal heard in February, 1899, this was reversed, the judges holding that *no* light previously enjoyed could be taken away, but hinting that the plaintiffs should not be too hard upon the defendant in letting him go up to a reasonable height. The result was that the latter was compelled to pull down one storey, leaving the angle of obstruction about 23deg. or 24deg. only. Thus it appears that even in a width across of 60ft., with an existing sky surface of 78deg., when there is no *lateral* light, it may be possible for a dominant owner to maintain a right to *all* the light he has hitherto enjoyed. This is rather a startling possibility.

ARCHITECTURAL INSTRUCTION IN NEW YORK AND PARIS.*

IN respect to the methods by which our ends are reached, we find ourselves, as we learn the lessons of our own experience, departing more and more in matters of detail from Paris traditions. This is what was to be expected—and, indeed, hoped for. The Ecole des Beaux-Arts is, indeed, our *fons et origio*, but the conditions are too different, there and here, for close imitation to be safe. In Paris the *nouveau* is thrown into the deep waters of the *atelier* to flounder as he may, with a dozen *anciens*, of greater or less degree of maturity, to teach him his strokes and to see that he does not hopelessly go under. By hook or by crook he picks up a knowledge of what he needs to know, finding always somebody at hand who, in requital for such services as he can render, will answer all his questions as they arise. It is an admirable system, prompt and efficient, but it requires *anciens* to work it; and *anciens*—that is to say, skilful and experienced men—would not stay in school after they had become experienced, if they had not the *Grand Prix de Rome* to look forward to. But they would not even go to Rome, and there spend three or four of the best years of their lives in further academic study, if they had not the promise of Government patronage to look forward to on their return home. It is upon this Government patronage that the whole Paris system rests. The *camaraderie* and mutual help that make the system of *atelier* instruction so delightfully efficient would be of little value without it, for the *anciens* would not stay long enough to get really old.

The Paris schools possess the further advantage that the best architects in France find leisure to take an active part in them, supplementing and completing the works of the *anciens*. This advantage cannot be had in this country. In a school like our own, all the instruction has to be given by two or three men—two or three teachers to eighty or a hundred students. The work must needs be done in classes, not man by man, and we must make up for this disadvantage by improving and perfecting our methods. For the purposes of class instruction the work has to be analysed and systematised into a series of carefully-graded exercises. In this we have made good progress and have already achieved excellent results. The more elementary work is done quite as well as it is done in Paris, and more promptly and surely. Even the more advanced work seems to be quite up to the Paris standard for work of the same grade, and considerably more uniform in excellence, as would naturally happen from the greater uniformity of the teaching. All this leads us to hope that, if the time ever comes when we can keep our men as long as the *ateliers* keep theirs—or, which comes to the same thing, can begin our work with students already advanced—it may equal also the more advanced work of the Ecole. Meanwhile, the best thing our men can do, if they want to carry their schooling farther, is to go to Paris; and that they do in large numbers, making for themselves there an excellent name.

But it is in the internal administration of the school that there is the greatest departure from the Paris traditions. For the last hundred years, at least—that is to say, ever since Napoleon proclaimed the *carrière ouverte aux talents*—the system of competition for place has pervaded French institutions. The École des Beaux-Arts is an admirable and efficient organism of tests and examinations, mentions, medals, and all sorts of honours, calculated to stimulate its students to their utmost endeavour and to add the spur of emulation and personal distinction. For all this machinery the promise of Government support to the man who wins in the race furnishes the motive power. The whole is so complete in every part, so smooth and effective in its workings, and the result so sure, that one is disposed to think that like effects can be produced only by like causes, and that the best anyone could do would be to profit by so brilliant an example and follow it point by point. But in this country such a course is impossible. The mainspring of Government patronage is wanting; and, though one might fancy that, even so, the forces of rivalry and personal ambition would suffice to accomplish the same ends, it is doubtful whether even in Paris, where all the habits and traditions of society are in harmony with the system, the medals and mentions, even the *Prix de Rome* itself, would prove to have any lasting validity without it. It is not the piston or the driving-wheel that moves the train, not even the boiler behind them, but the coal hidden under the boiler. In this country, where the whole system of examinations and competitions and prizes is unfamiliar, uncongenial to our habits, and in general distasteful, there would seem to be little chance of making it effectual, even if what experience of it we have had did not discourage the expectation. And, in fact, the present tendency seems to be the other way. The prizes for scholarship established by a previous generation have not worked as was expected; and the establishment of new prizes for schoolwork is, in this locality at least, officially discouraged. The traditions and habits, as well as the underlying forces, that render this system so successful abroad seem to be lacking here. Even in a *jardin d'acclimatation* it is not the exotics but the native varieties, sprung from the soil, that best flourish and grow. Different people have different ways, and in this country the ultimate energies that make the world go round reside not in the Government but in private persons, and we rely upon personal interest to carry to an end what personal initiative has begun.

Moreover, the conditions which in Paris reduce to a minimum the disadvantages of the system are also lacking in this country, and are not likely to be supplied. Gossip and scandal, charges of partisanship and undue influence among the judges, and of intrigue and bad faith among the competitors are, indeed, not unknown even in Paris. But these things need not be taken too seriously, for they are inseparable from the system. But the more offensive and obnoxious elements of personal jealousy and hostility are there largely eliminated by the fact that the rivalry and emulation in the School of Fine Arts is not between persons so much as between different *ateliers*. This raises the whole tone. For private quarrel is substituted, as it were, a state of public war, with the dignity and responsibility and the freedom from personal feeling that common sacrifices in a common cause naturally involve. Between members of the same class in the same school there is no such protection from the baser passions.

Besides, after all, we must believe that even in France—in France, indeed, more than anywhere—the real motive power in all their splendid achievements is to be found, not in any external conditions or inducements whatever, neither in the hope of Government employment, nor in academic honours. The somewhat second-rate men who throng the Government schools, in the hope of escaping military service, may very likely need these pricks and goads to keep them up to their work. But with the best of the Frenchmen, as with the large and brilliant company of American students who join their ranks, the motive forces, as we must believe, are to be found within. It is the importance and interest of the subject and their own enthusiasm for it that animate the men at the top of the school and crown its work. So in England. The English may be a nation of shopkeepers, as Sam Adams called them, and the extraordinary prevalence of money prizes for every species of scholastic endeavour may seem to give evidence of a most mercenary spirit; but this is a mere national habit, a curious tradition; and one must believe that English culture and scholarship would be the same if all the exhibitions and foundations were abolished, the English people being what they are. It is not these that achieve the result, but intellectual character and elevation of mind.

For our own part, at any rate, these are the lofty foundations on which we prefer to build; and so far we have found little occasion for serious misgivings and little inducement to change our policy.

* Extract from a paper by Professor W. R. Ware on the School of Architecture in Columbia University, U.S.A.

EDINBURGH'S HOUSING SCHEMES.

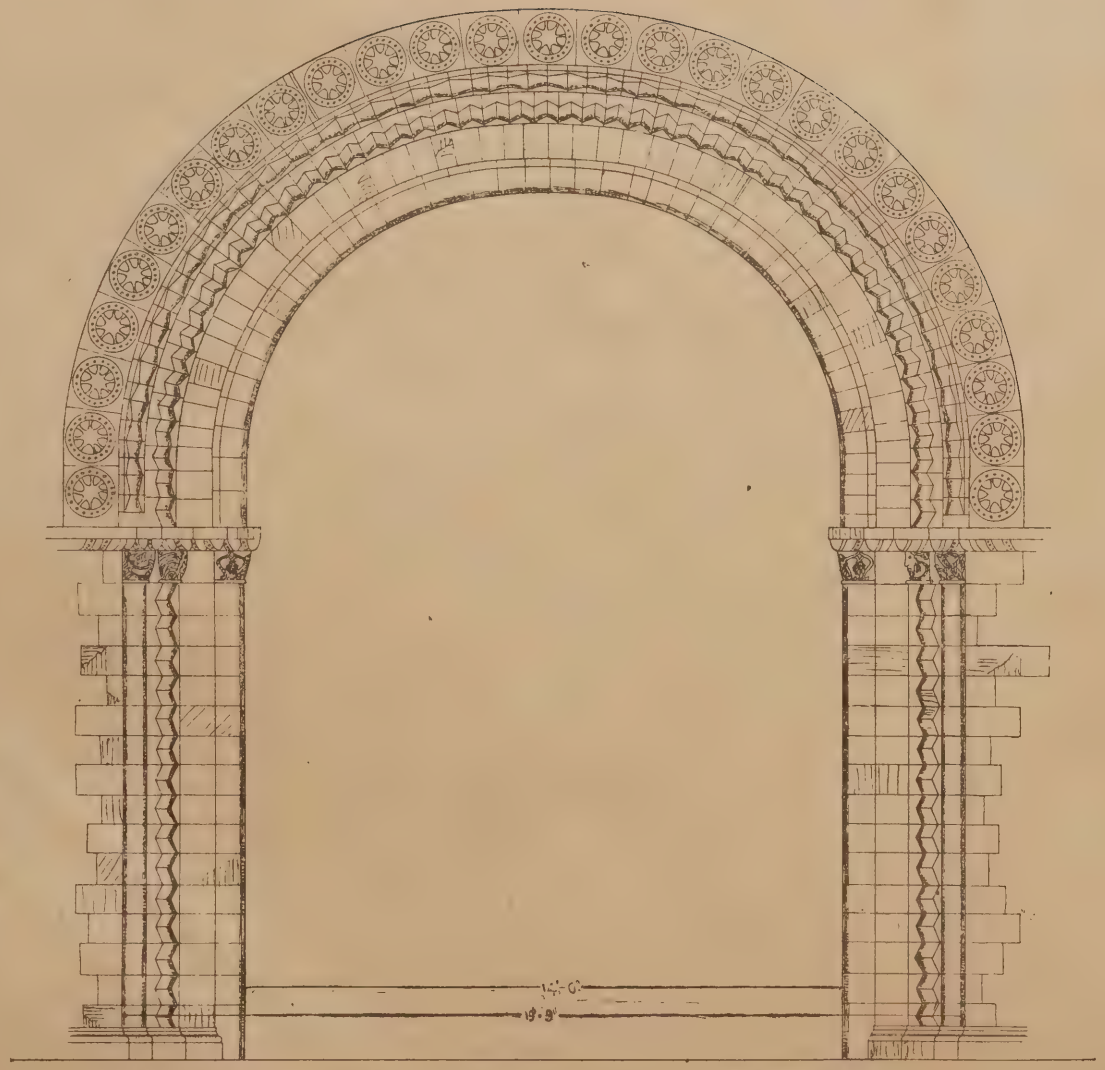
THE Lord Provost, in his recent opening address to the Edinburgh Town Council, indicated by his remarks that he considered the housing of the working classes would be one of the subjects required to be faced during his term of office. Not for many years has there been in the civic chair a Lord Provost who is better equipped for carrying through such an undertaking, for his Lordship's practical experience as a builder all his life has been so varied and so extensive that he should be able to ensure success. The first housing scheme at Edinburgh was carried out in High-School Yards, where two tenements were erected, four storeys in height towards the High School Yards, and five storeys towards the Cowgate. In these two tenements there are fifty-six separate houses and eight shops. The shops are only partly occupied, this locality not being suitable for shops. The cost was £10,545, excluding ground at £1 a yard. The second scheme was that at Tynecastle, where two blocks containing sixty-four separate houses of varying dimensions were erected. The total outlay was £9,886, including ground at 5s a yard. The third scheme was in "ground area D," at the back of the Police Chambers in the Cowgate. The cost was £17,000 for 105 houses, including caretaker's house. The building of eighty-one houses is at present going on in Allan Street, the estimated cost being £8 400. At the foot of the West Port active operations are proceeding for the erection of 61 single-roomed houses. The estimated cost is £6,100. Another scheme is in hand which contemplates the erection of two three-storey blocks in Potterrow, consisting of 37 houses, and estimated at £4,740.

The clearances effected under Sir James Russell's scheme have cost £99,296, including the expenses of obtaining powers. The localities where these operations have been carried out are Campbell's Close, Jackson's Close, Old Assembly Close, Baxter's Close, Potterrow, Riddle's Court, and Candlemaker Row. In some cases private individuals or a company have effected the clearances, so that the Corporation was spared from paying the total cost of the improvements. Besides Sir James Russell's scheme, which was promulgated during his Lord Provostship in 1893 and was the first scheme of its kind, there was another arranged in 1898, which included Stockbridge and Angus Street and Saunders Street and Pipe Street areas, Portobello. This year a third scheme included Greenside and Paul Street. The original clearance scheme embraced an area of 6½ acres. The rents of all the Corporation houses range from 2s. 7d. to 4s. 3d. for single and double-roomed houses, including taxes. It is said that there is a great demand by tenants for these houses. With regard to the financial aspect of the housing scheme, it is held that the cost of the houses will not come on the rates. It has been arranged to pay off the cost in thirty years.

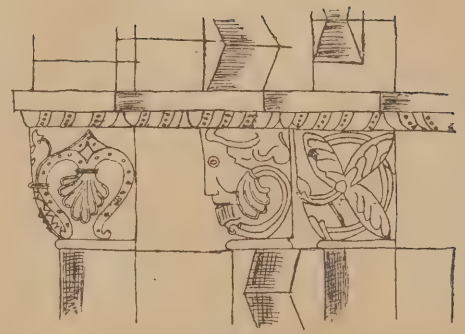
At Christ Church, High Wycombe, a new memorial east window has been unveiled.

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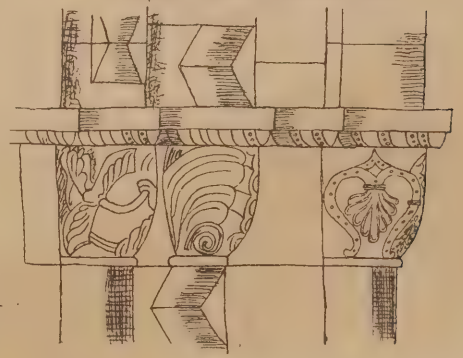
Supplement to
THE BUILDER'S JOURNAL AND ARCHITECTURAL RECORD,
Wednesday, December 26th, 1900.



Arch between Presbytery and Lady Chapel.



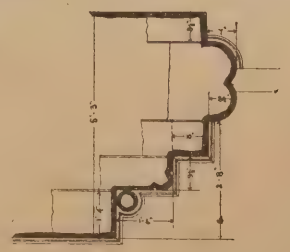
Impost South Side of Arch.



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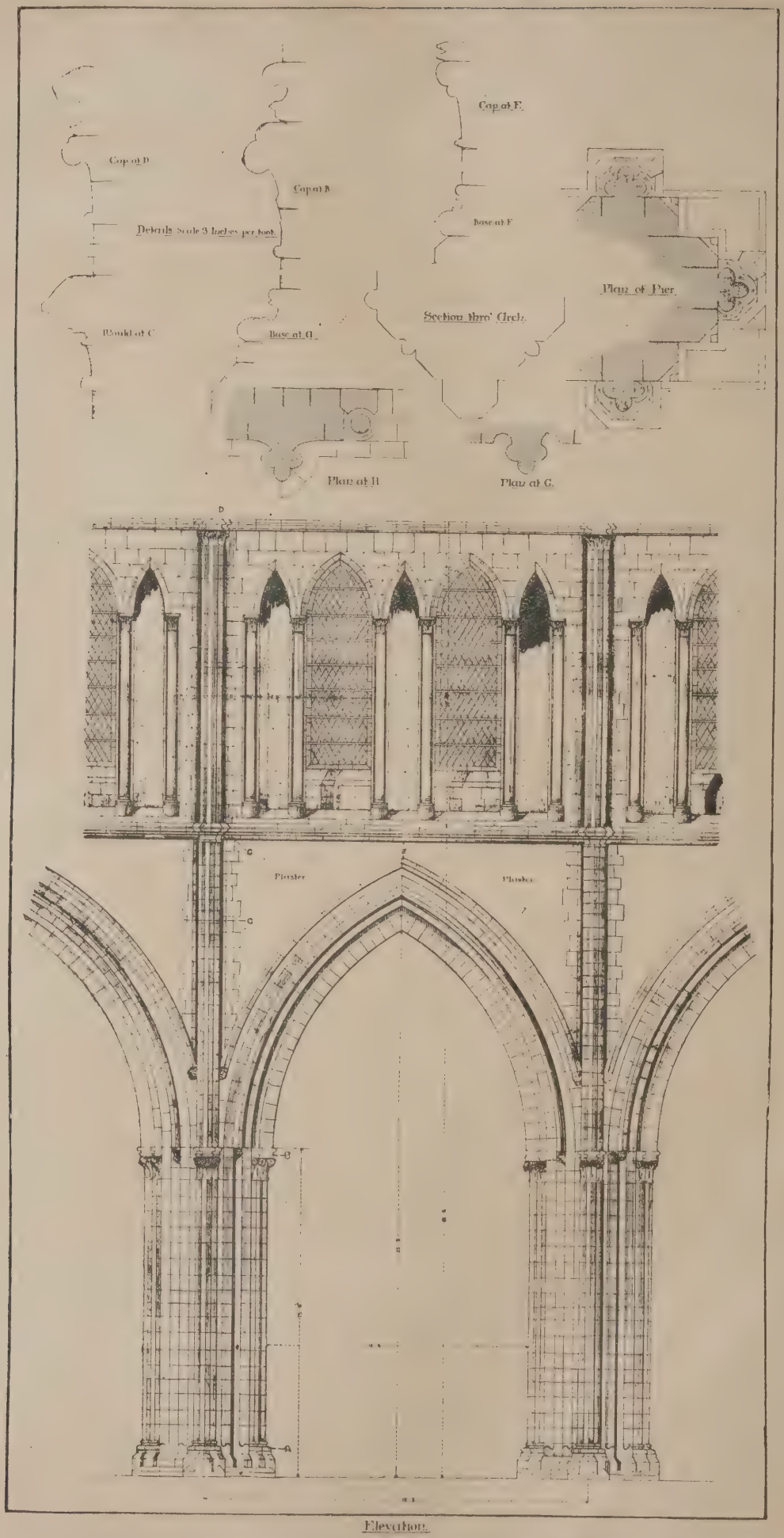
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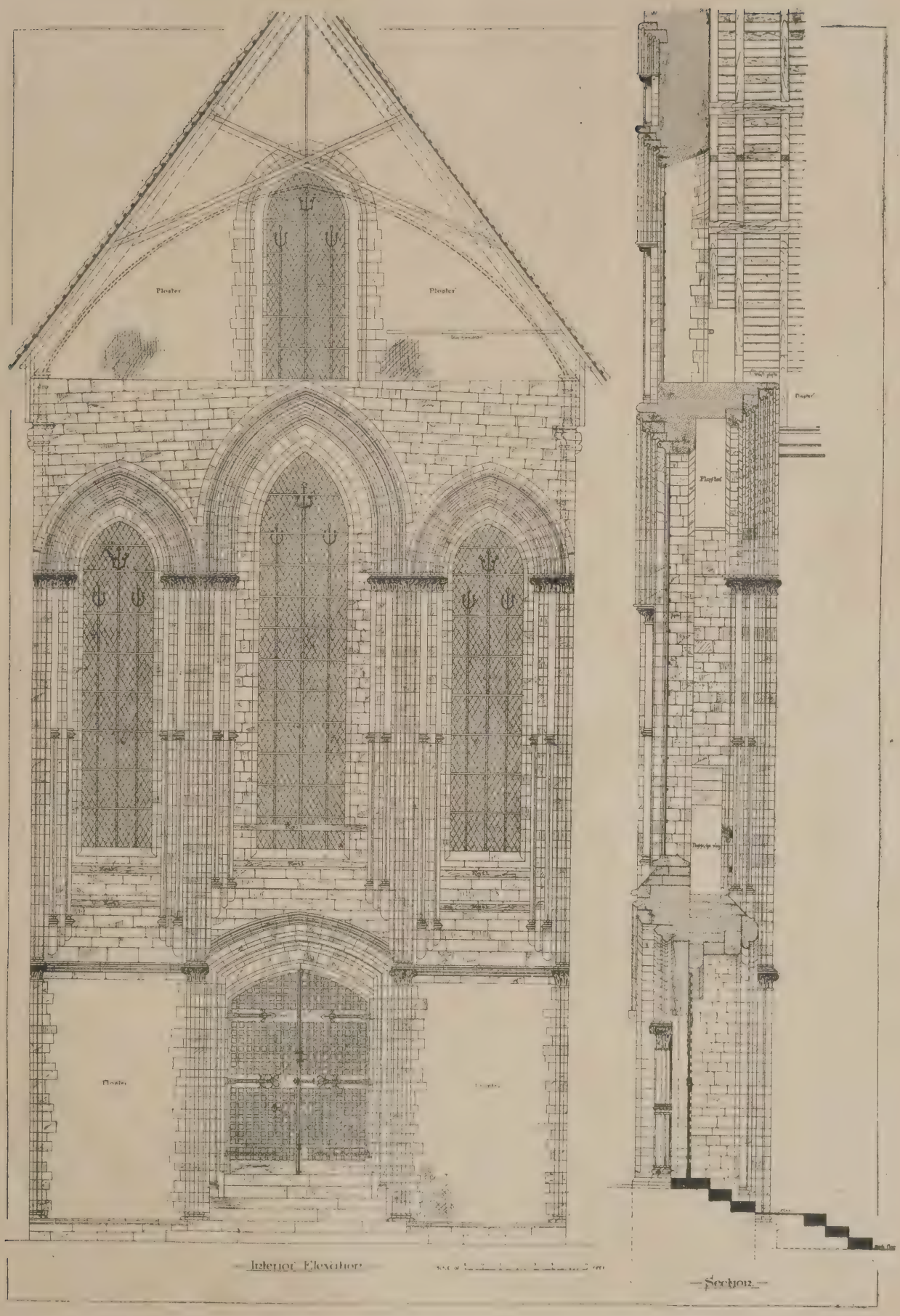
LLANDAFF CATHEDRAL (Norman, 1118). Measured and Drawn by R. REGINALD MORTON.

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Elevation.

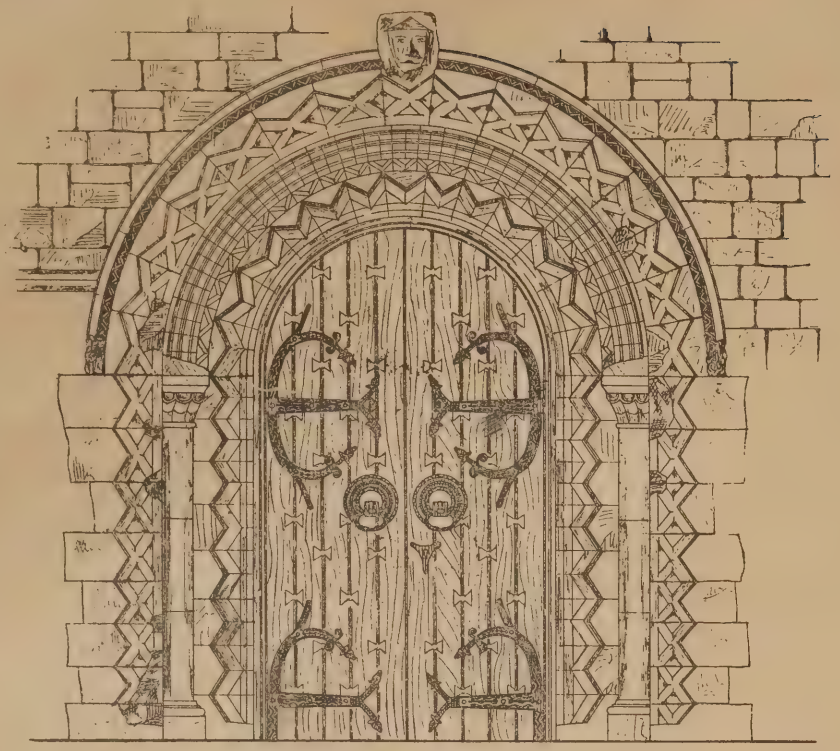
ILANDAFF CATHEDRAL: ONE BAY OF NAVE (Early English, 1220). Measured and Drawn by ROBERT MORTON.



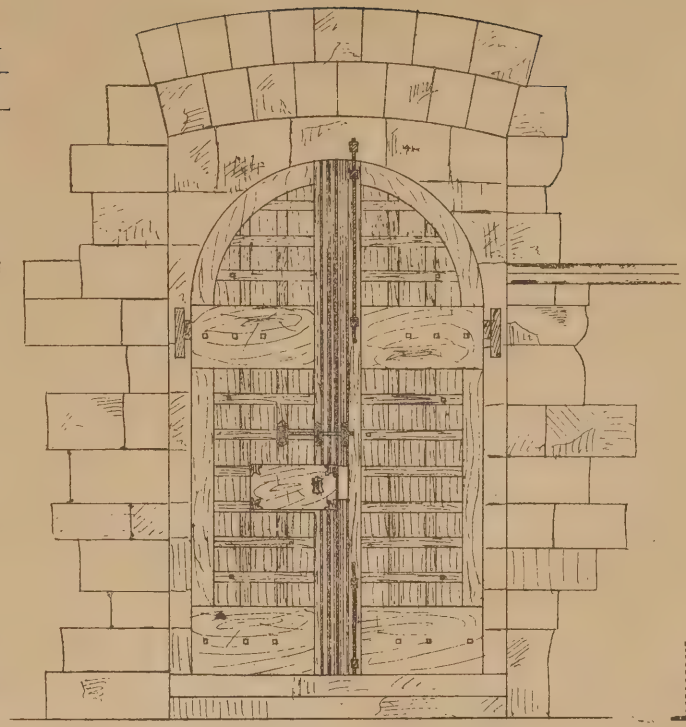
LLANDAFF CATHEDRAL: WEST END, INTERIOR (Early English, 1220). Measured and Drawn by ROBERT MORTON.

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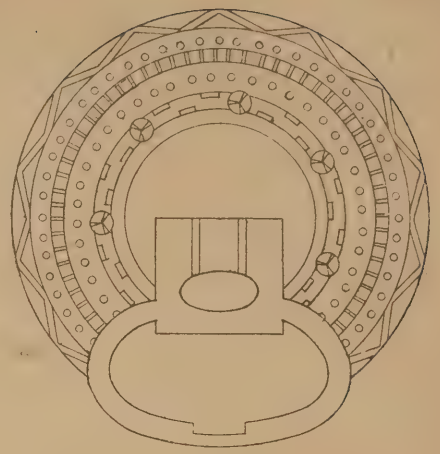
Supplement to
THE BUILDERS' JOURNAL AND ARCHITECTURAL RECORD,
Wednesday, December 26th, 1900.



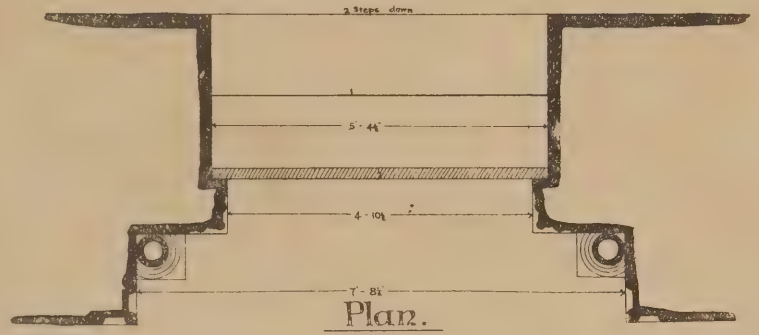
Exterior Elevation.



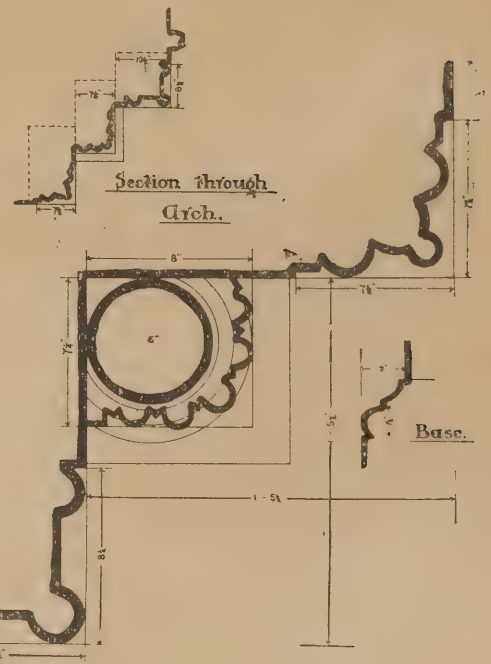
Interior Elevation.



Handle of Door.
Scale Half Full Size.



Plan.



Plan of Jamb.

LLANDAFF CATHEDRAL: NORTH DOOR (Norman. 1160). Measured and Drawn by R. REGINALD MORTON.

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Correspondence.

Use of Centrolinead for Perspectives.

To the Editor of THE BUILDERS' JOURNAL.

SIDMOUTH.

SIR,—The reply published on page 281 of your issue for November 7th with regard to the the centrolinead is not, in my opinion, satisfactory. In the first place the point of sight is *not* on the side of the long vanishing point, which is obvious from your own diagram; secondly, there is not the least necessity for decimals; and, thirdly, the assumption that 8in. on either side of the horizontal line for the pins will suit any perspective is absurd. I am indebted to you for the information that Peter Nicholson invented the centrolinead, but should very much like to know how *he* set it—he surely did not make a thing he could not use; Mr. Bryan's formula reminds one of Batty Langley's description of how projections, &c., were determined in the various Classic orders. My experience may be limited, but it goes to show that not one man in fifty can *really* set a centrolinead: he can worry till he gets an approximate result in three minutes or three hours, but what he wants to know is, how he can set the centrolinead right first time with his set square or other handy instrument; and I should very much like to see if any of your correspondents can tell him.

Yours truly,
R. W. SAMPSON.

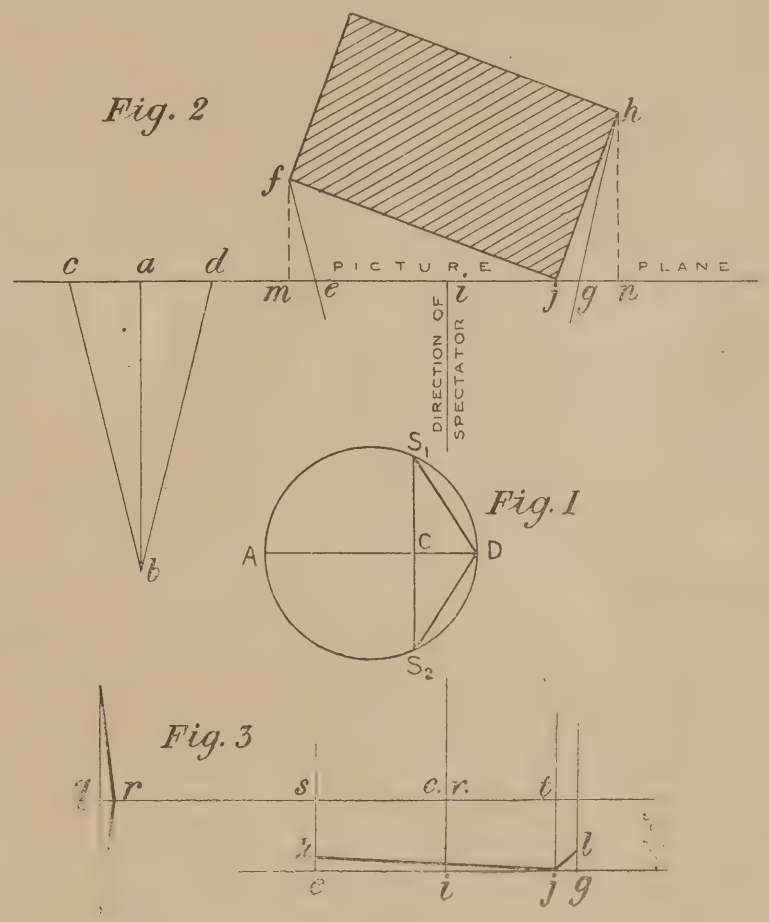
To the Editor of THE BUILDERS' JOURNAL.

SIR,—In reply to the above letter, which you kindly forwarded me, I may say that I did not test the description given, before quoting, as upon the surface there appeared no reason to doubt it. I have however now done so, and hope the result will be useful to your readers. Mr. Bryan's formula is based upon the well-known geometrical problem shown in Fig. 1, where A is the vanishing point, and A C : C S :: C S : C D, whence $C D = \frac{(CS)^2}{AC}$. There is an omission of a few words in his description. The complete sentence should read:—Lay the short arms of the centrolinead *exactly* along the short lines, D S′, D S″ (see issue for November 7th), and the long arm along the line A B. There is also an assumption that the distance of the vanishing-point from the point of sight (or more correctly the centre of vision) is known, otherwise the description appears to be correct. He does not say the point of sight is on the side of the long vanishing point, or any such nonsense.

I have Peter Nicholson's original work, entitled "A Treatise on Practical Perspective without the Use of Vanishing Points, being an Application of the Centrolinead to Perspective, &c.," 1815 (Barfield 10s. 6d.), which I shall be happy to lend your correspondent, but I do not quote from it as I have tested his methods and found them approximate only. My own method, as resulting from the investigation, is as follows. Let Fig 2 represent plan of building and position of picture plane. In any convenient position at side of plan set off $a\,b$ perpendicular to $c\,d$, let $c\,a = a\,d$, and $a\,b$ be as much longer than $c\,d$ as the distance of spectator is required to exceed the width of picture, say 2 to 1; then $a\,b = 2\,c\,d$. Join $c\,b$, $d\,b$, and draw lines $e\,f$ and $g\,h$ parallel to $b\,c$ and $b\,d$, respectively. Bisect $e\,g$ in point i and draw a perpendicular representing direction of spectator, whose distance from picture plane will be twice $e\,g$. Upon the perspective sheet, Fig. 3, draw a horizontal line representing the base of the picture plane, and 5 ft above it a line representing the horizon or height of the spectator's eye, with a vertical cutting the horizon at the centre of vision C.V. Transfer the distances $e\,i\,j\,g$ from plan to Fig. 3 and draw verticals. The heights $e\,k$ and $g\,l$ are found as follows:—Let $f\,m$ and $h\,n$ in Fig 2 be the perpendicular distances from picture plane, then $e\,k = 5 \times \frac{f\,m}{2\,(e\,g)+(f\,m)}$ and $g\,l = 5 \times \frac{h\,n}{2\,(e\,g)+(h\,n)}$. Join points $j\,k$ and $j\,l$, giving the perspective view of base of main walls. Set up $o\,p$ in any convenient position for the centrolinead pins, equidistant above and below horizon line, and intersecting it in q. The distance may be about 6 in. above and below horizon, but must be called so many feet, using the same scale as the remainder of the drawing. Then as $e\,k : j\,e :: k\,s$ to the distance of the vanishing point on that side from s. Call this distance x, then $x = \frac{j\,e \times k\,s}{e\,k}$. The same principle applied to the other side will give the points for vanishing in the other direction. Then $x - q\,s$ will be equivalent to A C of Fig. 1; therefore $(x - q\,s) : q\,o :: q\,o : q\,r$, or $\frac{(q\,o)^2}{x - q\,s} = q\,r$. Join $r\,p$ and $r\,o$, then the short arms of centrolinead must coincide with $r\,p$, $r\,o$, and the long arm with $r\,s$.

Anyone with a knowledge of architects' perspective can now complete the drawing without difficulty. The centrolinead may be used for obtaining the visual rays from windows, &c., in plan, by adopting the principle detailed above, or they may be marked off with a trammel. In the absence of a centrolinead a piece of Bristol board or stout drawing-paper may be cut out of the solid to give the direction of the three arms, and used against two drawing-pins.—Yours truly,

HENRY ADAMS.



A Question of Light.

To the Editor of THE BUILDERS' JOURNAL.

SIR,—I have read with interest the enquiry and answer on page 374 of your issue for December 12th with reference to "A Question of Light," and I should like with your permission to make some comments on both the question and the answer.

In the first place, I would advise your querist "J. S. B." to consult a good conveyancing lawyer on the subject, placing him necessarily in possession of all the facts of the case, and also placing the titles of the property in the lawyer's hands for perusal. These titles ought to show at once whether the church has any right of light over the "private lane." This right of light can only *in Scotland* be acquired by a "written grant"; ordinarily, the case of a building on a feu, such as (apparently) this church is, this "written grant" would be contained in the original feu-charter or feu-disposition. But the written grant might also be obtained subsequently, and this appears to be the case here, as the arrangement with B appears to have been effected some time subsequent to the building of the church. One can hardly suppose that such an arrangement could have been made and carried out without a "writing" on the subject; if this "writing" bears that B, upon consideration of the payment of £5 5s. per annum, guarantees not to build upon the private lane, then the church trustees are acting adversely to their own interests in trying to break the agreement because of outside circumstances—namely the erection of the school building—with which they have nothing whatever to do. On the other hand, if there is no written grant of light to the church, either at first hand under the original title or under a writing relative to the annual payment—the payment being made only upon a mutual understanding—then B can build upon his lane at any time, and more especially since the trustees have broken their agreement. The erection of the school building is no protection *unless* the school has acquired a written grant of light over B's lane—not over a part of it merely, but over the whole of it.

The difference between Scottish and English law in regard to right of light is an essential one. We have no "ancient lights" in Scotland, a matter for which I, for one, am duly thankful. As I have indicated in the earlier part of this letter, a right of light over another owner's property can only be acquired under a written grant in Scotland, and not merely by the lapse of time; therefore the reply of "G. H. B.", so far as its last sentence is concerned, where he states the law as regards ancient lights as it holds in England, is misleading and erroneous as regards Scotland. The principle underlying the Scottish law on the subject is this:—The owner of the "*solum*" of a piece of ground can do what he likes with it, including building on the whole area of it, *unless* there be some written obligation in his titles to prevent him doing so. Therefore, unless he is expressly obliged by his titles, or comes unde

an agreement to provide light over his ground to his next neighbour, his neighbour cannot claim that right of light. Of course it may happen that where two owners derive from a common author the right may be created in the titles of the owner whose property claims the right. This, of course, needs no explanation.—Yours faithfully,

JAMES KENNEDY HUNTER.

Gas Geysers.

To the Editor of THE BUILDERS' JOURNAL.

LONDON, N.W.

SIR,—Our attention has been drawn to newspaper reports of an inquest held at Hammersmith on December 14th on the body of a boy who died from carbon-oxide poisoning after bathing in a room supplied with hot water by a gas geyser. The reports do not state the one important point, namely, that the geyser was *not* supplied with a ventilating pipe. It is stated that the apartment measured 256 cub. ft., and that the doctor said that the space should not have been less than 700 cub. ft. In the public interest it is of immense importance that the matter should be clearly understood. Of course if a room has sufficient cubical contents the poisonous fumes from the gas would have proportionately less effect, though, with all respect to the doctor, we do not think in a room even of 700 cub. ft. dimensions it would be very safe to use such a quantity of gas without a ventilating pipe; but the fact is that the majority of bathrooms are, and must always be, of small dimensions. It is therefore absolutely necessary to insist that no geyser shall be fixed in a bathroom without a separate pipe to convey the fumes outside the apartment. It is not sufficient to insist that the bathroom must be ventilated, because all ordinary ventilators can be easily closed, and any careless bather feeling a draught would take upon himself to close them while bathing.

We may add that the question is not one of the difference between a luminous flame and a bunsen burner. If there is any difference in the mischievous power of one flame over the other, it is so little that it does not affect the question. Every gas flame, as is well known, throws off injurious products. The very usefulness of a geyser depends on the fact that it consumes a large quantity of gas in a very short time; consequently there must be a large escape of poisonous fumes. We are quite sure that there is no other way of using these now indispensable machines safely except by fixing a separate fume-pipe to *every* geyser.

Yours truly,

EWART & SON.

"Render unto Cæsar."

To the Editor of THE BUILDERS' JOURNAL.

LONDON, N.

SIR,—Will you allow me space to add a few words to this interesting discussion. "J. B." in his reply to "I. Y.'s" letter says that he champions the architects who *do not* draw, not the architects who *cannot*. Surely, sir, those who cannot may under certain circumstances claim our sympathy, but those who can, but will not draw, merit our contempt. "J. B." further says that success has robbed the architects he champions of their leisure and has forced them to become "brain-workers alone." The inference is obvious: drawing with them is the brainless occupation of idle hours. It reminds me of the story of the old lady who thought she would make her son an artist because he was weak in the head. Drawing is but the simple "writing down" of an impression, and there is little difficulty in tracing or writing down what the mind sees clearly. Yet "J. B." would have it that this power of perception, this manner of seeing things which stamps the individuality of the artist, is a thing to be bartered like a garment. There are many of us who would willingly pay the price! It seems strange that this power of thought transference should be claimed among artists by architects alone. Does a painter or a sculptor pose as the author of work he does not execute? No, "J. B.," your architects are, I am afraid, the quacks of art, hard-headed resolute hypocrites often enough, against whom I dare to draw a shaft, be they ever so successful.—Yours truly,

M. C.

Architectural Appointments in Egypt.

To the Editor of THE BUILDERS' JOURNAL.

KIRKCALDY.

SIR,—In his published annual report Sir W. Garstin says that young architects are required by the Public Works Department of Egypt, but that no suitable applicants come forward. Would you kindly tell me what are the prospects of the appointment, and why there are no applications? Kindly also state where to apply for information?

Perhaps by putting this in your correspondence column you might get the opinion of someone who has been through the mill. I noticed a correspondent wrote in your issue for May 16th last, under the *nom de plume* of "Caught," on the disadvantages of the Admiralty Works Department, the Royal Engineer Department, the English Office of Works, and the Irish Board of Works. Would this Egyptian appointment be similarly unsatisfactory, and might this not be the reason why no applicants come forward?

Yours truly,

REI.

Duddington Church, Northamptonshire.

To the Editor of THE BUILDERS' JOURNAL.

NEW BARNET.

SIR,—Can any of your readers explain why in the south porch of this church there should be a two-light window on the east side and a single one on the west side, there being nothing peculiar in the surroundings to call for this difference? The two-light window is all of one stone, comprising the four sides and the dividing mullion. The two arches of the window are round.—Yours truly,

ARTHUR J. WATERFIELD.

Builders' Notes.

Scarborough Master Builders' Association held its annual dinner at the Albermarle Hotel recently, Mr. A. W. Sinclair (president) occupying the chair.

London County Council.—At last week's meeting of the Council Mr. Cornwall, in moving the adoption of the Site Values (London) Rating Bill, recommended by the Parliamentary and Local Government and Taxation Committees, said that the estimated site value of London was £16 000,000. The Bill proposed to levy a rate of 2s. in the pound upon persons enjoying incomes from site values. After discussion the recommendation was agreed to. The Public Health Committee recommended: (1) That the Local Government Board should be informed that, in the opinion of the Council, no useful object would be served by exempting lunatic asylums in London from the Council's proposed by-laws as to drainage; and (2) that it should be pointed out to the Board that the drains of those buildings would, even if exempted from the by-laws, still remain subject to the control of the sanitary authorities, under the Metropolis Management Act of 1855 This was agreed to. Considerable discussion arose upon a recommendation of the Housing Committee that £12,500 should be expended on purchasing 1¼ acres in Wedmore Street, Holloway Road, Islington, upon which it was proposed to erect workmen's dwellings, but eventually the report was adopted. The appointment of Dr. A. B. W. Kennedy as electrical engineer for the reconstruction for electrical traction of certain tramways was confirmed. It was also resolved to appoint a second electrical engineer at a salary of £1,000 a year. The plans of the new Gaiety Theatre (Ernest Runtz, architect) to be erected at the junction of the Strand with the west spur of the proposed new road from Holborn to the Strand, to accommodate 1,259 persons, were adopted. The Asylums Committee recommended an expenditure of £89,000 in establishing a working colony for epileptics on the Horton estate. The Council adjourned until Jan. 22nd.

Quarry Notes.

The Northern Quarries Company have acquired some property known as Mossdale, near Silverdale, Lancashire, formerly in the possession of the curate of Silverdale.

Messrs. John McAdam and Sons, quarry-owners, Aberdeen, have purchased the estate of Camming's Park, which is situated about two miles from the city, and in close proximity to one of the firm's quarries. There is plenty of granite on the estate, and one large quarry hole where Messrs. Fordyce and Co., the old-established firm of builders, carried on quarrying operations for a number of years.

Messrs. A. and F. Manuelle have decided to re-open the upper quarry at the Dancing Cairns, which has been closed for many years, and preparations are now in progress for the erection of the necessary plant. The quarry is to be equipped with the most advanced appliances for carrying on the work expeditiously. The quarry is one of the old workings in Aberdeenshire which have produced a considerable quantity of excellent granite, and it is expected that when the quarry is in full working order, stones of fine, uniform colour, suitable for monumental building and paving purposes, will be obtained. Mr. Archibald Murray has been appointed to the management.

An Irish Monument.—A monument has recently been erected to the memory of the late Mr. John Doherty, Falls Road, Belfast, over his grave in Milltown Cemetery. The monument was designed by Mr. Thomas Magee and the work was carried out by Mr. M'Auley (O'Neil & Co.), Divis Street, Belfast. It consists of a Roman cross, cap, pedestal and sub-base of Aberdeen black granite, all these parts being polished, front and back, and standing on a bottom base of Newry granite fine-axed. The grave is enclosed by a bevelled plinth, also of Newry granite fine-axed, and having the bevelled surface polished. The monument stands 10ft. high, the cross 4ft. 10in., resting on a pedestal and base 5ft. 2in.

Italian Marble in 1899.—Reports just issued by the Italian Government show that a great increase in the production of Italian marble took place last year. The total production in 1899 of the quarries in the Carrara district was 279,112 tons, as against 245,213 tons produced last year. There is no corresponding increase, however, in the number of wokmen employed, the output of each quarryman rising from 38 92 tons in 1898 to 44 31 tons in 1899, and, what is still more extraordinary, the cost of production was reduced from 16·76 lire per ton to 14 73 lire per ton. The number of quarries open during the two years are thus classified:—

	1898.	1899.
Active	471	528
Inactive	793	736

The total quantity of marble exported was 235,680 tons, against 205,168 in 1898. The following are the countries importing quantities of 10,000 tons and over in the years 1898 and 1899:—

	1898. Tons.	1899. Tons.
France	24,087	27,691
Great Britain	40,089	37,757
Germany	15,280	21 259
Belgium	6,672	10 935
United States	39,859	41,522

The United States once more heads the list, and Great Britain has fallen to a second place. The trade of Germany is very largely increasing, as is also that of Belgium. The home trade in Italy appears to have been prosperous, as it is responsible for the consumption of 48,783 tons of marble, as against 41,909 in 1898. Another feature in the returns is the large increase in the amount of manufactured work exported last year; 22,912 tons is thus described, as against 16,741 tons in 1898. The three classes of marble exported in the two years is thus tabulated:—

	1898. Tons.	1899. Tons.
Blocks	93,126	88,422
Sawn	61,392	65,553
Worked	16,741	22,912

It will be seen from this table how largely the increase of manufactured goods is responsible for the total increase.

Enquiries Answered.

The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional, or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Legal Position of the Architect.

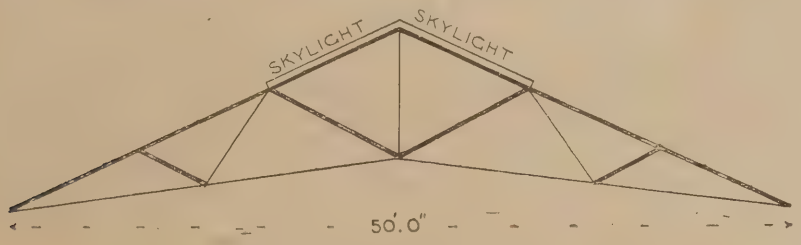
NORTHAMPTON.—ANXIOUS writes: "In an article on 'The Legal Position of the Architect' (see THE BUILDERS' JOURNAL for November 14th last) Mr. Macassey refers to a book published by him. Where is this obtainable, and what is the cost?"

"The Law relating to Civil Engineers, Architects, and Contractors," by Luke Livingston Macassey and James Andrew Strahan (2nd edition, 1897), is published by Stevens & Sons, Ltd., 119 and 120 Chancery Lane, W.C., price 10s. nett. G. H. B.

Roof for Hall.

EDINBURGH.—SCOT writes: "Which is the simplest and least expensive method of roofing a hall 70ft. long and 50ft. wide, lighted entirely from the roof?"

The construction of roof will depend very much upon the amount of light required, and this cannot be determined without knowing the purpose for which it will be used; also, whether a curved roof would be admissible, as this is generally cheaper, though decidedly more difficult to harmonise with surroundings.



ROOF FOR HALL.

Probably the best arrangement would be a steel truss with skylight, as shown in the accompanying sketch. This form of truss lends itself readily to the formation of hipped ends.

HENRY ADAMS.

Powers of Sanitary Authorities.

W. E. writes: "Some time ago the sanitary authorities ordered the closing of a dwelling-house. There is dampness in one wall of the house due to the proximity of a defective sewer, the property it is believed of several owners. The owner of the house has no share in or control over the sewer. The local authorities say that the sewer is private property. They also refuse to take any steps to compel the owner or owners to abate the nuisance caused by it. They have been formally asked to do so, but evade the real question by stating that the house was closed because it was a nuisance, and that when closed the nuisance ceased. Can they do this; are they not obliged to give a reason? Would the owner of the house be safe in taking legal proceedings against the owner of the land on which the sewer lies?"

In the absence of any common agreement, the question as to whether the adjacent drain is legally a "drain" or a "sewer" is dependent on the provisions of the local by-laws, and of the particular Acts of Parliament under which they are enforced (see page 173 of THE BUILDERS' JOURNAL for October 3rd last). If you are prepared to incur expense, perhaps it might be advisable to take legal proceedings against the sanitary authority, so as to force the matter to a distinct issue. In any case, your best course is to consult some experienced local solicitor conversant with the district and its by-laws, and who, from a general knowledge of the condemned building and its surroundings, would be able to advise you on the subject. It is probable that there may be other contributory causes which have led to the action of the sanitary authority. T. E. C.

Modern Renaissance Buildings at Sunderland.

SUNDERLAND.—ENQUIRER writes: "Kindly name a few modern Renaissance buildings in the neighbourhood of Sunderland which are worth measuring."

In High Street, Sunderland, the façade of the upper storeys of the "Cobden Exchange" and also of Stanton's boot shop, near Central Station, Newcastle-on-Tyne, the façade of the Tyne Commissioner's offices—all modern examples.

Models of Plaster Enrichments.

BATH.—J. A. writes: "Where can I purchase models of plaster enrichments and cement dressings? If the designs are not suitable, shall I require to have the work modelled?"

Models of plaster enrichments and cement dressings can be purchased from W. Millar, No 1 Arch, Battersea Park Station, London. For new designs model-making, and modelling, according to the design, are requisite. W. M.

Strength of Foundations.

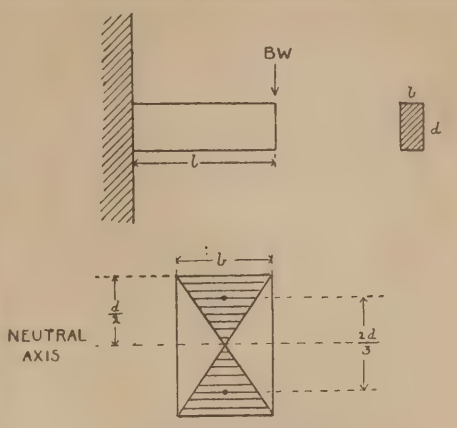
LONDON, W.C.—F. F. writes: "The accompanying section (not reproduced) shows a small back addition, upon which it is proposed to raise another storey 11ft. high. The existing old back addition of the one storey (ground) is built over very old vaults of two 4½in. brick ringed arches of an elliptical section, the depth between the foundations of the back addition and the crown of the arch of the vaults being about 4ft. Would it be safe to raise upon the 9in. walls of the back addition the additional 11ft. storey, without building piers at the angles and taking foundations through arch of vaults to a firm bottom, and supporting the walls of the second storey on rolled steel joists? Would the proposed extra weight on the existing back addition tend to crush in the elliptical arch of vault under?"

There is some risk in this case, and it is one in which a specialist should be consulted. He would probably want to examine the *locus in quo*. HENRY ADAMS.

Modulus of Rupture.

LONDON.—J. L. W. writes: "On page 212 of your issue for October 17th last 'R. W. C.', in explaining why the strength of a beam varied as its breadth whilst it varies as the square of its depth, made use of the following formula: Bending moment = $T\frac{bd^2}{6}$, where T = modulus of rupture per sq. in. I should be much obliged if you could inform me why $T\frac{bd^2}{6}$ is upon 6; and also the meaning of modulus of rupture per sq. in."

The "modulus of rupture" of a material is its ultimate resistance per square inch as averaged upon the assumption that it is equally strong to resist tension and compression, the neutral axis of a rectangular beam being thus brought to the centre. For fir of ordinary quality this modulus is 60 cwts. (3 tons), while for oak it is 78 cwts. (nearly 4 tons). The easiest way of explaining how it is that the bending moment of a rectangular beam equals *one-sixth* of $T\,bd^2$ is to work out a simple example. At the moment of fracture of a



MODULUS OF RUPTURE.

rectangular cantilever carrying an end load B W (see accompanying sketch), the bending moment is B W × *l*. If the modulus be taken in cwts. per sq. in., it is necessary to take B W in cwts. and *l* in inches, in order to preserve identity of units. Now, when the cantilever is upon the point of breaking, the outer fibres of the section (top and bottom) are about to give way, while the centre fibres (along the neutral axis) are neither stretched nor compressed. The effect is as if the shaded portions of the section were stressed to their utmost capacity and the remainder cut away. These shaded portions may be considered as the two flanges of a flanged structure, with their resistances collected at their centres of gravity, and the effective depth of the structure represented by $\frac{2d}{3}$, which is the distance between these centres. The resistance of either of the triangular flanges is represented by its area $\left(\frac{bd}{4}\right)$ multiplied by the modulus of rupture T, and the stress moment therefore is $T \times \frac{bd}{4} \times \frac{2d}{3}$.

This equates with the bending moment B W × *l*.

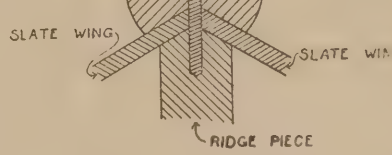
$$\text{Thus } B\,W \times l = T \times \frac{bd}{4} \times \frac{2d}{3}$$
$$= 2\,T\frac{bd^2}{12}$$
$$= T\frac{bd^2}{6}.$$

R. W. C.

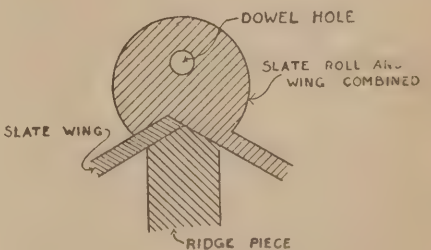
Ridges.

MANCHESTER HOME WORK writes: "What is a 'Thomas Ridge,' also a 'Williams Ridge'?"

The accompanying sketches will no doubt supply queriest with the particulars he desires.



"THOMAS" RIDGE

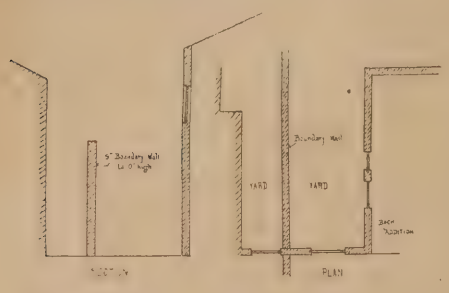


"WILLIAMS" RIDGE

Boundary Wall and Right of Light.

LONDON, E.—C. S. writes: "I am building new shop premises. The next-door landlord objects to the back addition on the ground that it encroaches on his ancient lights; I have altered the plans so as to come within 45deg., but he now says that I am creating new lights overlooking his premises, and objects to the windows being put in this position. Can he legally do so? The accompanying sketches illustrate what I mean."

The adjoining owner cannot prevent the



BOUNDARY WALL AND RIGHT OF LIGHT.

building owner from forming windows which may overlook the adjoining owner's premises, but he can build a wall upon his own ground which will obstruct the view from those windows over his premises, and so prevent the building owner from acquiring rights of light by twenty years' user. He may build such wall at any time within nineteen years, but in your case he is not likely to do so, as it would obstruct his own light. G. H. B.

Right of Light.

NORTHAMPTON.—ANXIOUS writes: "(1) A owns a covered yard which is used as a store for timber, &c. B's property adjoins, and between the two is a low stone wall (B's property). On top of this A erects wooden uprights and nails to them boards which reach to within about 4ft. of the underside of a glazed roof over the yard. The remaining space is left open, and has probably been in this condition for more than twenty years. Does A acquire a right of light through this space? It is not a window nor an opening for a window. The boards were simply erected to prevent anyone climbing over wall from B's property into A's. (2) In reports of various right of light cases one sees letters such as 7 Q.B.D., 529. These refer to former cases. In what book are they to be found?"

(1) If A's structure is only a timber store it does not appear that A can have acquired a right of light over B's property, because A's structure does not seem to be a dwelling-house, workshop, or other building within the meaning of the Prescription Act (see *Harris* v. *De Pinna*, 33 Ch.D., 238). (2) Reports of cases tried in the superior courts are to be found in the Law Reports published for the Council of Law Reporting by W. Clowes and Sons, Ltd., 27 Fleet Street, E.C. There are numerous volumes of these Reports, and the reference to 7 Q.B.D., 529 means the 7th volume of reports of cases in the Queen's Bench Division, page 529. G. H. B.

Book on Perspective.

BOLTON.—H. S. writes: "Kindly recommend a good advanced perspective text-book."

Ferguson's "Architectural Perspective," 3s. Published by Mr. B. T. Batsford, 94 High Holborn, W.C.

"Sweating" of Plastered Walls.

WOLVERHAMPTON.—SUDOR writes: "What is the cause of the sweating of painted plastered walls, not necessarily new work nor outside walls?"

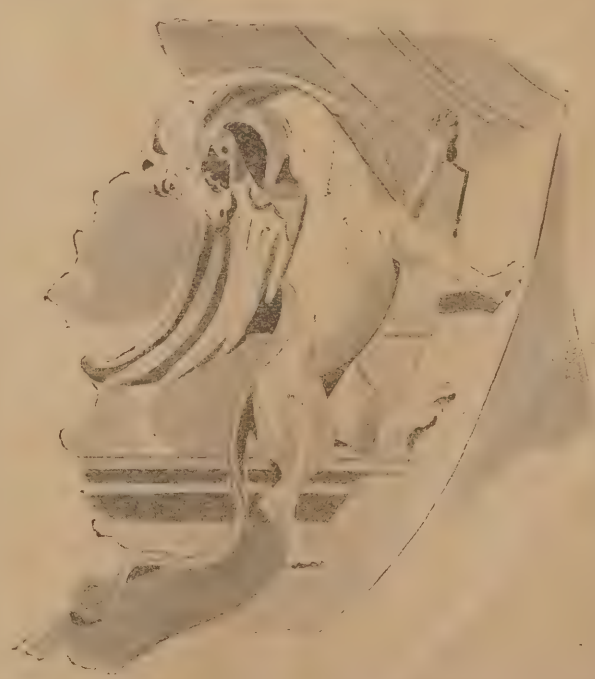
Without fuller particulars of the materials used for plastering, age, and position of walls, it is difficult to state accurately the cause of sweating, but, doubtless, it is due to condensation. Thorough ventilation is a cure for condensation. W. MILLAR.

Bricks and Mortar.

APHORISM FOR THE WEEK.

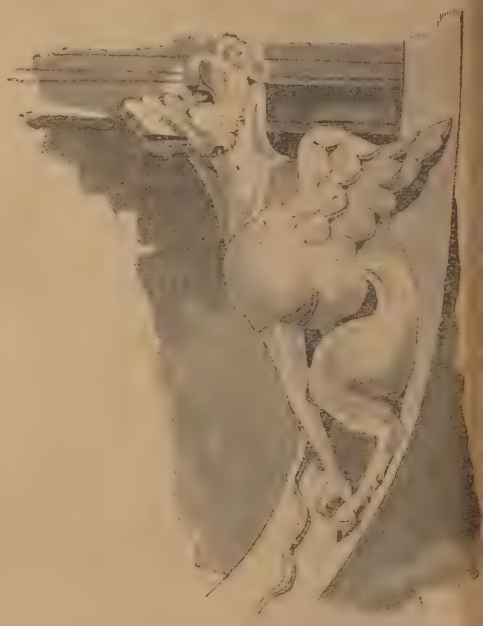
Art is not the bread indeed, but it is the wine of life.—JEAN PAUL.

Our Plates. LLANDAFF CATHEDRAL has no central feature, such as a tower or transepts, and a characteristic which is immediately noticed is the long—and except at one point—unbroken plan, comprising the nave, choir and presbytery under one roof. The one break is the chapter-house, which projects on the south side. The addition of buttresses in the recent restoration helps to somewhat relieve the plainness and flatness of this treatment. The foundation of the See is said to be the oldest now existing in Great Britain that still remains on its original site; but no portion of an earlier building than that founded by Bishop Urban in 1120 now remains, the chief remaining feature of which is the large Early Norman arch behind the high altar, which is one of the most effective features of the interior. This arch was doubtless the chancel arch of Bishop Urban's church. The Norman doorway on the north side, and that on the south side, are attributed to Bishop Henry, of Abergavenny, who held the See in the twelfth century. The chief beauty and the most attractive portion of the cathedral is the west front, which was built at a time when the Early English style was at its best. The interior design, in detail, arrangement and proportion is very fine, and it gains a great deal in dignity by the difference in height between the level of the nave floor and the ground outside, there being a fall of several feet at this point. The similarity of the treatment of this front with that of Ste. Remi at Rheims is said to be very striking, the proportion and grouping of the windows being almost identical, suggesting that the architect was the same in each case. From 1703 until about thirty-seven years ago the cathedral was unused, left to the mercy of the weather and in a pitiable state of decay; the walls of the nave were ivy-grown, and grass covered the nave floor, whilst the aisles themselves were roofless. A movement for the complete restoration however, was commenced by Deans Knight and Conybeare in 1843, including the rebuilding of the presbytery, choir and nave, and the building was put in its present condition. The cathedral is 250ft. long and 64ft. 3in. wide inside. The nave consists of six bays, the choir and presbytery of two bays each, and the Lady Chapel at the east end of five bays. Our illustrations are from measured drawings by Mr. R. Reginald Morton.



CARVING ON CHOIR STALLS, AMIENS CATHEDRAL. DRAWN BY ARNOLD MITCHELL.

Choir Stalls, Amiens Cathedral. MR. ARNOLD MITCHELL'S drawings of choir stall details in the great cathedral of Amiens, illustrated on this and the next page, show the beauty of the old Gothic work and exemplify the love of variety which saturated the whole spirit of the workman. Amiens Cathedral belongs to the great building period of France, namely, the thirteenth century, the century which witnessed the rise of those other great cathedrals of Rheims, Chartres, Coutances, Beauvais, Notre Dame (Paris), and Bourges. Amiens is the most characteristic of the French cathedrals, as Salisbury is of the English ones, and the carving to be seen there is of the very finest character.



CARVING ON CHOIR STALLS, AMIENS CATHEDRAL. DRAWN BY ARNOLD MITCHELL.

Ruskin's Monument. Mr. Miles, of Ulverston, is at present carving the monument to be placed over Ruskin's grave at Coniston. It will be a tall cross of the type lately revived from ancient models of the age before the Norman Conquest. Some of these were the "wheel" crosses, which have been most in favour, and are often seen in churchyards. An earlier form of cross, and one more purely English, was the three-armed type, like that at Irton, and the still more famous Ruthwell Cross. This Early English model has been freely adapted, not slavishly reproduced. The cross is of the hard green stone of the neighbourhood, supplied from the quarries of Tilberthwaite. The base is cut into the three Calvary steps, as they are called, and on the side facing the grave and looking east, at the bottom will be a figure with a lyre, representing Mr. Ruskin's earliest works, poems, and the poetry of architecture. Above this, in a panel of interlaced work, is his name and the dates 1819–1900, the only lettering thought necessary. All the rest of the story is told in pictures. Over the name is the figure of an artist sketching; above are the Lion of St. Mark (for his "Stones of Venice") and the candlestick of the Tabernacle (for "Seven Lamps"). The south side is filled with a scroll of his favourite wild-rose in bud, blossom and fruit; and on the boughs three of the creatures he wrote about with affection — the squirrel,

the robin and the kingfisher. On the west side is the parable of the workmen receiving each his penny from the Master—"Unto this Last." Then a design of "Sesame and Lilies," and, in the middle, "Fors Clavigera," the Angel of Fate holding the club, key and nail, which every reader of his works will easily recognise. Over that is the "Crown of Wild Olive," and at the top "St. George and the Dragon." The north side is a simple interlaced pattern. The cross-head on one side bears the Globe, symbolising in those old sculptures the Sun of Righteousness, and the other side has a disc, with the Fylfot, or revolving cross, accepted all the world over as the emblem of eternal life. The carving is purposely kept low and flat, bringing out the subjects by touches of shadow, rather than in high surface relief. This is a style hardly, if ever, used nowadays, but was anciently employed with great effect, when the stone was hard and meant for out-of-door light.

Chateau de Belœuil. ON December 16th a destructive fire broke out in the famous Chateau de Belœuil, near Mons, Belgium. The chateau contains a valuable library and many artistic treasures and curios. Most of the rare books in the library have been consumed, and the collection of pictures has also suffered greatly, several works having been totally destroyed, while others have been seriously damaged. The exact extent of the damage cannot be ascertained until an inventory has been taken. Belœuil was one of the finest residences in Europe, and was termed the Versailles of Belgium. It was the seat of the Princes de Ligne, and dated back originally to the twelfth century. But little remained of the early castle, and Belœuil was chiefly famous for its exquisite grounds, which were laid out by Lenotre, and for the art collections which had been formed by successive members of the de Ligne family. Its reminiscences are chiefly of the last century, when it was in the possession of the Marshal Claude Lamoral de Ligne, and, after him, of Prince Charles de Ligne, whose memoirs were among the most interesting records of the aristocratic life of France before the Revolution. Among the art works which it is feared have perished in this calamity are pictures by Rembrandt, Velasquez, Holbein and Pourbus.

Dr. Wallace's Colony. A number of the members of the Land Nationalisation Society are thinking of forming a Home Colony for themselves and sympathisers just outside London. Dr. Alfred Russel Wallace, the president, has long thought of some such attempt which would solve the housing question so far as the inhabitants of the colony were concerned, and greatly help on the social work of the society. An estate of something like 200 acres has been surveyed in one of the most beautiful parts of Surrey, and within half an hour's ride of London. It stands 400ft. above the sea-level, and has some fine woods on it, which would be preserved as part of the recreative and pleasure grounds of the colony. One member has subscribed £5,000, a third of the required purchase-money. The idea is to have co-operative ownership of the land, but individualism in the building of the houses. The building sites will be let on leases of probably 75 years at low rentals, and architectural and other restrictions will be imposed to keep the colony free from ugliness, overbuilding, or any other drawbacks. There will also be a residents' committee of selection, who will have the right to veto the introduction or effect the exclusion of "undesirables."

The Louvre Still in Need of Protection. THE problem of protecting the Louvre against fire has not, it is to be feared, been solved by the recent determination of the authorities to create a vacant space bounded by a stout wall between the picture galleries and the highly inflammable wing of the Louvre occupied by the Ministry of the Colonies. M. Redon, the official architect of the Louvre, is inclined to regard the efficacy of their expedient as very dubious. In his opinion, this makeshift proposal proclaims the extreme peril resulting from the neighbourhood of the Colonial Office, but does little to obviate the danger which is thus officially recognised. What is more, the more or less fireproof zone it is intended to create will not be an accomplished fact for two or three months to come. An endless series of formalities will postpone the carrying-out of the scheme until towards the end of the winter. In a word, thanks to red tape, the Louvre will remain in imminent peril throughout the winter, the most dangerous season of the year, and when the precautions contemplated have at last been taken they will be little better than illusory.



CARVING ON CHOIR STALLS, AMIENS CATHEDRAL, DRAWN BY ARNOLD MITCHELL.

The New War Office. IN a letter to the "Daily News" with regard to a statement made that the site chosen for the new War Office "is found inadequate to the needs of that great Department"; "that modifications have been made to fill these requirements"; and that "these alterations necessitate some curtailing of the courtyard space originally held to be necessary for light and air, and, therefore, do not tend to the improvement of the block of buildings either from a sanitary point of view or from that of mere convenience"; the Earl of Wemyss reminds us that before the foundations were begun, he vainly endeavoured by means of a memorial to Lord Salisbury, signed by 140 peers, to induce the Government to cause a model to be made of the proposed building and site, and also of a suggested adaptation to the proposed War Office of parts of Inigo Jones' design for the Palace of Whitehall, of which the existing Banqueting Hall alone exists. Since then he has looked upon any possibility of reviving the Inigo Jones' design as vain, for the foundations of the War Office are being vigorously prosecuted. But statements quoted on the inadequacy of the present site again raise a hope in Lord Wemyss that the present generation may yet be true to their heritage and duty, and endeavour, as the opportunity has arisen, to glorify that part of London by dealing with it, so far as is still possible, according to the inten tion and designs of England's great architect, Inigo Jones. "It is even now not too late. An architect friend reports to me that the whole site of the new War Office has been excavated to a considerable depth, and the whole covered with about 6ft. of cement-concrete, which will act as a foundation. I understand,' he says, 'that the brickwork will rise directly from this concrete platform; I imagine, therefore, that within reason the walls can be placed as desired.' The answer shows that the work already done would not be wasted; that it is not too late to construct the War Office on a larger and more convenient site; that Inigo Jones may yet have a chance, if enlightened public opinion can be aroused in a matter so vital to the embellishment of our Empire City."

BOTHWELL CASTLE.

THIS was the subject of Mr. G. S. Aitken's recent lecture before the Edinburgh Architectural Association. Having described the situation of the castle—on the north bank of the Clyde, about 8½ miles south-east of Glasgow—Mr. Aitken went on to speak of the present ruin, which consists of the southern portion of the original building, conspicuous for its great western and south-eastern towers and their connecting walls, and occupying a space about two-thirds of its ancient extent. The architectural features of these towers were dealt with, and the mason's marks in the great western tower described. What object these marks served, he said, had not been determined, but the system was certainly very ancient, marks having been found on Egyptian masonry. Some experts supposed them to be symbolic; others that they were cut in the stones to show whose work they were, and how much the workmen were entitled to receive in payment. He would suggest, however, from an examination he had made of the ruins, that while the marks might be the property of particular masons, they also served the purpose of indicating the intended position of each stone in the building. The master-mason, as any modern clerk of works would do, planned the various courses of masonry, marking on his drawing the symbol of each man to be engaged upon them, and allotting in that way to each hewer his work, which readily found its place in the building on reference to the master-mason's original draft. The marks might also have been intended to aid in settling the amount of money that fell due to each, and at the same time assigning to the individual mason the credit due to him for workmanship. Three distinct families, the Olifards, Morays, and the Douglases, have been connected with Bothwell Castle from the time of its origin till the erection of Bothwell House, situated a little to the east, the centre and north wing of which were designed in the eighteenth century by James Playfair. If we examine the details of the various parts of the Castle, and determine their dates, it should not be difficult to find out what share each house had in their erection. We have good reason for stating that the western tower, with its pertinents, enclosed within the inner bailey, was the work of the Olifards, because its detail is Early English, the vogue in their time. We go further and say there is every reason to suppose that they erected a complete castle with the extended outline disclosed by the excavation of 1888. The period of their occupancy from the time of William Olifard, the second justiciary of the Lothians, which was probably about 1180, and the date when Bothwell passed into the hands of the Morays (nearly 110 years), gave ample time to carry it out in its entirety.

It seems clear that no building of any moment could have been done during the occupancy of the Morays from the year 1292 till the date of its dismantling in 1337. The English, who often held possession during this time, were not likely to extend it, and the Scots in their turn had no chance of doing so.

We infer, therefore, that the work was carried out during the time of the Olifards; the assumption is eminently reasonable when we consider that, according to a contemporary record, Caerlaverock Castle, which closely resembles Bothwell in idea, was by this date complete, with its circular towers and curtain walls; and we have besides further confirmation in the condition of castle building across the border, for at an earlier date than we are considering—the reign of Stephen of England—there had been erected 1,115 castles in England, many of them having the full arrangements of a fortalice, so that allowing for the later development of castle erection in Scotland there is nothing unreasonable in assuming that Bothwell was complete prior to the invasion of Edward I., at the end of the thirteenth century.

The dismantling in 1337, intended to render the Castle useless to an invader and at the same time to relieve the owner of the task of defending it, went so far we may suppose as the destruction of the western half of the great tower and the reduction in height of all the rest of the walls and towers. As the Douglases, when they came into possession in 1361, had Tantallon and Douglas Castles, we may presume that with these fortalices they would only restore so much of Bothwell as served for occasional occupancy. If we assume that they confined their restoration to the south part at present standing, this will solve all the difficulties of the date problem by assigning to *them* the erection of the banqueting-hall, chapel, and south-east tower, which are all works of their period. As a matter of course they would make the great western tower available for living in by building the existing cross wall, and also complete their labours by enclosing the area connected with the reinstated Castle by the erection of the present north curtain wall. This theory fits all the pieces of the puzzle together.

Mr. Thomas Ross, who moved a vote of thanks, expressed the hope that the lecture would be fully illustrated when published in the transactions. Mr. James Bruce, ex-president, in seconding, referred to the slide shown of the Douglas arms over the postern—the arms are ermine, a heart, on a chief three stars; he was followed by Mr. Rae Macdonald, "Marchmont Herald," who gave some very interesting information on the heraldry of the Castle. The lecture was illustrated by plans and limelight views.

BRASENOSE COLLEGE, OXFORD.

THE members of the Oxford Architectural and Historical Society recently visited Brasenose College, when the Principal met the party and showed them the chapel, library and hall, giving the history of one or two of the more interesting features. The college was founded by the Bishop of Lincoln and Sir Richard Sutton, of Presbury, in Cheshire, in 1509, on the site of two small Halls, little University Hall and Brazen-Nose Hall. The original knocker from which the latter derived its name was carried away during a quarrel between the students, when a large body of them left Oxford, taking with them the knocker, and founded a new college for themselves in Lincolnshire. It is only within the last six or seven years that this interesting relic has been recovered and placed on the wall over the high table in the hall. The gaily gilt nose, which is a conspicuous feature over the gateway of the college in the Radcliff eSquare, is not in any way like the real knocker, which resembles a leopard's head in bronze. Some handsome candelabra, bearing the name of the donor, have also been recently restored to the institution. Brasenose College led the way in the manner of placing libraries; almost all the old Oxford and Cambridge libraries until the beginning of the 16th century run north and south, facing east and west, the object being to catch the early light. When a luxurious generation began to think more about comfort than length of possible working hours, they built the libraries to face north and south, so as to get the full force of the sun from the south. Brasenose was the first of the fourteen libraries built between the beginning of the 16th century and the Restoration of 1661, all of which face south; and when later this invariable rule was departed from this college led the way with the present library, completed in 1663.

The party then proceeded to Holywell Church, where they were met by the Vicar. Mr. Leigh exhibited some interesting old engravings of the church, showing its development from the original form without the north and south aisles to its present form. Very little is known of the history of the church, which is dedicated to St. Cross, but it is generally supposed that it was of Norman origin. The upper part of the tower was built by a Warden of Merton in the reign of Henry III. The aisles have been added in the present century, and quite recently small clerestory windows have been let into the wall beneath the roof in the south side. Seven or eight years ago the commandments, creed, &c., were removed from above the chancel arch, and the present decoration of angelic figures painted there instead by Mr. Reginald Halward.

From the church the party were taken into the Manor House Chapel, where the ancient well stones discovered during some excavating were shown. This Holy Well is supposed to have supplied the bath chamber of the Warden of Merton before mentioned. The Manor House is a very ancient foundation, and the date of the well stone beneath the chapel is supposed to be about 1488.

Views and Reviews.

Road Making and Maintenance.

This is a practical and comprehensive book for the use of students, municipal engineers and surveyors, and others. The work consists of two parts, the first dealing with the making and maintenance of macadamised roads, and the second with carriageways and footways. The arrangement of the matter is systematic, and, speaking generally, we find it largely follows that adopted in the "Construction of Roads and Streets" by William H. Maxwell, A.M.I.C.E. This is particularly noticeable in the case of the "Historical Sketch," some portions of which to us read uncommonly like a paraphrase of a similar chapter in Mr. Maxwell's work. Suggestions for the planning of other chapters, such, for example, as the "Laying Out of New Roads" (Chapter II.) and "Earthworks, Drainage, &c." (Chapter III.), have, we think, also been gleaned from the same source, although we do not find that any acknowledgment has been made. Many books have been written upon this subject, but the present work will be found a useful, up-to-date and exhaustive compilation of all the principal data which can be collected upon the questions treated; the author's apology for its publication being found in the fact of the recent introduction of mechanical appliances for quarrying, manufacturing and consolidating the metalling which has led to important changes on the older methods, whereby more expeditious, effective and economical work has been rendered possible. The transfer of the management of highways to county councils by the Local Government Acts has also afforded scope for road maintenance on a larger scale than has hitherto been practised in this country, and in this the author has had an experience extending over many years which has enabled him to bring together much useful information on the subject, and to more particularly set out his own views upon the various questions raised in the concluding chapter, which is a "Recapitulation" of the preceding pages. This, to the experienced engineer and surveyor, will, we think, be found the most interesting portion of the book, giving, as it does, sound practical views evidently matured from the author's own daily experience and savouring of the freshness of originality.

It would be impossible in the course of an ordinary review to thoroughly analyse all the various chapters of Mr. Aitken's book, but a reference to some of its more salient features will be of interest to our readers. In the "Historical Sketch" the evolution of road-making as a science is traced from the time of the Romans to that of Telford, who was the first to really establish sound engineering practice in roadmaking on the lines adopted at the present day. The usual information upon "Resistance to Traction," with interesting tables and data, is to be found in Chapter I., which is followed by a general description of the preliminary operations of the engineer in settling upon the lines and levels of a new line of communication. To the young engineer this will be found a useful and instructive chapter, and is accompanied by large plans and sections of a proposed new roadway and of the suggested improvement of an existing line. Earthworks, methods of drainage, the design of retaining walls, culverts, and the use of coffer-dams, cylinders and caisson foundations and other constructional matters in connection with bridges are discussed at some length. An omission is to be noted in Fig. 16 (page 57) in which the "natural slope" should have been shown "benched" where embanked upon, which is an important detail in practice. A

short reference to the importance of the bearing of geology upon the subject under treatment opens a useful chapter on "Road Materials," but having regard to the great importance of geological considerations to the road-maker, the reference made is too brief to be of service, and might, we think, have been extended with great advantage in a work of this character. A novel feature is to be found in the admirable chapter on "Quarrying," which is full, practical, and well illustrated, and is certain to well repay careful perusal by those borough and county engineers and surveyors who have to quarry a large proportion of the stone used upon the roadways under their charge. The same remarks also apply to Chapter VI. on "Stone Breaking and Haulage." Both subjects are treated in a practical manner, with details of cost and other data. Chapters upon road-rolling, scarifying, and the maintenance of existing roads complete Part I. of the book.

Part II. consists mainly of descriptions of the various forms of pavement for carriageways and footways, and gives well-known information condensed from various other works. With the greater portion of the matter contained in these chapters the experienced surveyor will already be perfectly familiar, there being comparatively little that is new—the "conclusions" of the author, however, on page 372 will repay perusal. Next follows a chapter upon the interesting question of "subways," and the subject is treated at some length but not illustrated, which certainly would have added considerably to the value of the chapter. In all, the work consists of 425 pages of matter, and must have involved a large amount of labour, as nearly all the principal works on the subject appear to have been searched and selections abstracted and condensed from them, resulting in a very useful work of reference, which every interested student would do well to study. There is an excellent index, and the book is well produced; it should prove a useful acquisition to the library of every municipal engineer and surveyor.

"Road Making and Maintenance," by Thomas Aitken, A.M.I.C.E. (London: Charles Griffin and Co., Exeter Street, Strand, W. Price 21s.).

CHIMNEY CONSTRUCTION.*

BY E. J. PHILIP.

IN designing a chimney for any given purpose the first question is, "What is the chimney for, or what is it to do?" For instance, if it is to produce draught for ventilation it will not require to be lined with fire-brick, nor will there be any benefit in putting in a loose lining. We will suppose the chimney under our consideration is to induce draught to burn coal.

The size of the flue is the first dimension you will require, and it will depend on the quantity of coal to be burned and the velocity of the gases up the shaft. It is easily understood that as chimney powers increase the dimensions do not increase proportionately. To illustrate this I will take some figures from a table in a reliable work:—

A chimney 70ft. high, 30in. diameter = 100 h.p.
" " 200ft. " 66in. " = 1,000 h.p.

That is, the high chimney with five times the area equals ten times the power; and while I am not sure that this proportion is right, it seems to illustrate the way the formula works. The only correct way is to calculate the number of cubic feet of gas going up the chimney at the average velocity, and the area of this column is the area of the chimney. The rate of combustion depends on the draught, and the draught depends on the height of the chimney and the temperature of the gases. The height of the stack is nearly always determined by the surroundings, as the stack must of necessity be above any buildings or hills; I might say that the average stack is higher than is necessary. However, when there are no buildings or hills, the following formula will establish the height. This is known as Gale's formula:—

$$H = \frac{120}{T}\left(\frac{F}{g}\right)^2.$$

After getting the height, the area may be obtained by Kent's formula, which is: $A = \frac{\cdot 06F}{\sqrt{H}}$.

In this rule the effective area is obtained, and is 2in. less all round than the actual area. This 2in. is to make up the friction of shaft. We now have area of chimney and height of it. I might say that experience has shown that to burn hard screenings requires a 175ft. stack, for buckwheat 150ft., and for soft coal 80 to 100ft. This is a pretty fair basis to start from. We will suppose our chimney is, say, 100ft. high and 40sq. ft. in area. It seems, with this information, a simple matter to construct a stack; and so it is, only you must go about it in the right way. To continue your calculations after getting the size, you start at the top and work down. Authorities say that a chimney having a flue over 5ft. in diameter shall be 1½ bricks thick at the top; from 3 to 5ft. in diameter, 1 brick; and under 3ft., ½ brick. A chimney 5ft. or more in diameter would have this size for the first 25ft. down, and would increase ½ brick for each 25ft. This, according to calculations, is almost too much. It can run 30ft. to 40ft. each stage, but will depend on the kind of material—that is, whether hard or soft brick, and whether built in cement or lime; 30ft. to 40ft. is suitable, with good material and workmanship. Having laid out the different thicknesses of wall, and knowing the batter, which varies with different builders and conditions from $\frac{1}{16}$in. to $\frac{3}{8}$in., you can determine the weight of the shaft or chimney proper. In large chimneys it is usually specified what they shall weigh per cubic foot. After determining the weight you can decide how much bearing surface you will require for the kind of soil you have at the foundation. Various bearing powers of soil are given as follows: Hard rock, native bed, 100 tons sq. ft.; clay, dry, 4 to 6; moderate dry, 2 to 4; soft, 1 to 2; gravel and coarse sand, 8 to 10; sand compact and well cemented, 4 to 6; clean dry sand, 2 to 4; quicksand and alluvial soils, ½ to 1 ton per sq. ft.

When the ground is soft you would require piling or timbering, and will need to spread it out over a considerable area. The weight in tons divided by the bearing power of soil gives the area necessary. Wind-pressure is also an important factor in determining the area of the base. I will not go into the rules affecting wind-pressure, but experience has shown that at the base of the shaft proper its diameter shall be one-tenth of height for a square chimney, one-eleventh for an octagonal one, and one-twelfth for a round one. In considering wind-pressure it is usually figured at from 25 to 56lbs. by different authorities. This must be resisted by foundation, as if the chimney rocks over with wind it will throw its entire weight on one side of the foundation. In considering wind-pressure it is necessary to take into account whether the chimney is protected by buildings or standing in an open field. If the chimney is built into a building, wind-pressure may be almost disregarded, except for the portion above the roof.

A great deal has been said about the merits of different-shaped flues, but experience and tests have shown that a parallel flue is the best, or as good as any other shape. The arguments for taper flues are something like this, that the velocity of the gases as they ascend is diminished by their cooling, and consequently they require more room, and the flue should become larger; others say that the gases cooling down contract in volume, and therefore the flue should get smaller so as to take the same shape as the column of gas. Experience has shown that both contentions are correct. The gases contract and get smaller and consequently need less room, but their velocity also diminishes, due to their greater weight, and they therefore need more room. In this way they balance and require a parallel flue. Some authorities say a round parallel flue is the best for all purposes.

The chimney should be finished with a cap of some material that will stand the weather. I like cast-iron best, but a cap can be moulded of Portland cement, or if the stack is for smelting work, of fireclay. These materials stand well, and if there is a ladder on the chimney they can be kept in repair. A ladder should always be built on the shaft, as it provides a means of examining it at any time, and if repairs are needed they can be done easily.

Lightning conductors are also approved and disapproved; but if a chimney is the highest object in its vicinity it is likely to take the discharge from a storm over it, and a properly-erected conductor will carry it off, although many stacks are standing without any.

* A paper read before the Canadian Association of Stationary Engineers.

Surveying and Sanitary Notes.

Trinidad Asphalt.—The Colonial report recently presented to Parliament for the year 1899 states that of the mineral products of the island of Trinidad, B.W.I., asphalt is by far the most important. The Trinidad asphalt trade was more prosperous in the year 1899 than in any previous year of its history. One hundred and forty thousand tons were exported.

A New Pavement.—The United States Consul at Hamilton, in Ontario, states in a recent report that the city authorities there have, after years of experiment, discovered a pavement for streets that is durable, excellent, and cheap. The tests, which have been made over a number of years on business streets, show that tarred macadam makes not only a smooth and solid roadway, but that it can be maintained and repaired at very little expense. The first cost in Hamilton is from 3s. to 3s. 8d. per square yard, and the authorities estimate that the cost of repairs in streets with heavy traffic is less than ½d. per yard per year, while ashphalt costs over 1½d. By the addition of tar the road becomes impervious to water, is proof against frost in winter, and mud and dust are prevented in summer. It is easily repaired and does not require scraping, so that much of the wear of the surface is avoided. Success, however, depends on the care with which the road is laid down at the outset. Either stone or cement kerbing is placed before the road is commenced. The base consists of cement laid on broken stone or gravel, which is freely rolled with heavy rollers, the curve being designed to carry off water quickly. Upon this a solid bed of stones, at least 6in. in thickness, is placed, the interstices being filled with small stone and gravel, well rolled in. Over this comes a coating of gravel, rolled hard, and then a layer of stones saturated with tar, the stones not exceeding 2in. in diameter. These stones, before being mixed with boiling tar (8 to 12 imperial gallons to the cubic yard), must be thoroughly dried, either in the summer sun or by exposure on heated plates, until all the moisture is expelled. After a thorough rolling, another stratum of tarred stone of the same thickness and dimensions is added, rolled, and covered with a layer of gravel and quarry chips, also mixed with tar. A top dressing of screenings is then added, and if a light colour is desired it can be obtained by adding cement. Most of the stone used in Hamilton is machine crushed; limestone is used because it is abundant locally, but granite or flint would absorb less tar and bear more wear and pressure.

A Bronze Statue of Gutenberg, the crowning figure of a handsome monument to the father of printing, has been unveiled in Vienna. It stands in the shade of five-storeyed houses, in a small square facing the busy thoroughfare which leads from St. Stephen's Cathedral to the Danube Canal. Gutenberg stands upright and very tall, in a long mantle, and wearing a broad cap. Behind the statue rises an enormous building erected quite lately on the site of one of the most interesting old Vienna houses, the Regensburger Hof. That old house, if it were still there, would be a fitting background to the mediæval statue. On the pedestal a relief in marble shows the Awakening of Man, the rays of the sun being made to symbolise the art of printing.

Law Cases.

Artistic Copyright in the Colonies.—In the Superior Court at Toronto on November 6th, Mr. Justice Rose delivered an important copyright judgment in the case of *Graves* v. *Corrie*. The question at issue was whether the Act passed in 1862 (25-26 Vict, c. 68) for amending the law relating to copyright in works of the fine arts, and for repressing the commission of fraud in the production and sale of such works, extended to the colonies or was confined to the United Kingdom. The decision was in favour of the latter reading of the Act. The Act of 1842 which governs literary copyright does extend to the colonies, as the wording explicitly states. The "Times" correspondent says: "This is, I believe, so far as reported decisions go, the first to decide definitely that a copyright in the fine arts printed in the United Kingdom is confined to the United Kingdom. As suggested in the judgment, this may possibly have been an oversight, but what seems more likely is that in 1862 the British Parliament did not feel as free to legislate for the self-governing colonies on copyright as it did in 1842."

Mischievous Boys: a Good Precedent.—At the Ipswich County Court *Thomas Parkinton and Son*, builders, recently sued *J. H. Wrinch*, barley merchant, for £13 for damage done by defendant's children to ladders, poles, scaffold boards, &c.; damage done to mortar, sand, and bricks rendered useless; and damage to work in course of progress. Mr. Low, for the plaintiffs, said that his clients were engaged in enlarging 45 Fonnereau Road, Ipswich, where defendant and his family resided. The work was commenced in May, and finished in the early autumn. Defendant had three sons, and during the whole of this time, whenever they had the opportunity, they devoted spare time and energy to causing plaintiff and his workmen inconvenience and annoyance, and doing all the damage they possibly could. They were very energetic. For instance, a great part of their time was devoted to putting stones and pieces of brick into the mortar; they broke the scaffold boards, swarmed up the ladders, and Saturday afternoons especially they devoted to demolishing any fresh brickwork they could find about. Complaints were made to Mr. and Mrs. Wrinch, but instead of the lads being restrained or punished, the father said boys would be boys. The jury awarded plaintiff £10 10s. They found that the boys did do the mischief, and that the defendant knew the mischief was going on, though he took no steps to stop it.

An Important Case relating to the Use of Sewers.—In the Queen's Bench Division of the High Court of Justice on December 14th the case of the *London County Council* v. *The U. D. C. of Acton* was heard before Mr. Justice Ridley. In this case the plaintiffs claimed to recover from the defendants the sum of £225 9s. 5d. and interest, pursuant to the London County Council (Acton Sewage) Act, 1898, for the use of the metropolitan main drainage system. The defence was that the plaintiffs were only entitled to recover £97 16s. 6d., which sum the defendants paid into Court. His Lordship, in giving judgment, said that the case was one raising questions of importance, and if he had been in any doubt as to his decision, or if there had been no such case as that of the *Islington Vestry* v. *Hornsey Urban Council*, he should not have delivered any opinion at present. He thought, however, that the case he had mentioned covered the point in question. In 1855 the new Metropolitan Management Act passed, and the Metropolitan Board of Works became managers of the districts within their boundaries and owners of the sewers. The result of this was that the Stamford Brook (East) and a portion of the Stamford Brook (West) were in their district, whilst the remainder of the Stamford Brook (West) was in another district. Houses in Acton at this time were sending sewage through these two sewers, and they had acquired a right so to do. Then a new state of things began under which the houses in the Acton district were not included in the metropolitan area, whilst a portion of the sewers were. Population increased and fresh houses were built, with a consequent increase in the quantity of sewage passing into the sewers. Nothing appeared to have been done until an action was brought against the Acton Local Board in 1882; and an injunction was granted preventing the Acton Board in the future from discharging more than a fixed quantity of sewage into the sewers in question. So there was a period between 1855 and 1882 during which an increased quantity of sewage had been delivered into the Stamford Brook sewers, and the question now arose was that sewage which had been so discharged for that period of time within the words to be found in section 3 (*a*) of the London County Council (Acton Sewage) Act, 1898. If it was so included, the defendants were right; if not the plaintiffs must win. It appeared from the cases of the *Attorney-General* v. *The Acton Local Board* and the *Metropolitan Board of Works* v. *The London and North-Western Railway Company* that after the constitution of the Metropolitan Board of Works the latter could not allow persons outside their districts to drain into it, because the words "any person" in the Act of 1862 were construed not to include any one unless they were in the district. If that was correct, it followed also that you could not, being a person outside the district, acquire by prescription the right to drain your premises into any sewer which had the benefit of draining into the metropolitan drainage system. The recent case of the *Islington Vestry* v. *Hornsey Urban Council* appeared to him to decide this very point. It seemed to him, therefore, that it followed from the decisions referred to that the houses which were getting the benefits of these drains between 1855 and the period he had mentioned were not doing so by way of prescriptive right, and if they were not it seemed to him to be clear that the words "houses or buildings having acquired a prescriptive right to drain into the Stamford Brooks Sewers," appearing in the Act of 1898, must refer to and be satisfied by such houses or buildings as had used the sewers before the passing of the Metropolis Management Act. It had been contended on behalf of the defendants that the words "acquiring a prescriptive right" had no reference to the metropolitan district system, or to persons outside the district acquiring rights to drain into it, but simply to the fact of houses acquiring a right against the Acton Local Council. He did not think that view was in accordance with the general intention of the Act, which was dealing with the question as to how far the Acton district was to get the benefit of the metropolitan drainage system. It was not a question between certain houses and the Acton Council with which the Act was dealing, but between such houses and the metropolitan district. On the points submitted, therefore, he decided in favour of the plaintiffs. Judgment was given accordingly, the exact amount to be paid being left to be settled subsequently.

Athenian Buildings.—A lecture was delivered last week on this subject before the Sheffield Society of Architects, and Surveyors, by Mr. Hugh Stannus, F.R.I.B.A. The lecture formed a comprehensive and interesting guide to the ancient buildings of Athens. Aided by a number of excellent lantern views, Mr. Stannus conducted his hearers round the city, pausing to describe the temples, and pointing out their architectural characteristics. He dealt fully with the beautiful little temple of Nikê Apteros, then went up the hill, around the Parthenon and the Erectheion. Descending, he showed the Dionusas, the Choragic monuments, the Olympieion, the Theseion Agora, and the Temple of Winds. At the conclusion of his lecture on Athens, he dealt briefly with some of the temples of ancient Sicily. A vote of thanks was accorded to the lecturer, on the motion of Mr. C. Hadfield, seconded by Professor Anderson. A ballot was taken, and the following gentlemen were elected:—Fellows, Messrs. W. J. Hale and H. L. Paterson; associates, Messrs. G. R. Morris and H. W. Inott; students, Messrs. H. W. Wilson and J. Miller.

Professional Practice.

Broughton.—The New Victoria Theatre, Broughton, has been erected from the designs of the well-known theatre architect Mr. Bertie Crewe, and is situated at the junction of Great Clowes Street and Sussex Street. The site is open to no less than three streets, thereby insuring sufficient exits to secure the safety of the public. The main front to Great Clowes Street is a highly ornamented one of red terra cotta, containing the main entrance to the theatre and three spacious shops. The front is divided by Ionic pilasters into five bays, the centre one surmounted by a carved pediment, above which is an attic storey, finished with a copper dome and light iron cresting. Covering the main entrance is a canopy of hammered iron and leaded glass, while at the pit and gallery entrance in Elton Street another canopy is provided for the shelter of those waiting at the doors. The front at night is illuminated by arc lamps and the stained-glass windows of the building. Entered from the main entrance doors is the vestibule, about 24ft. by 16ft., with marble mosaic floor, marble dado, and painted ceiling. On the left hand of this apartment is the booking office, where the money taken to all parts is controlled in one room. On the right hand side is a broad and easy stair to the balcony, and facing the entrance from the street the vestibule opens direct into the grand foyer. This is a spacious hall, 34ft. by 18ft., also with marble mosaic floor, walls panelled in fibrous plaster, and hand-painted ceiling. From the foyer are the corridors leading direct to stalls, dress circle, and grand saloon. The entrance hall and foyer are lighted by no less than seven hammered brass electroliers. The auditorium is planned upon the composite two-tier principle, having stalls, pit stalls, and pit on the ground tier; dress circle and balcony, so divided that the lowest row of the latter is some 6ft. above the back row of circle, on the first tier; and the gallery on the second tier. The decorations of the house are in the style of Louis XIV., there being an ante-proscenium, with two boxes on either side at different levels to the circles, the openings on stall level being used for the stalls entrances. The prevailing tones are ivory and gold, with sparing use of copper bronze, the upholstery and hangings being in a deeper tone of copper. Specially designed electroliers in accordance with the style form actual portions of the decoration of proscenium, circle and ceiling. The whole of the theatre, both before and behind the curtain, is lit by electricity, generated by the proprietors' own plant, which has been placed in such a position that no noise or vibration can be detected in the theatre. Gas is also laid on as a stand-by. There are saloons decorated and lit in keeping with the auditorium. The grand saloon for dress circle and balcony is 42ft. long by a maximum width of 25ft. The occupants of the orchestra stalls have their own little saloon on the level, thus obviating the nuisance in so many theatres of the stall-people having a long weary climb to the refreshment saloon. The stage is 40ft. from curtain line to back wall, 74ft. in width, and 50ft. from stage to grid. The proscenium opening is 30ft. in width. There are no less than eighteen dressing rooms, well lighted and ventilated, with hot and cold water laid on, and property rooms, &c., as well. The entire building, including decoration and scheme of lighting, has been designed and personally superintended by the architect, and the building has been carried out by Messrs. W. Brown and Son, of Trafford Road, Salford, who also are responsible for the gas-work and heating. The constructional steel work is by R. Moreland and Son, fire appliances and ventilation by Messrs. Vaughan and Brown, granolithic cement by Messrs. A. J. Phillips and Co., mosaic pavings by Messrs. Drespelles and Co., marble dadoes by J. Whitehead and Co., decorations by J. Burns and Sons, stained glass by Charles Evans and Co., furnishing by Turner, Son, and Walker, and the Jones panic bolts are fitted throughout.

Hinckley.—The new church of St. John the Evangelist was opened recently. The founda-

tion stone of the half of the new church which is already erected was laid by the Bishop of Oxford in June 1899. The total cost of this part is estimated at £5,905. The church, when completed, will consist of a nave of five bays and a chancel of three bays, and will have a total length of 130ft., exactly one-half of which, consisting of the four western bays of the nave, is now built. The chancel will be separated from the nave by transverse arches, but otherwise there will be no structural difference between these two parts of the church. The boarded ceiling, the apex of which is 41ft. from the floor, will be the same throughout. The two aisles will also run from one end of the church to the other without further break, and with the nave they make a total width internally of 57ft. There is no clerestory, and the aisles are separated from the body of the church on each side by a row of seven pillars 20ft. high. The windows are also all of one pattern on each side, but the design of the two aisles is different in every respect. The wider aisle and that with the higher wall is on the north side. It will have seven windows of five lights each, four of which are already built, and a porch and parvis will occupy the next and easternmost bay of the nave. The nearly flat roof of this aisle is surrounded by a battlement. The other aisle has a more sloping roof, the lead of which shows outside, and the heads of its four-light windows are flattened. The difference between the aisles is further emphasised by the painted decoration of their ceilings. The rafters are white throughout, but the boarding between is counterchanged with squares of red and green in the north aisle, and in the south aisle it is all a red ground, upon which the sacred monogram changes with the eagle for St John. The eagle and the chalice are also blazoned on the corbels which terminate the principals, interchanged with the gridiron, which shows the connection with St. Lawrence, the mother church of Hinckley. The nave roof is divided by red and green ribs into white squares, powdered with roses, which will give place in the chancel to blue, with gold stars. The manner of the window tracery is somewhat of a compromise between the Florid and the Perpendicular, and the mouldings are of the latter type. The church also has the general features of spaciousness and lightness which are characteristic of the later English Parish Church. Such of its ornaments as have yet been obtained are also of this type, as the high steps for the font in the midst of the west end of the nave and the long and low reredos to the altar, which now stands beneath a blue tapestry, hanging against the temporary east wall, but will take its place eventually beneath the east window. Externally the building is of red brick and stone; but within only the stone and plaster show, and the windows are glazed throughout with large roundels, in the manner of the Bavarian churches. The west front, like the sides, has large windows and deep buttresses, one of which is surmounted by a small steeple, which carries the bell, and a somewhat similar turret will mark the division between the nave and the chancel. The architects are Messrs. Bucknall and Cowper, of Old Queen Street, Westminster, and the builders Messrs. Kingerlee and Sons.

London.—The Working Lads' Institute, Whitechapel, E., was re-opened recently after undergoing extensive alterations. It was erected originally from the designs of Mr. George Baines, F.R.I.B.A., about fifteen years ago, in sections, the last portion being a lecture-hall with swimming-bath under. This portion of the property was recently compulsorily acquired by the Whitechapel and Bow Railway Company and has been pulled down. The remainder of the premises has been remodelled for the purposes of the institute, the old reading-room on the first floor being enlarged by the addition of another room, the two together now forming a large lecture-room, the reading-room being transferred to the floor above. New caretaker's rooms in the rear, and a new retiring room to the lecture-room have been added, and the whole premises have been decorated. The work has been carried out under the superintendence of Messrs. George Baines, F.R.I.B.A., and Reginald Palmer Baines, architects, 5 Clement's Inn, Strand, by Messrs. Turtle and Appleton, St. John's Hill, Clapham, at a cost of about £1,300 inclusive of Electric Lighting throughout.

London.—The Grosvenor Hotel, which has been reconstructed internally, has just been opened under the management of the Gordon Hotels, Limited. The Grosvenor was erected in 1862, and was the first of the great modern hotels in the West End of London. It is situated at Victoria. In reconstructing the hotel the whole of the first and second floors have been completely altered. A glass-covered lounge has been fixed over the entrance, which gives a view up Buckingham Palace Road. The grand hall forms the centre of the building. Its decorations are very light, the pilasters being of veined marble, and the panels of alabaster. Grey marble and alabaster have also been used for the balustrade in the lower part of the stairway. At the head of the first landing there is a painting of an Italian garden scene by Mr. Breakspear. The hall, which has a marble floor, is arranged as a lounge, and the galleries which run round it have been redecorated. The reading and reception room is an attractive apartment, worked out in the Italian style with salmon-coloured silk panels on the walls and green drapery. Carved oak has been used for the wainscotting of the smoking-room, and the furniture throughout the room is in shades of brown. In the billiard room, also, there is a high-panelled oak dado, with a richly-modelled frieze. The dining room has been doubled in size, and will now accommodate more than 200 people at separate tables. It has a mahogany dado, a large mahogany mantelpiece, red curtains and draperies, with embroidered valances and crimson silk panels. The corridors are much more commodious than those of the new hotels, and are used as lounges. On the first floor a large reception room has been made into private suites of rooms furnished in various styles, with silk panels. The hotel contains all modern requirements, and is well furnished; the electric light fittings are made of hammered metal or brass; and the sanitary arrangements have been entirely remodelled. The hotel entrance to the Victoria Station of the London and Brighton Railway has been rearranged. In the station itself the company are carrying out very large extensions, a part of the scheme being an additional wing to the Grosvenor Hotel over the booking office, which will double the number of bedrooms and give the hotel another frontage. The reconstruction has been carried out under the direction of Mr. A. Waterhouse, R.A.

Middlesbrough.—An extensive scheme of alteration and improvement in the New Theatre Royal has just been finished. The work of reconstruction was placed in the hands of Messrs. Hope and Maxwell, architects, of Newcastle-on-Tyne. Principal entrances have been provided in Sussex Street, and dressing-rooms and bars have been built outside the walls of the building. This addition gives a very much enlarged area to the auditorium, and allows for a stage 12ft. deeper than before, besides providing for four private boxes. The scheme has also provided ladies and gentlemen's cloak rooms and lavatory accommodation. Messrs. A. R. Dean and Co., of London and Birmingham, are responsible for both the decorations and furnishing. Separate tip-up chairs have been provided for both the upper circle and pit stalls, whilst cushioned seats have been provided for the pit and amphitheatre. A new act-drop has been designed by Mr. Conroy, portraying characters from the principal Shakespearian plays.

A new Theatre at Ayr is to be erected in place of the present Ayr theatre, which has been in existence for about seven years and is of wood. The new building will be constructed in the Carrick Oval ground, and will have accommodation for 1,100 people. The accesses to the ground will be improved. A site has been secured for another theatre. The site is in the Dalblair grounds, in close proximity to the railway station, and the structure is estimated to cost £6,000.

New Patents.

These patents are open to opposition until January 28th.

1899.—Self-closing Taps.—24,216. J. E. COWEY, 33 Holborn Viaduct, London. The valve is provided with a cavity at each end, the rear cavity receiving a plug and serving as a dash-pot and the front cavity receiving the inner end of a spring-controlled stem. By this means the pressure of the water against the valve is largely overcome when the stem is pushed in, thus requiring a very small effort on the part of the user.

Lever Hand-Presses.—24,568. S. R. S. BATLEY, Prestonpans Villa, Chandlers Ford, near Southampton. In this invention the principal wearing parts are above the die or brick-box and are so kept cleaner, lasting longer. The machine is well balanced

Wood Flooring.—25,145. W. SHOOSMITH, 5 Eastern Road, Brighton. As a provision against the swelling and shrinkage of wood flooring blocks, a course of spring blocks or a run of elastic material is provided at intervals, forming an expanding and contracting joint.

1900.—Paving Material.—1,915. C. A. C. CAUDEMBERG, 43 Rue Colta, Nice, France. India-rubber is dissolved in turpentine and with it is mixed powdered asphalt. This mixture hardens quickly and forms an elastic, dense and solid layer.

Freezing of Water in Pipes.—3,331. A. NÜESCH-SAXER, Flawil, and R. NÜESCH, Als ätten, Switzerland. This apparatus is characterised by a double-seat valve, the spindle of which (in the form of a pipe) has an opening between both the valve heads and is connected with the rising pipe by a stuffing-box and by a lever fixed on the rotatable pipe. By these means the inflowing water can be stopped and the water still remaining in the rising pipe run off; or the reverse can be done.

The following specifications were published on Saturday last, and are open to opposition until February 5th. A summary of the more important of them will be given next week. The names in italics within parentheses are those of communicators of inventions.

1899.—21,971, MCDONALD, fittings for lavatory basins. 23,572, BOEHNDEL, gas for illuminating and heating purposes. 23,667, RITTMAN (*De Saint Hubert*), brick-pressing machines. 23,734, BOUILLET, electric-lighting or heating apparatus. 23,820, DOULTON, water closets. 24,383, CHANDLER, CHANDLER AND KIRKHAM, HULETT AND CHANDLER, LTD., apparatus for washing gas. 25,541, JARVIS, construction of closet pans, &c. 25,584, BAUDISCH, means for protecting river embankments. 25,622, LUNDBERG AND LUNDBERG, method of fitting the covers of electric-light fittings to their base parts.

1900.—403, HOLGATE, machines for sawing stone, marble, or other substance. 1,428. J. DUCKETT AND SON, LTD., DUCKETT AND BULLOCK, water closets and flushing cisterns. 1,579, KEIGHLEY brushes and apparatus for applying paint. 1,662, OATES, urinals. 1,743, GLEN, refuse destructors. 1,756, WEHRMANN AND BASTIANS, suspension devices for arc lamps. 2,041, ROSS, portable drilling machines. 2,907, ELLIS AND WESTCOTT, sanitary systems for ships. 4,302 MOORE, pumps and valve chambers. 4,309 KAYES fireproof pulp for boards, &c. 4,813 BACHE springs and fittings for dancing floors. 7,136. DÜNKELBERG, moulds for bricks. 14,054, JULIUS SAX AND CO., AND AIRD, indicators for electric bells. 14,208, CHAMBERS AND CHRISTIAN, device for preventing the rattling of windows. 15,960, GABRIELLI (late GIUSEPPE), fireproof coating for walls and floors. 16,248, DAVIES, KENT AND STEWART, electric wall or floor coupling sockets. 16,393, DINGLE AND URQUHART, chimney cowls. 17,039, BÜHL, automatic saw-sharpening machines. 17,139 TERLIN, drawing compasses, dividers, &c. 17,607, TRAVERS, hot water or steam radiators. 18,997, SAND-

STROM, spring hinges. 19,224, SOMMER, filter press. 19,268, WANGELIN, water-supply or flush tanks. 19,379, DUCKETT AND BADGER, machines for sand-mouldings. 19,410 COPLANTZ, extensible ladders.

Engineering Notes.

Boiler Explosions.—The eighteenth report of the Board of Trade on boiler explosions for the year ending 30th June last states that 24 persons were killed and 65 injured by these explosions; though the loss of life compares favourably with preceding years, the number of persons injured exceeds the average for the same period. Only seven cases are attributed to ignorance or neglect on the part of boiler attendants, and under this head the figures for the last ten years seem to indicate that a steady improvement is taking place.

New Dock Works at Burntisland.—Very satisfactory progress continues to be made with these works, and they will probably be completed by the middle of next summer. The outer embankment has been run westward for a distance of about 800yds., and from the west point of this wall shorewards to the old harbour head an extensive coffer-dam, about 580ft. long, has been constructed in order to keep back the water from the area within which the new wet dock had to be constructed. These outer works have accounted for a large portion of the time that has elapsed since the works were commenced early in 1897. The original plans have been altered and enlarged so as to increase the water area of the dock from 8 to 12 acres, the extreme length of which is about 1,300ft., and the width from 180ft. to 700ft. The concrete walls are 40ft. in height from the foundation to the coping. In width the walls are 14ft. at the base, and the coping consists of Norwegian granite blocks, about 3,000 tons having been imported for that purpose.

Masters and Men.

The new Isolation Hospital, Chinley, is being warmed and ventilated with the patent Manchester stoves and grates supplied by Messrs. E. H. Shorland & Brother, of Manchester.

Northern Building Trade Dispute.—At the half-yearly meeting of the Lancashire, Cheshire, and North Wales Building Trades Employers' Federation at Liverpool it was decided to support the Newcastle employers in the dispute which has arisen between them and the bricklayers. The employers at Blyth have also locked out the bricklayers' labourers and stonemasons and this extends the dispute to several districts.

Trade Unions in 1899.—A Board of Trade report on Trade Unions in the United Kingdom gives statistics for the period 1892 to 1899 relating to 1,685 unions. The number of unions on the list at the end of 1899 was 1.292, the membership of all at the end of 1899 being 1,802,518, an increase of about 20 per cent. since 1892 The total membership last year rose from 1,649,231 to 1,802,518, an increase of 153,287, or 9 per cent., the greatest proportionate increase in any of the eight years covered by the report. The rise is general. There has been an increase in 1899 over 1892 also as regards income and funds, and a decrease in expenditure. Out of an average yearly expenditure for eight years of £1,503,890, 21 4 per cent. was expended on "dispute pay," 59 8 per cent. on unemployed and other friendly benefits, and the rest in management. In 1889 "dispute pay" absorbed only 9 4 per cent.

East Clandon Parish Church has been restored under the direction of Mr. T. G. Jackson, R.A., at a cost of £2,000.

Keystones.

At St. Paul's Church, Haggerston, N.E., as a memorial to the late Rev. S. J. Stone, a brass and choir vestry are proposed to be added, and the west windows filled with stained glass.

The new Euston Theatre of Varieties, facing St. Pancras Station, London, has been opened. The architects were Messrs. Wylson and Long, and the builders were Messrs. Kirk and Kirk. The external elevations are carried out in red brick and terra-cotta. Mr. Boekbinder has done the interior decorations.

Paintings in a Workhouse.—The wards of Kingston Workhouse have been decorated with copies of Raphael's cartoons. These parochial officials evidently do not consider that a kind of orderly squalor is the proper atmosphere for a building in which paupers are housed. These copies, it appears, were painted some time ago by an inmate of the workhouse.

The new Swimming Bath for Weston-super-Mare.—A Local Government Board enquiry was held recently in reference to an application made by the Weston-super-Mare Urban District Council for sanction to borrow £9,819 in connection with the construction of a new swimming bath. The bath pond is proposed to be 100ft. by 35ft., lined with glazed tiles, the depth of the shallow end being 4ft. 9in., and the deep end 8ft. 3in. Included in the accommodation is a spectators' gallery seating 400 persons. The building will be lighted with the electric light.

A new Fire Station at Paddington has been erected in the Edgware Road, W. The total cost of the site has been £7,195 15s. 9d. The work has been executed by the Works Department of the Council, the manager of works having agreed to execute the work for the amount of the architect's estimate, viz., £13,210, with an addition of £98 for stoves. The entire cost of the site and building has therefore been £20,503 15s. 9d. The front (comprising two main blocks) to Edgware Road is built principally of red brick with Portland stone dressings. The building will accommodate a station officer, nine married men, and two coachmen, and contains stabling for four horses. The station is lighted by electricity, and is equipped with a steam fire engine, a horsed escape, and a hose cart.

Paisley Abbey Restoration.—In the proposed Paisley Abbey and Clark Town Hall surroundings improvement scheme the principal feature is the clearing away of the Abbey Close Church and all the houses and other erections on the ground between the present site of that chuch and Ellis Lane, with a view to the exchange with the Abbey Close congregation of their present site for one to the south looking up Abbey Street. It is also proposed to clear away all the houses, &c., from the Place of Paisley in Abbey Street, as far as the Graham Institute in Cotton Street. The scheme, too, contemplates the laying-out of the Abbey Churchyard, and its maintenance as an open space. In the same manner the other portions of ground cleared of erections will be laid out and maintained as open spaces. The total estimated cost is £20,000.

King Oscar and Archæological Research.—King Oscar of Sweden and Norway has given a sum of 10,000kr. towards the archæological researches of Dr. Lennart Kjellberg in Asia Minor and the island of Lesbos. Dr. Kjellberg had just issued a report upon his preparatory journey last spring in those parts in order to frame a programme for his pending researches. Together with the well-known German archæologist, Dr. J. Böhlan, he visited Lesbos and the environs of Smyrna, and in the latter he believes he has found a suitable spot for excavations. This is the ancient city of Larissa, on the lower part of the river Hermos, where he believes is one of the earliest cradles of the culture which yielded us the songs of Sappho and Alkaio, and indirectly even the Iliad. The Sultan has been asked for a concession, which it is hoped may be obtained in time for the work to be commenced in the spring.

The new English Church at Valescure has been enriched by the gift of a brass lectern designed in the Byzantine style to harmonise with the surroundings of the church. The lectern, which stands about 5ft. high, is ornamented with acanthus flowers in Byzantine detail, and its colour is dead Roman gold, exactly as the metal is left by the workers' tools, and thus changes of climate do not affect it. The stem is ornamented with four onyx stones.

Monmouth Castle.—The Duke of Beaufort has decided to sell his Monmouthshire seat, the celebrated Troy House, and when it is put up for auction in the spring a large amount of his property in that county will also be offered. The property to be offered will include the ruins of Monmouth Castle and the Tower House, which is at present leased to the War Office. Monmouth Castle is famous for having been the seat of John of Gaunt, while Troy House contains the cradle in which Henry V. was rocked, and a suit of armour which he wore at the Battle of Agincourt.

The Restoration of Pierrefonds was a notion of the Empress Eugénie, who wanted "to bring a chapter of Walter Scott into her life." The idea occurred to her at a picnic, and as it haunted her she consulted M. Viollet le Duc at one of her Compiègne teas. He entered into her views. The Directors of State Buildings and of Fine Arts did so too. The Empress wanted to find a change at Pierrefonds from the unpicturesque classicality of Compiègne. The architect worked wonders. The castle he restored is now a mediæval museum, and a most interesting place to visit. The most numerous tourists attracted by it are Germans.

Workmen's Dwellings for Llandudno.—A Local Government Board enquiry was held recently into the applications of the Llandudno Urban Council for permission to obtain a number of loans for various purposes. The first application was for a loan of £6,367 for the erection of workmen's dwellings of 32 lettings and 28 houses, which would be divided into four classes at a rental of 7s., 5s. 9d., 5s., and 3s. per week each, including rates and taxes:—Class A, composed of ten houses with a frontage of 18ft., with living room, kitchen, larder, scullery and washhouse, three bedrooms first floor, bathroom and attic bedroom, there being attached to each an open space of 293ft., asphalted; Class B, of which there were eight houses, composed of similar rooms with smaller dimensions; Class C, containing no bathrooms; and Class D, divided into flats. The next application was for a loan of £1,782 for water supply; this was explained to be a part of a scheme adopted by the Council in 1895 substituting 15-inch water mains. The application covered a length of 1,045 yards of 15in. main. A further application for £1,135 to cover cost of protection works for the extension of the sewer was also heard.

Walthamstow and William Morris.—Mr. Passmore Edwards has given to the Walthamstow Public Library a bust of the late William Morris, executed by Mr. Henry C. Fehr. The ceremony of unveiling the bust and of opening the extension of the lending library was performed last Saturday week by Mr. W. Holman Hunt. Mr. Holman Hunt, before unveiling the bust, gave an interesting address, in the course of which he bore warm testimony to the character, work, and genius of the late William Morris, and said Walthamstow had good reason to be proud of the fact that they could claim him as a native of the district. Commenting upon the lamentable decline in decorative art which began in the reign of George IV., he referred to the great efforts made by Benjamin Hayden to revive it, and then proceeded to deal with the earnest manner in which Morris took up the neglected art, brought it to a state of perfection, and made it by its very beauty commend itself to the public. Mr. Passmore Edwards said that it had been his pleasure to promote the establishment of public libraries, and he was now placing busts of local men in these libraries. He had placed medallions of Charles Lamb and Charles Keats in one library, and it was his intention to place those of Browning and Ruskin in Camberwell Library, and of Sir Edward Burne-Jones and Lord Leighton in another.

Mr. Horace Gundry, F.R.I.B.A., surveyor for Paddington, died last Friday week, aged 59 years.

St. George's Cathedral, Cape Town is to be replaced by a larger and more imposing building. Towards the erection Mr. Cecil Rhodes has promised £3,000 "as a war memorial."

"Builders' Journals" Wanted.—The publisher will be glad to send a copy of the current number of the "Architectural Review" in exchange for any three copies of the "Builders' Journal" for the following dates:—April 19th, June 28th, and November 1st, 1899; and January 17th, 1900.

The Death is announced of Mr. Gabriel Carelli.—Born in 1821 in Naples of a family of many generations of artists, he had reached his eightieth year, yet he only laid down his brush two days before his death. Street scenes and fine architectural subjects of interiors and exteriors are among his most noteworthy productions, in Italy, Spain, Constantinople and the East.

Victoria Street, Westminster, will soon have changed its character. Half a dozen new shops are ready for opening. Others are to be constructed, and in many windows of the stately buildings that line the thoroughfare bills are displayed announcing the readiness of landlords to convert the premises into places of business. Victoria Street when first built was regarded as an architectural triumph.

The Professorships in the Royal College of Art recently made at South Kensington mark emphatically the changes that have been brought about there under the scheme of reorganisation. Mr. Gerald Moira becomes Professor of Painting, Mr. Lethaby Professor of Design, Mr. Beresford Pite Professor of Architecture, and M. Lantèri retains the Professorship of Sculpture. Under the old system the school scarcely justified its existence.

The Grand Theatre, Islington.—The re-building of this theatre, since the fire which occurred there in March last, has now been completed. Mr. Frank Matcham was the architect, and Messrs. Dearing & Sons were the contractors. Although rebuilt on the original lines as to the auditorium, great additions have been made in the way of extra exits, and it is computed that the house could be emptied in about one minute in the event of fire or panic. A fire-curtain has been added to the stage.

Competition for Police Courts and Fire Station at Blackburn.—It was announced on page 396 of our last issue that the authors of the accepted design in this competition were Messrs. Briggs & Wolstenholme and Messrs. Stones & Stones, both of Blackburn. Mr. A. N. Bromley, of Nottingham, was the assessor. The probable cost of the buildings is worked out as follows:—

	Cubic feet.	£	s.	d.
Police courts, main block ..	530,000 @ 10d.	22,083	6	8
" police quarters	172,000 @ 6½d.	4,658	6	8
Fire station, engine house ..	118,000 @ 6d.	2,950	0	0
Fire superintendent's house, two houses at Duke Street end, stables, recreation rooms, &c.....	178,000 @ 6½d.	4,820	16	8
Hose tower	16,000 @ 1s.	800	0	0
17 firemen's cottages	@ £200 each	3,740	0	0
Paving, drainage, &c.		1,100	0	0
Total estimated cost.....		£40,152	10	0

Vandalism in Asia Minor.—The ruins of the ancient Ionian city of Magnesia, on the river Mæander, near Miletus, which were laid open by the German Professors Karl Humann and Baron Hiller, about a decade ago, have since been partially demolished by the head architect of the Turkish Province of Smyrna. This man, says a correspondent of the "Standard," is a Polish engineer named Baronovski. In 1895 he had the Temple of Zeus pulled down, and used the large marble stones for the construction of a mosque at Smyrna and of a bridge over the Mæander. He would have continued his work of destruction then had not Dr. Wiegand, in charge of the German excavations, telegraphed to Kiamil Pasha, Governor-General of the province—well known for the interest he takes in antiquities—to prohibit the operation. It is to be hoped that Baronovski will now be stopped, once for all, from continuing his vandalism.

New Companies.

Park Cottage Company, Limited.

This company was registered on December 5th with a capital of £7,500 in £10 shares to acquire land and buildings, to erect dwelling-houses, cottages, and other buildings, and to carry on the business of auctioneers, surveyors, land, house, and estate agents, financiers, contractors, builders' merchants, &c. Registered office: Ffrwd Offices, Mountain Ash, Glamorganshire.

East Coast Saw Mills Company, Limited.

This company was registered on December 7th with a capital of £10,000 in £1 shares to acquire the business carried on at Hull, Scarborough, Birmingham, and elsewhere as the East Coast Sawmills Company, and to carry on the business of timber merchants, sawmill proprietors, timber growers, and importers, manufacturers of all articles in which timber or wood is used, &c. The first directors (to number not less than three nor more than seven) are F. Bedwell, T. J. Baker, T. Brown, and W. James.

Commonwealth Portland Cement Company, Ltd.

This company was registered on December 4th with a capital of £100,000 in £1 shares to acquire certain property at Ivanhoe, Roxburgh, New South Wales, to adopt an agreement with the New Zealand Mines Trust, Limited, and to carry on the business of cement and brick manufacturers, limestone, lime, shale, sand, earth, metal, and mineral merchants, quarry-owners, engineers, &c., as miners, mine-owners, colliery-owners, coal-merchants, brick and lime burners, brick and tile makers, &c. The first directors (to number not less than three nor more than seven) are T. Russell, C.M.G., H. T. Bristow, C. E. Russell, and W. T. Dodds.

COMING EVENTS.

Thursday, December 27.

ROYAL INSTITUTION.—Sir Robert Stawell Ball on "Great Chapters from the Book of Nature."—I., 3 p.m.

Friday, December 28.

LONDON INSTITUTION.—Professor W. B. Bottomley, M.A., F.L.S., on "Flowers: I.—Structure and Colour," 4 p.m.

Saturday, December 29.

ROYAL INSTITUTION.—Sir Robert Stawell Ball on "Great Chapters from the Book of Nature."—II., 3 p.m.

Monday, December 31.

LONDON INSTITUTION.—Professor W. B. Bottomley, M.A., F.L.S., on "Flowers: II.—Insect Visitors," 4 p.m.

Tuesday, January 1.

ROYAL INSTITUTION.—Sir Robert Stawell Ball on "Great Chapters from the Book of Nature."—III., 3 p.m.

Thursday, January 3.

ROYAL INSTITUTION.—Sir Robert Stawell Ball on "Great Chapters from the Book of Nature."—IV., 3 p.m.

LONDON INSTITUTION.—Professor W. B. Bottomley, M.A., F.L.S., on "Flowers: III.—Unbidden Guests," 4 p.m.

CIVIL AND MECHANICAL ENGINEERS' SOCIETY.—Mr. W. B. Esson, M.I.C.E., M.I.E.E., on "The Case of Electric Power Distribution," 8 p.m.

TENDERS.

Information from accredited sources should be sent to "The Editor." Results of tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the Work.

BASFORD, Notts.—For additions to hospital for the Guardians. Mr. W. V. Betts, architect, Radford Road, Old Basford:—

W. C. Shaw	£1,942 0 0	W. J. Hutchinson	£1,689 15 6
J. Greenwood ...	1,820 0 0	A. B. Clarke	1,687 12 4
J. Cooper	1,745 0 0	W. Maule	1,664 0 0
J. G. Thomas ...	1,737 0 0	G. Hopewell & Son,	
J. Attenborough...	1,700 0 0	Old Basford * ...	1,650 0 0

* Accepted.

DARTFORD.—For the erection of an electric-light station, for the Urban District Council. Messrs. Hesketh & Stokes, architects, 110 Cheapside, E.C.:—

T. Martin	£8,043	Perry Bros.	£5,807
Leslie & Co., Ltd.	6,587	Smith & Sons, Ltd. ...	5,619
J. Lonsdale	5,935	Somerford & Son * ...	4,906

* Accepted.

DONCASTER.—For the erection of schools and house, Owston, for the Owston and Skellow School Board. Mr. J. Simmons, architect. Quantities by architect:—

Sprakes & Sons	£2,053	G. Mottram, Queen's	
Gill & Son	1,877	Road, Doncaster * ...	£1,750
Arnold & Son	1,780		

* Accepted.

HANDSWORTH, Staffs.—For making up Hutton Road for the Urban District Council. Mr. H. Richardson, C.E., Council House, Handsworth:—

J. Biggs	£2,424 0 0	Fitzmaurice & Co.	£2,243 0 0
G. Law	2,249 0 0	J. White, jun. ...	1,976 15 0
Currall, Lewis & Martin	2,246 0 0	G. Trentham, Handsworth *...	1,848 0 0

* Accepted.

LONDON, S.E.—Accepted for the rebuilding of shop and premises, No. 901 Old Kent Road, S.E., for Mrs. M. A. Chalk, Caterham, Surrey. Mr. J. Halsted-Waterworth, architect and surveyor, 281A Queen's Road, New Cross Gate, S.E.:—

Sydney R. Best, Brockley £915 15 0

LONDON, S.E.—Accepted for reinstating damage by fire to stable and chaff-cutting room at the rear of No. 94 Borough Road, S.E., for Messrs. Charlesworth & Austin, Ltd., High Street, Borough, S.E. Mr. J. Halsted-Waterworth, architect and surveyor, 281A Queen's Road, New Cross Gate, S.E.:—

H. M. Dobson, New Cross Gate £90

LONDON, S.E.—Accepted for additions and alterations at Nos. 51, 53, 55 & 57 Commercial Road, Peckham, S.E. Mr. A. E. Mullins, architect and surveyor, 16 Church Street, Camberwell Green, S.E.:—

J. H. Thompson £720

LONDON, S.E.—For rebuilding No. 77 Warham Street, Kennington, S.E., for Mr. G. Moss. Mr. A. E. Mullins, architect and surveyor, 16 Church Street, Camberwell Green, S.E.:—

G. Wood & Co.	£289	H. & G. Mallett	£280
Rice & Son	285	J. Gedye*	257

* Accepted.

LONDON, N.—Accepted for the completion of four cottages in Montagu Road, Edmonton, N., for Mr. B. S. Dimmock. Mr. A. E. Mullins, architect and surveyor, 16 Church Street, Camberwell Green, S.E.:—

A. Mitchell £473 12 6

LONDON, W.C.—For alterations, &c., at Nos. 67 and 71 Russell Square, Bloomsbury, W.C., for the National Union of Teachers. Mr. A. E. Mullins, architect and surveyor, 16 Church Street, Camberwell Green, S.E.:—

Cox	£753	Philps & Bisiker	£650
Burman & Sons	692	Lee	648
Marsland	676	Smith*	617

* Accepted.

LONDON, S.E.—Accepted for the execution of repairs, &c., at Relief Station, Peckham Park Road, S.E., for the Camberwell Guardians. Mr. A. E. Mullins, architect and surveyor, 16 Church Street, Camberwell Green, S.E.:—

W. Wright £165 2 3

LONDON.—For taking down and rebuilding the Dundee Arms Hotel, Artillery Street, Bermondsey, for Messrs. Noakes & Co., Limited. Mr. G. W. Thompson, architect. Quantities by Mr. C. A. Priestley, 35 Norfolk Street:—

		Extra for granite.	Total.
Bullers	£10,400	£500 0 0	£10,900 0 0
Laurance & Sons ...	9,046	—	—
Rider & Sons	8,669	500 0 0	9,169 0 0
Patman & Fothering-ham...	8,111	482 0 0	8,593 0 0
Downs	7,893	510 0 0	8,403 0 0
Lole & Lightfoot	7,859	466 0 0	8,325 0 0
G. Newton*	7,649	453 5 6	8,102 5 6

* Accepted.

LONDON.—For the erection of new drying and stamp rooms, for the Vinolia Company, Limited, Stratford. Mr. S. S. Dottridge, architect, Albert Buildings, Queen Victoria Street, E.C. Quantities by Mr. F. R. Smith, 6 Great College Street, Westminster:—

Gregar & Sons	£2,888	Weibking & Son	£2,685
Falkner & Sons	2,781	Munday & Son * ...	2,603
Outhwaite & Son	2,726		

* Accepted.

LONDON.—For the erection of a receiving-house for children and nurses' home, Broad Street, W.C., for the Guardians of the Poor of St. Giles-in-the-Fields and St. George, Bloomsbury. Mr. J. Grafton Izard, architect, 5 Bloomsbury Square, W.C. Quantities by Messrs. Gardiner & Theobald, 110 Great Russell Street, W.C.:—

F. & H. F. Higgs	£14,150	King & Son	£12,200
T. C Sharpington ...	13,750	H. L. Holloway	12,000
Foster Bros.	13,539	W. J. Renshaw	11,989
Courtney & Fairbairn	13,221	Smith & Sons...	11,892
Todd & Co.	13,069	J. Appleby	11,890
Hibberd Bros., Ltd. ...	13,068	Prestige & Co.	11,777
B. E. Nightingale... ...	12,555	A. Bush, 64 Ridgmount	
C. Ansell	12,527	Street, W.C.* ...	11,586
H. Wall & Co....	12,292		

* Accepted.

[Architect's estimate, £12,114.]

LONDON.—For electric lighting, Grove Park Workhouse. Mr. Thomas Dinwiddy, architect, 54 Parliament Street, S.W., and Greenwich:—

Pearson & Co.	£7,550	Samuel G. Cozens... ...	£6,140
Troy & Co....	7,394	Collins Bros	5,921
National Electric Wiring Co.	7,350	Foote & Milne	5,763
Hampton & Sons	6,598	Johnson & Phillips ...	5,550
Barlow Bros. & Co. ...	6,400	Joel & Co.	5,456
Drake & Gorham	6,380	Dawson & Co.	5,014
Geipel & Lange	6,278	Lea & Warren	4,910
		Cook & Co.	4,338

* Accepted. [Architect's estimate, £5,500.]

NEWMARKET.—For the erection of engine and destructor houses, &c., Exning Road, for the Urban District Council:—

W. Manders ...	£12,433 12 0	A. J. Bateman ...	£10,577 0 0
J. G. Cowell ...	10,990 0 0	H. J. Linzell,	
Scales & Robins ...	10,700 0 0	Newarket * ...	10,497 0 0

* Provisionally accepted.

NEWQUAY, Cornwall.—For the erection of two shops in Bank Street, for Mr. Wm. Thomas. Mr. John Ennor, jun., architect, Newquay:—

Cocking & Jenkin	£1,860	W. S. Tippett *	£1,725
C. Carrlwick	1,842		

* Accepted.

[All of Newquay.]

PLYMOUTH.—For alterations and additions to the Laira Green Schools, for the Plymouth School Board. Mr. Henry J. Snell, architect, Plymouth:—

Lethbridge & Son ...	£16,390	Wakeham Bros.	£14,266
A. Andrews	16,325	J. Berry	14,144
P. Blowey	16,300	Lapthorn & Co.	13,879
Tozer & Son	16,225	J. Paynter	13,268
W. Trevena	16,200	Blackell & Son	128,58
T. May	15,890	W. G. Goad	11,545

[All of Plymouth.]

SIDCUP.—For new children's homes, Sidcup, Kent. Mr. Thomas Dinwiddy, architect, 54 Parliament Street, S.W., and Greenwich:—

		Add Roads and Fences.	Total.
Martin Wells & Co. ...	£120,000	£8,558	£128,558
White & Son	121,115	7,200	128,315
Leslie & Co.	113,360	11,740	125,100
W. Mills	115,736	8,347	124,083
B. E. Nightingale	110,000	10,150	120,700
Wm. Shepherd	111,490	7,928	119,418
Holloway Bros.	104,800	9,450	114,250
Killby & Gayford	104,100	9,600	113,700
Thomas & Edge	104,000	9,580	113,580
C. Wall	105,370	7,700	113,070
J. J. Wise	106,000	6,000	112,000
Wallis & Sons	103,895	8,100	111,995
H. L. Holloway	100,900	9,800	110,200
T. Rowbotham	100,554	7,123	107,777
Pattinson & Son	97,245	6,795	104,040

Architect's estimate, £108,500.]

CURRENT PRICES.

		£ s. d	£ s. d.
FORAGE.			
Hay, best	per load	4 0 0	4 7 6
Sainfoin mixture	do.	3 10 0	4 10 0
Clover, best	do.	4 5 0	5 0 0
Beans	per qr.	1 8 9	—
Straw	per load	1 8 0	1 18 0
OILS AND PAINTS.			
Castor Oil, French	per cwt.	1 10 0	1 11 6
Colza Oil, English	do.	1 11 3	—
Copperas	per ton	2 0 0	—
Lard Oil	per cwt.	1 19 0	—
Lead, white, ground, carbonate	do.	1 4 10	—
Do. red	do.	1 0 4½	—
Linseed Oil, barrels	do.	1 10 9	—
Petroleum, American	per gal.	0 0 5⅝	0 0 6
Do. Russian	do.	0 0 5⅛	0 0 5 13/16
Pitch	per barrel	0 8 6	—
Shellac, orange	per cwt.	3 0 0	—
Soda, crystals	per ton	3 2 6	3 5 0
Tallow, Home Melt	per cwt.	1 5 6	—
Tar, Stockholm	per barrel	1 8 6	—
Turpentine	per cwt.	1 9 0	—
METALS.			
Copper, sheet, strong	per ton	86 0 0	—
Iron, Staffs., bar	do.	7 15 0	10 10 0
Do Galvanised Corrugated sheet	do.	12 0 0	12 10 0
Lead, pig, Spanish	do.	16 2 6	16 0 0
Do. do. English common brands	do.	16 10 0	—
Do. sheet, English, 3lb. per sq. ft. and upwards	do.	21 0 0	22 0 0
Do. pipe	do.	23 0 0	—
Nails, cut clasp, 3in. to 6in.	do.	12 0 0	13 0 0
Do. floor brads	do.	11 15 0	12 15 0
Steel, Staffs., Girders and Angles	do.	8 0 0	8 5 0
Do. Mild Bars	do.	8 5 0	8 15 0
Tin, Foreign	do.	116 15 0	117 5 0
Do. English ingots	do.	118 0 0	119 0 0
Zinc, sheets, Silesian	do.	22 10 0	—
Do. do. Vieille Montaigne	do.	23 2 6	—
Do. Spelter	do.	18 12 6	—
TIMBER.			
SOFT WOODS.			
Fir, Dantzic and Memel	per load	3 0 0	4 0 0
Pine, Quebec Yellow	do.	4 7 6	6 0 0
Do. Pitch	do.	2 13 0	3 6 0
Laths, log, Dantzic	per fath.	4 10 0	5 10 0
Do. Petersburg	per bundle	0 0 9	0 0 10½
Deals, Archangel 2nd & 1st	per P. Std.	12 15 0	17 0 0
Do. do. 4th & 3rd	do.	—	0 11 5
Do. do. unsorted	do.	—	—
Do. Riga	do.	6 15 0	8 10 0
Do. Petersburg 1st Yellow	do.	14 15 0	15 5 0
Do. do. 2nd „	do.	8 15 0	14 15 0
Do. do. Unsorted „	do.	5 5 0	13 0 0
Do. do. White	do.	9 10 0	11 5 0
Do. Swedish	do.	8 10 0	13 0 0
Do. White Sea	do.	12 15 0	16 15 0
Do. Quebec Pine, 1st	do.	19 5 0	—
SOFT WOODS—*continued.*			
Do. do. 2nd	per P. Std.	18 15 0	—
Do. do. 3rd &c.	do.	9 0 0	9 15 0
Do. Canadian Spruce, 1st	do.	10 10 0	11 15 0
Do. do. 3rd & 2nd	do.	8 15 0	9 0 0
Do. New Brunswick	do.	7 5 0	8 0 0
Battens, all kinds	do.	7 10 0	8 0 0
Flooring Boards, 1in. prepared, 1st	per square	0 11 0	—
Do. 2nd	do.	0 9 0	0 11 3
Do. 3rd &c.	do.	0 8 6	0 10 6

CONTRACTS OPEN.

THE URBAN DISTRICT COUNCIL of WHITBY.

BUILDINGS FOR ELECTRIC LIGHT STATION.

The Urban District Council of Whitby are prepared to receive TENDERS for the ERECTION of an ELECTRIC LIGHT STATION and DESTRUCTOR.

General conditions, form of Tender, and bills of quantities can be obtained on and after TUESDAY, 1st JANUARY, 1901, and drawings can be inspected on application to the Clerk at the Offices of the Council, Whitby.

Tenders upon printed forms, and endorsed "Electric Light Station," to be delivered at the Offices of the Council not later than TWO o'clock on TUESDAY, the 8th JANUARY, 1901.

£10 to be enclosed with each Tender, which will be returned to all unsuccessful contractors immediately Tenders are accepted.

The Council do not bind themselves to accept the lowest or any Tender.

By order,
WM. SEATON GRAY,
Clerk to the Council.

Offices,
Whitby, Yorks.

ROCHFORD RURAL DISTRICT COUNCIL.

TO BUILDERS.

The Council invite TENDERS for the ERECTION of an ISOLATION HOSPITAL near Sutton Ford Bridge, Rochford, Essex.

Plans and specification may be seen at the Offices of the Architects, Messrs. C. & W. H. PERTWEE, Chelmsford, or of the Quantity Surveyors, Messrs. R. L. CURTIS & SON 119 and 120 London Wall, London, E.C.

Bills of quantities and form of Tender may be obtained from the Quantity Surveyors on payment of £1 1s., which sum will be returned on receipt of a bonâ-fide Tender.

Tenders are to be sent to me not later than MONDAY, the 7th JANUARY next.

The Council do not hold themselves responsible for the accuracy of the quantities, or bind themselves to accept the lowest or any Tender.

By order,
FREDERIC GREGSON,
Clerk.

Southend-on-Sea,
December 1900.

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	At Wharf.	ex Ship within one month.	At Wharf.
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17½×3×2	8 11	8 2	14 6
17½×3×1½	6 10	6 3	10 9



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1½×4½ Oak, 56/9 Pitch Pine, 29/- per square
1 ×4½ „ 45/6 „ 25/6 „

These prices include desiccation.

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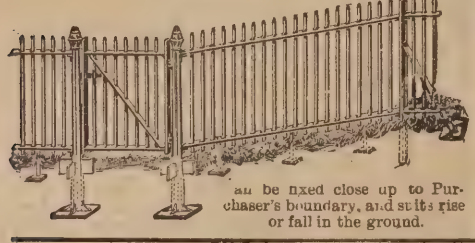
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The secret of its simplicity and perfection is the famous **"Lucky Curve,"** Combined with our new **Spring Lock Device.** Also fitted with our **Anti-Break** Cap. Ask your dealer to let you try a Parker. Now and then a dealer tries to sell an old-style pen instead; in such a case write us. If you want to investigate send for our valuable Guarantee and interesting Booklet, Free.

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2. That prior to the accident the passenger in question had affixed his or her usual signature in the space provided below.

3. That notice of the accident be given to the Corporation guaranteeing this insurance within seven days of its occurrence.

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Particulars and conditions of sale may be obtained at the Mart, E.C.; of Messrs. RANKEN, FORD, FORD and CHESTER, Solicitors, 4 South Square, Gray's. Inn, W.C.; and of the Auctioneers, 11 St. Helen's Place, Bishopsgate, E.C.

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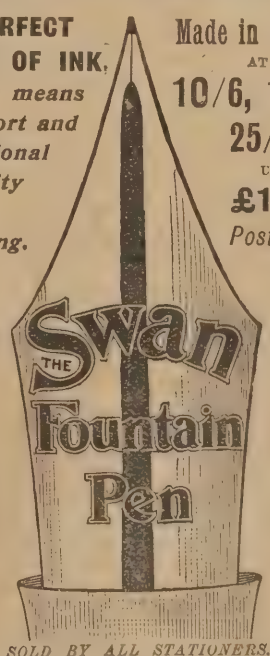
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COMPLETE LIST OF CONTRACTS OPEN.

DATE OF DELIVERY.		WORK TO BE EXECUTED.	FOR WHOM	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
		BUILDING.		
Dec.	28	Halifax—Alterations to Fish Market	Markets Committee	J. Lord, Borough Engineer, Town Hall, Halifax.
"	29	Stratton St. Margaret, Wilts—Infirmary, &c.	Swindon and Highworth Union Guardians	R. J. Beswick, 35 Regent Street Swindon, Wilts.
"	29	Wigton, Cumberland—Room at Police Station		G. D. Oliver, County Architect, Carlisle.
"	29	Whitchurch, Salop—Lining Church with Stone	Rev. C. R. Pembridge	G. Hancock and Son, 6 Bargates, Whitchurch, Salop.
"	29	Falmouth—Police Station	Standing Joint Committee	County Police Station, Falmouth.
"	29	Falmouth—School of Art	Committee of Science and Art Schools	Chamber of Commerce, Arwenack Street, Falmouth.
"	31	Harrow Extensions	J. Adamson and Co.	Johnstone Brothers, 39 Lowther Street, Carlisle.
"	31	Balby, Doncaster—Infants' School	School Board	F. W Masters, 11 Priory Place, Doncaster.
"	31	Melrose—Post Office	H.M. Commissioner of Works, &c.	H.M. Office of Works, Edinburgh.
Jan.	1	Bradford—Warehouse		Milnes and France, Architects, Bradford.
"	1	Colchester—School Building	Royal Grammar School Governors	H. Goodyear, Borough Surveyor, Colchester.
"	1	Mountain Ash, Wales—Chapel	English Baptist Trustees	T. W. Millar, Architect, Mountain Ash.
"	1	Poynton, Cheshire—Police Station		H. Beswick, County Architect, Newgate Street, Chester.
"	1	Kingston-on-Thames—Additions to Laundry	Union Guardians	J. Edgell, Clerk, Guardians' Offices, Coombe Lane Kingston-on-Thames
"	1	Dover—Alterations, &c., to Boiler House	Town Council	H. E Stilgoe, Borough Engineer, Town Hall, Dover.
"	1	Friskney Eaudikes—Double Cottage		The Vicar, Friskney, S.O., Lincs.
"	1	Leicester—Premises	National Union of Boot and Shoe Operatives	Harrison and Hattrell, 34 Friar Lane, Leicester.
"	2	Stoke-upon-Trent—Laundry and Boiler House	Workhouse Guardians	C. L nam, Architect, Stoke-upon-Trent.
"	2	Ryhope, near Sunderland—Rebuilding Inn	J. Johnson	H. Grieves, Architect, Albany Chambers, South Shields.
"	3	Cardiff—Electric Tram Depôt	Corporation	W. Harpur, Borough Engineer, Cardiff.
"	4	Fersfield, near Diss, Norfolk—School and Residence, &c.	School Board	H. Winkworth, 3A Hatton Court, Ipswich.
"	5	Halifax—45 Houses		R. Horsfall and Son, 22A Commercial Street, Halifax.
"	5	Larne, Ireland—Painting and Repairs at Town Hall	Urban District Council	W. G. Younge, Clerk, Council Chamber, Town Hall, Larne.
"	5	Pickering, Yorks—Vicarage, Stable, &c.		J. Kirk and Sons, Crown Hotel, Rosedale Abbey.
"	7	Halifax—Masonry to Bridge	Improvements Committee	J. Lord, Borough Engineer, Town Hall. Halifax.
"	7	Rochford—Isolation Hospital	Rural District Council	C. and W. H. Pertwee, Architects, Chelmsford.
"	8	Glanamman, Carmarthenshire—Station Buildings	Great Western Railway Company	Engineer, Neath Station.
"	10	Low Row, Yorks—Wesleyan Chapel		Secretary, Chapel Building Committee, Kearton, Reeth, Yorks.
"	10	Sandbach—Shop Fittings, &c.	Co-operative Society, Limited	A. Price, Architect, Elworth, Sandbach
"	10	Lambourn, Berks—Fire Engine House	Parish Council	H. J. Maberly, Clerk, Market Place, Lambourn.
"	10	Cricklade, Wilts—Police Station	Standing Joint Committee	County Offices, Trowbridge.
		ENGINEERING		
Dec.	28	Port Glasgow—Conduit	Borough Commissioners	W. R. Copland, 146 West Regent Street, Glasgow.
"	28	Salisbury—Refuse Destructor		A. C. Bothams, Engineer, Municipal Offices, Salisbury.
"	28	Ayr—5½ miles of Electric Tramways	Magistrates and Council	J. Young, Engineer, Town Buildings Ayr.
"	28	Ryde—Esplanade and Sea Wall	Corporation	C. Mathew, Borough Surveyor, Town Hall, Ryde, I.W.
"	29	Winwick, Lancs—Wiring	Asylums Board	J. S. Muspratt, County Offices, Preston.
"	31	Llandudno, Wales—Promenade Works	Urban District Council	E. P. Stephenson, Church Walks, Llandudno.
"	3.	London, N.—Plant	Hendon Urban District Council	R. Hammond, 64 Victoria Street, London, S.W.
"	31	Leeds—Electric Lighting Plant	City Council	H Dickinson, 1 Whitehall Road, Leeds
"	31	Worthing—Switchboard	Corporation	Gurstaland Hookham, 14 and 15 Queen Street, S.W
"	31	Beckenham—Steam Disinfector	Urban District Council	J A Angell, Surveyor, Beckenham.
"	31	Ilford—Fire Engine and Escape	Urban District Council	J W. Benton, Clerk Council Offices, Ilford.
"	31	Otley, Yorks—Detritus Chambers, &c.	Urban District Council	J. E Sharpe, Engineer, Council Offices Otley
"	31	Worthing—Electric Tramways	Corporation	W. Verrall, Town Clerk Municipal Offices, Worthing.
Jan.	1	Colchester—River Quay.	Corporation	H Goodyear, Borough Surveyor, Colchester
"	1	Hampton, Middlesex—10-ton Steam Roller	Urban District Council	J. Kemp, Surveyor, Council Offices, Park House, Hampton.
"	1	London, S.W.—Bridgework	Secretary of State for India	Director-General of Stores, India Office, Whitehall, S.W.
"	1	Thetford, Norfolk—Electric Wiring and Fittings	Town Council	J Houchen, Town Clerk London Road, Thetford.
"	2	Christiania—Transmission of Electric Power	Stavanger Corporation	E. Berentsen, British Vice-Consul, Stavanger.
"	2	Tooting Bec—Wiring	Metropolitan Asylums Board	Board Offices, Embankment, E.C.
"	2	Middleton, Lancs—Superheaters	Corporation	Lacey, Curehugh and Sillar, 78 King Street, Manchester.
"	2	London, E.C.—Dock Bridges, Boiler Tubes, &c	East India Railway Company	C. W. Young, Officiating Secretary, Nicholas Lane, E.C.
"	4	Manchester—Twenty-two Electric Cranes	Ship Canal Warehousing Company, Ltd.	W. H. Hunter, 41 Spring Gardens, Manchester
"	5	Baltinglass, Ireland—Iron Pump, &c.	Rural District Council	J. R Dagg, Clerk, Baltinglass.
		IRON AND STEEL		
Dec	28	London, S.W.—Safety Chains, Springs, Brackets, &c.	Uganda Railway Committee	Crown Agents for the Colonies, Downing Street, S.W.
"	28	Southampton—Stresses and Fittings	Corporation	W B. G. Bennett, Borough Engineer, Municipal Offices, Southampton
"	31	Dublin—Castings, Ironmongery, &c.	United Tramways Company	R. S Tresilian, 9 Upper Sackville Street, Dublin.
"	31	Margate—Scrap Iron, Girders, Columns, &c.	Isle of Thanet Gas Company	J. Dougall, Engineer, Offices, The Dane, Margate.
"	31	Llandudno—Pipes	Urban District Council	E. P Stephenson, Church Walks, Llandudno
Jan.	4	Stockholm—Steel Girders	Swedish State Railways	Commercial Department, Foreign Office, S.W.
"	5	Halifax—Castings, Ironmongery, &c.	Waterworks Committee	J. A Paskin, 22 George Street, Halifax.
"	8	Farnworth, Lancs—Tramway Rails, &c.	Urban District Council	W. J. Lomax, 1. Folds Street, Bolton.
		ROAD AND CARTAGE		
Dec.	28	East Molesey—Making Up Road	Urban District Council	J. Stevenson, Surveyor to Council, Walton Road, East Molesey.
"	28	Southgate—Making-up Streets	Urban District Council	C. G. Lawson, Surveyor, Council Offices, Palmers Green, N.
"	28	Exeter—Cricket Ground and Road		Ellis, Son and Bowden, Surveyors, Exeter.
"	29	Hayward's Heath—Sussex—Road Works	Urban District Council	E. Waugh, Clerk to Council, Hayward's Heath.
"	30	Nottingham—Carting	Corporation	A. Brown, Guildhall. Nottingham.
"	31	Kettering—Footpath	Urban District Council	Surveyor, Market Place Kettering.
"	31	Ilford—Seven One-horse Tip-wagons	Urban District Council	J. W. Benton, Clerk, Council Offices, Ilford.
"	31	Pemberton, Lancashire—Setts and Kerbs	Urban District Council	P. Partington, Clerk, Pemberton.
"	31	Knutsford—Road Works	Urban District Council	W J. Downes, Surveyor, Knutsford.
"	31	Knutsford—Forming, &c., Cemetery Paths	Urban District Council	W. J. Downes, Surveyor, Knutsford.
Jan	1	Hawarden—Cheshire—Roads	Wirral Rural District Council	W. H. Churton, Clerk, Eastgate Buildings, Chester.
"	1	Hailsham, Sussex—Road Works	Rural District Council	J. Huxley, 9 Wellington Terrace, Hailsham.
"	2	Feeling, Durham—Broken Slag and Whinstone	Urban District Council	H Miller, Surveyor, Council Offices, Felling.
"	2	Litherland, Lancs—Roadmaking, &c.	Urban District Council	W. B. Garton, 25 Sefton Road. Litherland.
"	2	Ramsgate—Wood Paving	Corporation	T. G. Taylor, Borough Surveyor, Broad Street, Ramsgate.
"	2	Ramsgate—Breaking and Renewing Concrete Roadway and Wood Paving	Corporation	T. G. Taylor, Borough Surveyor, Broad Street, Ramsgate.
"	5	Hampton-Wick—Broken Granite	Urban District Council	J. N. Horsfield, Surveyor, Hampton Wick, Middlesex.
"	5	St. Annes-on-Sea—Making-up Streets	Urban District Council	T. Bradley, Clerk, Council Offices, Park Road, St. Annes-on-Sea.
		SANITARY.		
Dec.	28	West Hartlepool—Scavenging	Corporation	J. W. Brown, Borough Engineer, West Hartlepool.
"	29	St. Annes-on-Sea, Lancs—Pipe Sewers, &c.	Urban District Council	H. Bancroft and Son, 83 Mosley Street, Manchester.
Jan.	1	Kessingland, near Lowestoft—Sewerage System	Mutford and Lothingland Rural D.C.	F. Peskett, 157 London Road, Lowestoft.
"	1	Leicester—Public Conveniences and Sewers	Parks and Recreation Grounds Committee	E. G. Mawbey, Borough Engineer, Town Hall, Leicester.
"	2	Litherland—Pipe Sewer, &c.	Urban District Council	W. B. Garton, 25 Sefton Road, Litherland.
"	5	Larne, Ireland—Sewers, &c.	Urban District Council	W. G. Younge, Clerk, Town Hall, Larne.
"	7	Gildersome, Yorks—Sewage Disposal Works	Urban District Council	J. Waugh, Engineer, Sunbridge Chambers, Bradford.

COMPETITIONS OPEN.

DATE OF DELIVERY.		DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	BY WHOM ADVERTISED
Dec.	31	Malling, Kent—Steam and Hot Water Scheme	£25	J. F. Allison, West Malling, Kent.
"	31	South Shields—Municipal Buildings	£200 £100 £50	J. M Hayton, Town Clerk, Court Buildings, South Shields
Jan.	18	Hindley—Public Offices	£50, £25, £10	A. Holden, Surveyor, Hindley.
"	23	Tanfield, Tantobie, 3- and 4-roomed Workmen's Cottages	£10, £5	R. Heslop, Surveyor to Urban District Council, Dean View, Burnopfield
Feb.	14	Ballarat, Australia—Statue		J. W. Nedwell, Hon. Sec. Soldiers' Statue Fund, Ballarat, Australia.
March	25	Basford—Sewerage Scheme		C. J. Spencer, Clerk, Public Offices, Basford.

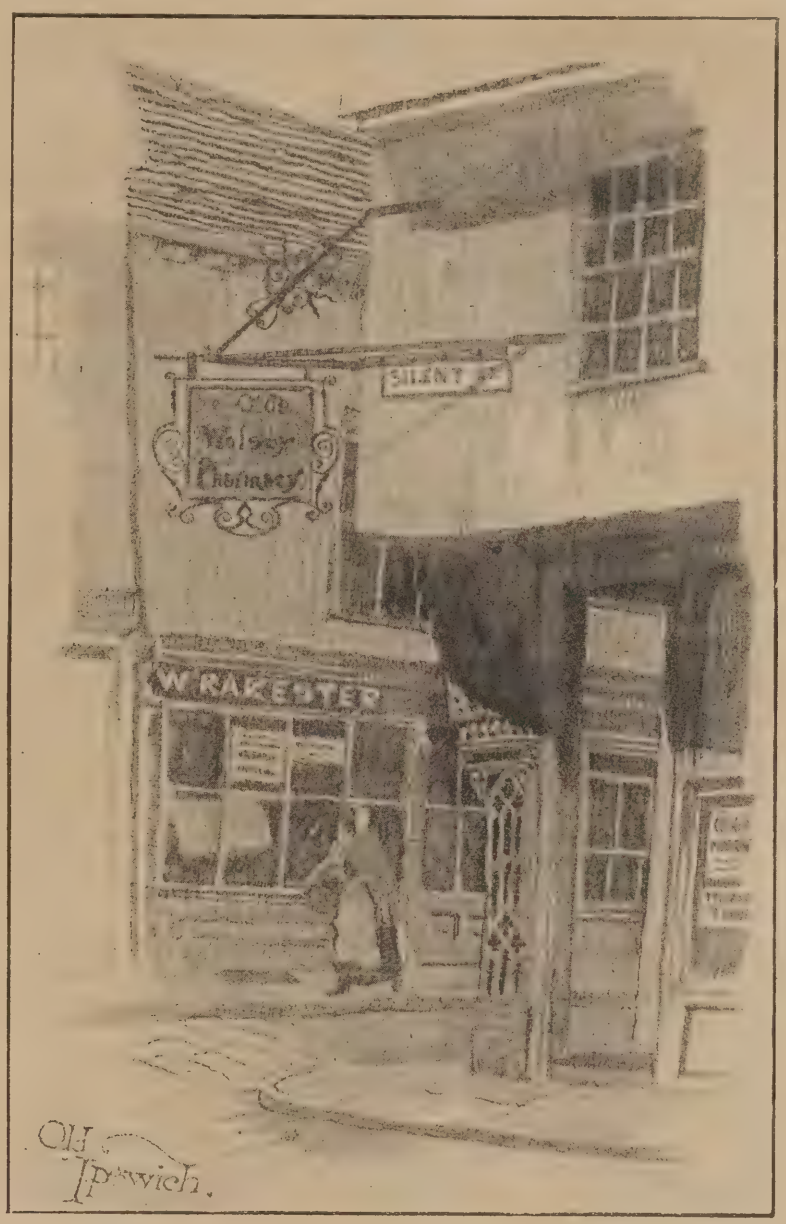
THE BUILDERS' JOURNAL & ARCHITECTURAL RECORD

JANUARY 2, 1901. No. CCCVIII.

EFFINGHAM HOUSE, ARUNDEL STREET, STRAND, W.C.

An Architectural Causerie.

The Past Year. ARCHITECTURE is not a thing subject to violent changes—its advance or retreat is not the work of a day, or a year—and it becomes difficult for a contemporary writer to discern the direction and force of the current in thought and handiwork. Though the present state of architecture is very far from satisfactory, still there is a steady, though slow, movement towards a better standard, in spite of the fact that the commercial requirements of to-day are so antagonistic to everything outside their own category. During the past century England has witnessed a great vacillation among her architects, first the old Classic of Chambers and his school, then the Neo-Greek of Decimus Burton, later the enthusiastic revival of Gothic architecture, and at the present time a medley of styles, some following Renaissance models, others feebly copying the Gothic revivalists, and a small—growing—body of earnest workers striving amid the hubbub to found a style intrinsically belonging to their own day, a body of men using their materials in an honest skilful way, simply, effectively and with frank purpose; and these men are the centre of a great hope—may it be fulfilled! Perhaps the chief architectural event of 1900 was the competition for the buildings on the crescent portion of the new street from Holborn to the Strand. We have already criticised the eight sets of designs which were sent in: suffice it to say now that, while several were very meritorious, not one embodied the great civic idea, and all showed a lack of that grouping of mass so essential to the appearance of large blocks of buildings and so ably represented in the works of some of the great French architects. The conditions imposed by the London County Council were not fair to the competing architects, and now that the designs by Mr. Runtz for the Gaiety Theatre and a block of buildings adjoining have been passed by the Strand Improvement Committee it seems that the idea of a homogeneous treatment has been abandoned. Mr. Norman Shaw's criticism of the designs is still kept secret, though for what reason it is hard to say. It is to be hoped that the Council will not throw over the idea which prompted them to hold the competition, as they will thus miss the great opportunity which is at present theirs. During the past year several other large competitions have been decided, prominent among which were those for the new Sessions House in the Old Bailey and the Mersey Docks and Harbour Board Offices—the latter being limited to Liverpool architects. Mr. Mountford's building for the Sessions House should look very fine when erected. A great deal of attention has been drawn to the problem of housing the poor and many attempts to solve it have been made throughout the kingdom—at London, Liverpool, Birmingham, Edinburgh, Manchester, Bradford, Dublin. In some cases considerable success has been achieved and a great many insanitary areas have been swept away, but with the present conditions of the tenure of land and the high prices of materials and labour it is generally found impracticable to let the new houses at rentals sufficiently low to allow the very poor to live in them. As might be supposed, the problem in London has assumed an alarming aspect, though the Council has latterly pursued a most energetic course, with much success. In March last the Prince of Wales opened the last block of buildings on the Boundary Street area and it is only necessary to learn the facts about this former plague spot in order to appreciate the great difficulties that have to be encountered. The buildings on this area, by Mr. Blashill and Mr. Rowland Plumbe, and also those on the Millbank estate, show what can be done even when all expenses are cut down to a minimum. During 1900 the prices of materials continued to rise, and this has largely affected building operations, while the phenomenally high price of coal has seriously hampered brickmakers, who are vainly looking around for a new fuel. Almost a year ago John Ruskin died, within three weeks of his eighty-first birthday. As Mr. E. T. Cook expressed it, Ruskin's principal work in art criticism was done fifty years ago, and done so completely that the new generation had forgotten it—the very depth and diffusion of his influence on the artistic world blinded his later contemporaries to its magnitude. Now the eloquent voice is silent, and Ruskin lies in the quiet churchyard of Coniston, amid the mountains that were his home and his daily delight; but his influence lives and is bearing much fruit. William Butterfield, that noble builder in brick, that kindly gentleman, that able architect; William Young, the author of the new War Office design and the architect of the municipal buildings at Glasgow; Charles Barry, the son of the late Sir Charles Barry; and Henry Currey, the architect of St. Thomas's Hospital—these four names must be included in the list of deaths for 1900. During the past year many large buildings have been begun or completed. In London the sites have been cleared for the new Government buildings in Whitehall, the work of completing South Kensington Museum according to Mr. Aston Webb's design has been commenced, and the new Royal College of Science and Royal School of Art Needlework, both in the vicinity, have been begun; the new Roman Catholic Cathedral at Westminster (J. F. Bentley, architect) is approaching completion; large new hospitals have been built at Ladywell, Lewisham, Hendon and Bethnal Green; Marylebone Workhouse and the Italian Hospital have been extended; three big office buildings have been finished on the Victoria Embankment; the Hippodrome and the Hotel Russell have been opened; Spurgeon's Tabernacle has been reconstructed; and considerable progress has been made with the Eastern Telegraph Company's building in Finsbury Circus and with Mr. Alfred Waterhouse's extensions to the Prudential Assurance Company's premises on Holborn. It is impossible to enumerate the buildings that have been completed in the provinces; a few, however, of the larger works may be mentioned. At Newcastle the City Lunatic Asylum has been enlarged; at Nottingham an immense new station has been built; at Glasgow a new central fire station and the Ruchill Hospital were opened; new Physical Laboratory to the Owen's College at Manchester; large new workhouse at Doncaster; new municipal buildings at Chatham and Douglas; new



CORNER-POST, SILENT STREET, IPSWICH. DRAWN BY EDWARD WALKER.

Sessions house at Preston; extensions to the Alexandra College at Dublin; new art gallery at Bath; Colston Hall reconstructed at Bristol; workmen's dwellings at Birmingham; and a large new church at Eccleston from designs by Mr. Bodley. The past year has not been without its acts of vandalism, the greatest of which was perhaps the erection of the new guard-house at the Tower, a red-brick building entirely out of keeping with the weathered stone buildings of London's ancient fortress. It is to be hoped that the Government will not abuse its trust in the keeping of Tintern Abbey. The most notable books relating to architecture published during 1900 were:—"Gothic Art in England" (Prior); "The Art and Craft of Garden Making" (Mawson); "French Architects and Sculptors of the Eighteenth Century" (Lady Dilke); "Old Cottages and Farm Houses in Kent and Sussex" (Davie and Dawber); "Later Renaissance Architecture in England" (Belcher and Macartney); "Royal Tombs of the First Dynasty" (Flinders Petrie); "Pompeii" (Mau); and "Homes for the Working Classes in Urban Districts" (Cranfield and Potter). In January last the scheme for the Homes of Rest at Bisley for discharged soldiers, which form the Building Trades' Gift to the Nation, was promoted. The Central London Railway was opened in June; the cement manufacturers and the wallpaper manufacturers formed two large "combines"; and much attention was drawn to the questions of public competitions and architectural education, and to the decoration of St. Paul's Cathedral. These are a few of the things which might be mentioned as having taken place during 1900. Many other items of importance could of course be spoken of, but space forbids; nevertheless, enough has been said to show that both the principles and practice of architecture are being followed with earnestness and zeal; let us hope that the new century will witness the rise of a great national style developed by a great race of architects.



THE OLD NEPTUNE, IPSWICH.

IPSWICH.

BY EDWARD WALKER.

LIKE many other towns and cities of England, the ancient borough of Ipswich, the county town of Suffolk, has, during the last half-century, been slowly but surely losing its mediæval character, and this has been brought about, here as in the majority of other similar places, by the growth of the town as a centre of commercial industry. One or other of those narrow ancient streets, once lined on either side by the dwellings of the merchant princes, each with its overhanging upper storey, its many-paned windows and quaint gables, has from time to time been found to be quite inadequate for the ever-increasing traffic, and the result has been that in the subsequent alterations many buildings of very great interest and beauty have been swept away. Happily for the architectural student, however, a considerable number of similarly ancient houses still remain, silent witnesses of a former grandeur. Many now serve as warehouses; others have been converted into inns. In some of these latter it is quite a common sight nowadays to see the labourer taking his small beer seated on a richly-carved settle, amidst such surroundings as oak-panelling and an almost gorgeous mantelpiece can give, to say nothing of, maybe, a fine coffered ceiling moulded into curious devices of a most beautiful character. A few of these old abodes are still occupied as dwellings, but these are for the most part tenanted by people in very different circumstances from those enjoyed by the former habitants.

The architectural antiquities of Ipswich are of a domestic rather than of an ecclesiastical or baronial character. There are neither remains of a castle nor ruins of an abbey, but the place was formerly encompassed by gates, earthworks and ditches, of which, however, there are now only few traces. The ancient churches of the town have in most instances been replaced by modern structures, but those old edifices which still exist afford subjects of much interest to the student. They are for the most part of flint and freestone or rubble, the towers of some of those of a later date being of extreme value as examples of the decorative treatment of these materials. That illustrated in the accompanying drawing of "Sparrowe's House" may be taken as a typical instance of a tower of this description. The plain surface of the stone walls is relieved by means of squares, circles and diamonds in flint running in horizontal bands, and this, though doubtless often at the sacrifice of simplicity, gives to these towers an extremely rich and brilliant effect, seen to best advantage in bright sunshine. Much of the internal beauty of these old Ipswich churches is due to their open timber roofs, of which there are one or two fine specimens, particularly that of St. Margaret's, a well-designed hammer-beam, the timbers richly ornamented with carved shields and scroll-work. This church is Early Perpendicular, and possesses a finely-traceried clerestory with an elaborate battlement, while in the interior are a good fourteenth-century octagonal font and interesting remains of a rood staircase.

It has been said that there still remain in Ipswich some interesting examples of domestic architecture of the fifteenth and sixteenth centuries, and undoubtedly the finest of these is "Sparrowe's," otherwise "the Ancient," house. This house is not merely a remarkable instance of elaborate ornamental pargeting, but the details of its ornamentation are so curious as to be almost unique—perhaps they are as quaint as those of any dwelling in England. The exterior and interior are of different periods, and the whole has been subjected to many alterations; in fact, the house in its present state is the accumulated product of a series of years extending over two centuries. In the year 1801 a secret room was

discovered at the top of the house, over one of the attics. It had a good fifteenth-century hammer-beam roof with carved angels and corbel heads, and (being the oldest portion of the house) it is probable that it covered a hall which at a later date was subdivided into the smaller rooms still to be seen. Many of the rooms are elaborately panelled, one of those at the front being enriched by a beautifully-carved mantelpiece with the arms of the Sparrowe family conspicuous among the details. Our illustration shows the corner of the house overlooking a narrow lane, but the principal façade, 70 feet in length, faces the main street, and consists of four bays of a similar character to the one illustrated. Along the basement storey, on brackets, panels and cornice, are strings of pendent fruit and other floral decorations, cleverly moulded in plaster. On the first floor, in a central position, are the royal arms of Charles II., and on the base of each of the four oriel windows modelled figure subjects emblematical of the four continents—Europe, Asia, Africa and America. Between the windows, and springing from a moulded pedestal, are pilasters, across each of which hang large festoons of fruit and flowers, while the whole is surmounted by a heavy cornice extending the length of the front. The sky-line of the roof is picturesquely broken by four quaint dormers, and in the triangular space over the casements are figures of Cupids in various postures modelled in somewhat high relief.

Though there are several fine old houses in other parts of the town, yet, as one would expect, most of them are to be found in the neighbourhood of the harbour side. It was here that the bold pioneers of trade dwelt, the front of the house being to the street, with the warehouses in the rear overlooking the river. The "Old Neptune" Inn and the "Lion and Lamb," forming the subjects of two of the accompanying illustrations, were formerly the residences of some of these merchant-adventurers, and with their picturesque oriels, their carved window-frames, door spandrels and eaves-boards, their panelled rooms and moulded ceilings, give us a good idea of the pride these men took in their homes.

It is not possible now to enter into any detailed description of the Elizabethan mansion of Christchurch, the "Wolsey Gate," the old Ipswich corner-posts, and many other of the antiquities of Ipswich, yet the student may be assured that a visit to this old town will not only be extremely gratifying to him, but (which is more important) instructive also in the highest degree.

LIGHTNING CONDUCTORS.

BY C. E. SAVERY.

DURING the last few decades electricity has so far developed itself in the various uses to which it can be adapted, providing for the transmission of messages from one end of the world to the other, in the lighting of our streets and dwellings, or in the carrying of goods and passengers—that very little attention is paid at the present time to the electricity generated by the elements themselves; and it is only occasional accidents which serve to remind us of the existence of a power in the air to which we appear to have become accustomed. It seems a paradox that we should use electricity for so many useful purposes and yet be unable to gauge with any degree of certainty the effect of a single lightning flash in the sky. From the time when Franklin flew his son's kite and drew off the electric fluid by means of a key attached to the string until the present the imperative necessity for lightning conductors for preventing accidents to buildings is generally admitted. How frequently, however, do these fail to act with any degree of certainty when a building unfortunately happens to be struck. Provision should be made so that the fluid may be conveyed to the earth with as little danger to the fabric as possible; yet it certainly seems that an unpleasant element of chance obtrudes itself into the case. In too many instances of recent accidents the electric fluid has partly traversed the conductor and then at a lower level been able to effect a considerable amount of damage; at other times the conductor has been conveniently ignored by the flash, and injury otherwise inflicted. Of course it will be said that numerous cases occur, of which we have no record, where buildings were actually struck and the fluid has been safely carried away by the conductors; and this may happen quite frequently. Granted. But the fact remains, that too many accidents occur where lightning rods

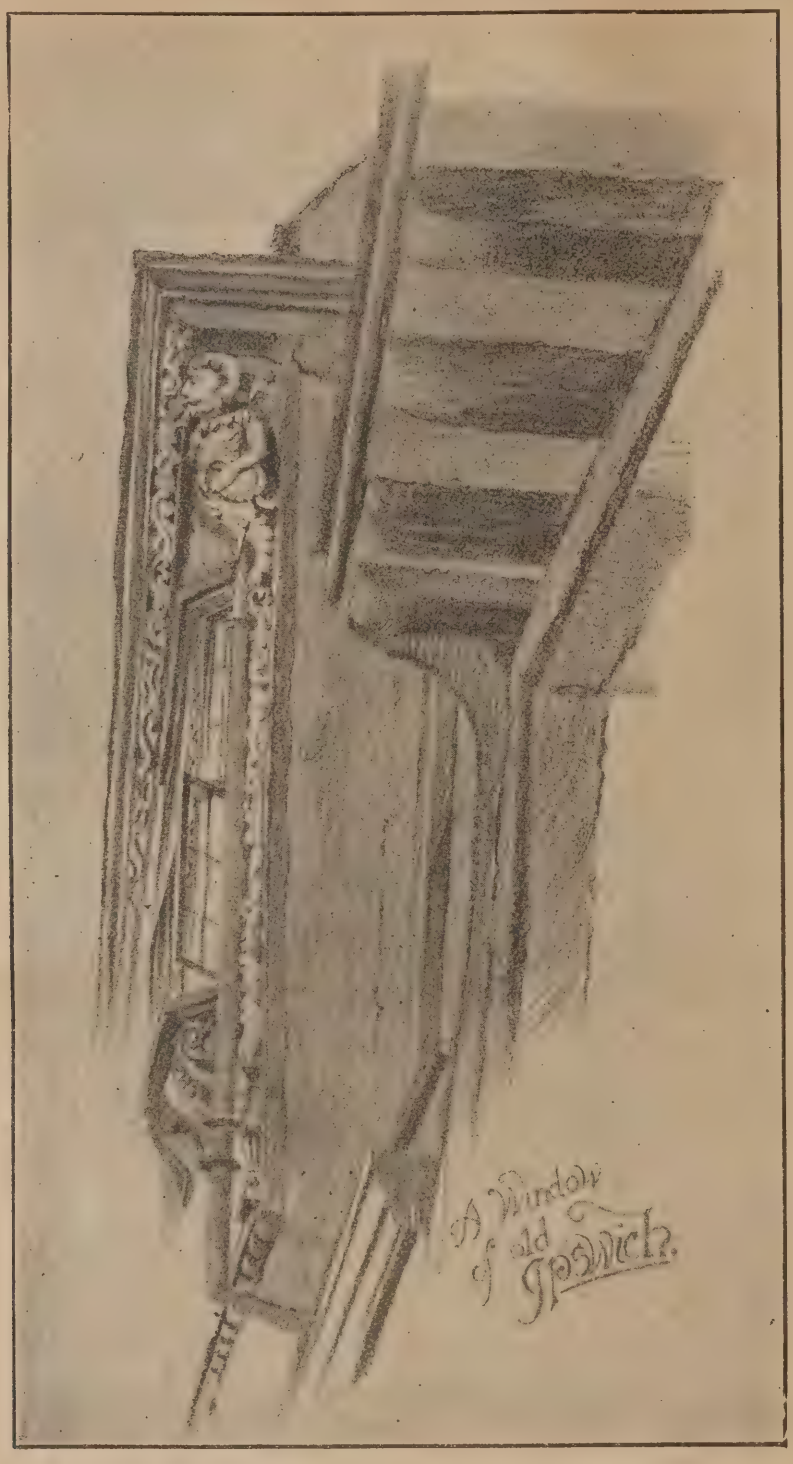


are fixed for us to admit that their working is entirely satisfactory. Unless an unforeseen accident happens to the conductor itself our buildings should enjoy comparative immunity from the effects of thunderstorms, and we may therefore be led to a consideration as to some of the causes which lead to the accidents in question.

At the present time it has become the fashion to leave matters requiring special treatment to experts in the different branches of science. This has undoubtedly many advantages, but on the other hand the younger branch of the architectural profession is apt to leave troublesome matters, such as the details pertaining to lightning conductors, to an expert in this special line of work. Admittedly we live in an age of specialists in every department of science and art, and it cannot be denied that those who devote all their energies to one particular branch (or more) must acquire greater knowledge on these special subjects than an "all-round man" could possess; yet this system of delegation, so to speak, is not altogether right. It leads frequently to a slipshod method of specification, not confined, unfortunately, to lightning conductors, with a resultant liability to accident occurring to the building itself for which the architect alone is primarily responsible.

Some general remarks may here be made with regard to the causes for the apparent inability to deal with so important a matter as the safeguarding of a building against electric disturbances, and we may at once direct our attention to a few of these causes.

A reference to old forms of lightning conductors will show us that a copper chain was generally used for the conductor itself, and this practice has more or less survived. I say "more or less" because some experts now insist that an iron rod—or other material—is just as good a conductor as a copper cable. This may



ORIEL WINDOW FROM AN OLD HOUSE IN FORE STREET, IPSWICH.

be so, but, irrespective of its power of electric attraction, may not the copper itself present a better material for withstanding the effects of weather? Apart, however, from this, the chief point on which scientists disagree is the insulation or *not* of the conductor. Which is the best way to safely dispose of it? The old method was simply to carry the conductor into the earth by means of a coil of wire, and so disperse the electric force. Another method, now much advocated, is to connect the rod with a water-course or drain, where the fluid would be absorbed, or at any rate cease to be capable of doing any damage. In the former treatment the earth around the conductor should be kept as moist as possible, and the use of coke has been advocated for this purpose. In the writer's opinion, however, it seems that both methods work fairly satisfactorily, when the fluid has been safely brought so far, but it is rather in its transit over the conductor—after actual contact—that the chief difficulty presents itself. In many cases the lightning strikes the top of the rod, traverses it for some distance, and then diverges on to the fabric itself, causing considerable damage. It is, of course, well known that the electric flash is proverbially erratic in its course, but the means provided for its safe transmission to the earth should at least be arranged as simple and direct as possible. Some, indeed, urge that it is absolutely unnecessary to insulate the conductor at all, and that by following the line of the building, avoiding any unnecessary bends in the rod or cable, the fluid will pass safely to the earth. This, however, is shown by experience to be a very untrustworthy theory. In the case of a church spire or tower it frequently happens that a fairly clear fall exists to the earth from the point of contact, but often the conductor has to be carried past breaks of some sort—roof projections or perhaps a porch with an iron or metal guttering adjacent to the conductor—and this latter is quite as good an attraction for the fluid as the cable itself. The method advocated by some experts as to connecting the rod itself with all iron or metal work it may pass (so as to provide against any sudden distribution of the current in transit) seems hazardous. What is to guide the course of such extraneous electric fluid? It may, or may not, be safely conducted to earth or otherwise run an innocuous course. Here, then, risks occur which can and should be provided against. Again, it is often impossible to take the conductor directly to the ground, and it is instances such as these which call for special arrangements for the safe conduct of the electric force.

For the sake of argument, without questioning, therefore, the opinions of those who advocate non-insulation, it appears to the writer that such insulation becomes imperative when the cable has to be carried past other attractive objects likely to divert the electric fluid. This contention is chiefly based on the necessity for the complete insulation of telegraph and telephone wires. The conditions are, of course, very different—the force is not so erratic, to say nothing of the sudden impact to which the lightning conductor may at any time be subjected—yet there can be but little sense in the slipshod way in which many of the conductors of our large buildings are arranged.

The idea generally prevalent was that the fluid would only strike the highest part of a building, and for this reason the chimneys and other elevated portions of the fabric have very properly been the chief objects of care against attack. But so often has the fluid struck other parts of the fabric that it makes one wonder whether there is much use in the safeguards otherwise provided.

That carefully-arranged lightning conductors do actually protect the structure is readily proved by the immunity from accident of our tall chimney shafts, perhaps some hundreds of feet in height; it is comparatively seldom that these are damaged; and this strengthens the contention that a simple course for the conductor is necessary apart from complete insulation.

If, however, it is conceded that in the case of two conductors, the one simply attached to the building and the other insulated from it, the fluid will travel with equal ease over both, the point only remains as to whether the electric fluid could by any means escape from the insulated conductor whilst in transit to the earth. If this meets with a negative answer the result of the foregoing argument must undoubtedly be in favour of complete insulation. A powerful current passed over a large-sized model should tend to elucidate this—at any rate in so important a question nothing ought to be left to chance. It certainly rests with architects to see personally that their work is protected in the best possible manner from the effects of storm; and they are undoubtedly entitled to ask those who are specialists in these matters to provide some means for the adequate safety of their buildings.

THE EFFECTS OF HEAT AND COLD ON PLUMBER WORK.*

BY THOMAS HUME, F.I.S.E.

THE general effects of heat and cold on metals are familiar to most of us, and are of considerable interest. In the case of plumber work these effects are not so obvious, nor do they seem to most people to have anything like the same importance; indeed, till a comparatively recent time, they were considered as of such insignificance as to merit very little attention. This state of things, however, is rapidly passing away, as the changes that have taken place in connection with plumber work have rendered the effects of heat and cold more obvious; besides which there is the largely extended use of plumber work arising from our improved civilisation, and the important part it plays in securing the health and comfort of domestic life (I refer to the introduction of hot-water systems, high-pressure boilers, circulating tanks, &c.).

Effects arising from changes of temperature in the various departments of plumber work, varying almost from zero up to 212°

* A paper read before the Edinburgh Architectural Society on December 5th, 1900.

Fahr., have to be taken into consideration and provided for, otherwise the result will be most deleterious, for in nothing is the destructive work of time more evident than in the effects produced by the expansion and contraction of metals under these changes of temperature. As you are all doubtless aware, these effects are quite irresistible; there are no means that I have heard of whereby expansion and contraction under the influence of heat and cold can be prevented. If a piece of lead or other metal pipe is placed between two rigid obstructions (see Fig. 1) and heat applied, the pipe will either bend to one side in the middle (Fig. 2), or will swell out all round, to the extent of the expansion that takes place (Fig. 3); or if it is enclosed all round, as in the case of a hot-water pipe buried in the ground, the expansion will go inwards at some point and very soon produce a fracture (Fig. 4). This is due to one of those forces of nature that cannot be restrained. All that can be done is to provide for the natural law performing its functions with the least possible resistance, and thereby reducing its destructive effects to a minimum.

This has rendered necessary many changes in methods of construction, and the use of more suitable and stronger materials, which in turn have caused the plumbing trade to become an extremely complicated one. The working of lead was the original business of the plumber, and from this the name is derived, but by reason of the changes already referred to and to others of a commercial nature, other metals have been largely employed whose natures are entirely different, and require to be dealt with in quite a dissimilar manner. This I regard as a very trying experience in the trade, and one which, so far as I can judge, is not undergone in any other trade. The carpenter is never supposed to handle and shape any other material than wood; the mason, stone; the blacksmith, iron; but how different is it with the plumber, who, besides handling lead (which he fondly and with some pride regards as his chief metal), has to work zinc, copper, and block tin, and also to handle cast and wrought iron. The tendency must therefore be to cause a deterioration in the quality of the work produced; and hence the necessity for studying carefully and well the nature of the several metals, thus enabling the plumber to manipulate them in a manner calculated to give the best and most enduring results.

The effects of changes of temperature varying from 32 deg. to 212 deg. Fahr. on the metals I have named are very different, and bear the following proportions to the bulk of the materials:—

Lead	expands 1 part in		349
Zinc	"	"	322
Copper	"	"	581
Block tin	"	"	493
Wrought iron	"	"	846
Cast iron	"	"	901
Brass	"	"	584

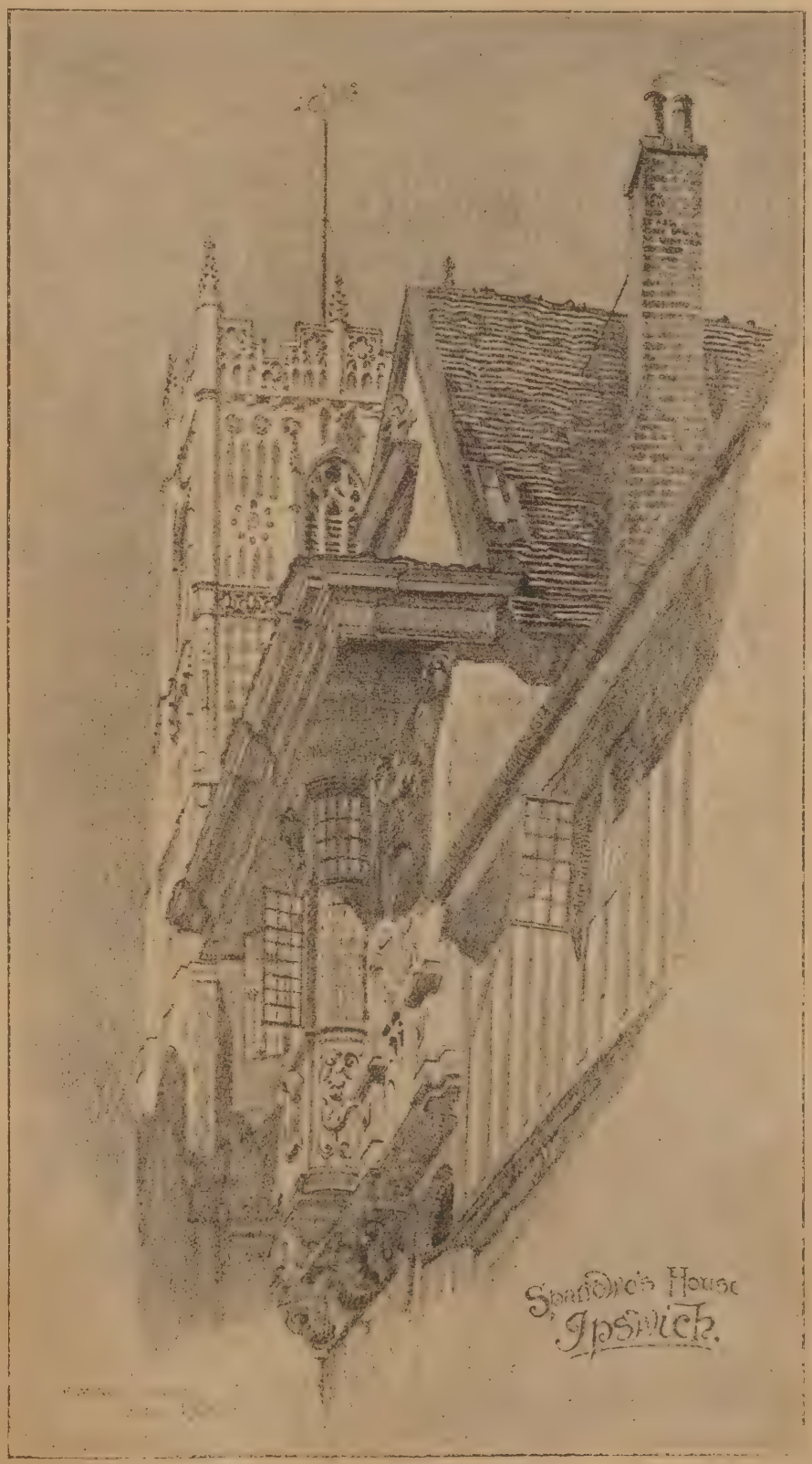
I have had a little apparatus made for the purpose of testing in a rough way the accuracy of the above table. It consists of a stand on which 1ft. of piping can be laid, one end of the pipe being stopped against a rigid obstruction, and the other end being free to expand; and in doing so under the application of heat it impinges upon the end of a lever, which moves an indicator over a quadrant-shaped dial. The results given on this apparatus, for the purpose of making them more apparent, are about double what they are in reality, because of the unequal lengths of the moving lever and indicator, and further because the experiments were made in a workshop where the temperature was 55 deg. to begin with. The heat was applied by means of a blow-lamp, with a thermometer lying inside the pipes.

		Degrees.
1ft. of lead pipe	thus treated registered	3·0
Ditto copper	" "	1·9
Ditto galvanized wrought-iron	" "	1·5
Ditto cast iron	" "	1·0

These experiments of course refer to lineal expansion only, which in the case of pipes used by plumbers is that with which they are chiefly concerned. But the expansion is in the same proportion in diameter as in length, and in the case of a metal sheet is the same laterally as lineally.

Lead Work on Roofs.

We will first consider these effects in connection with the plumber work of roofs. Lead, you will observe, expands under the influence of heat almost more than any of the metals, namely, 1 in 349, being only exceeded by that of zinc, which expands to a slightly larger extent. Lead being so much used for roofing purposes, the effects of expansion by the direct rays of the sun are very marked. If sheet lead is laid in long, and broad pieces, or bound, so that it is not free to expand at the ends or sides, it will buckle up in small ridges, which, by rising during the day and falling during the night, ultimately crack through (see Fig. 5). This buckling-up and cracking of the lead is greatly facilitated by its softness, which, by the way, is usually regarded by architects as a virtue. The softness is the result of rolling, which is done from a flat block of lead about 7ft. square and 3in. or 4in. thick, cast of pure ingot lead, and rolled out in a mill to 30ft. or 40ft. in length, and of the required thickness. In my early days at the trade, forty-five years ago, cast sheet-lead (which was formerly employed very commonly) was just going out of use, being only used in very exceptional cases. This lead was made by the plumbers themselves, and it was requisite in those days that a plumber's shop should have a large melting-pot for the lead, with a frame or table and apparatus for running out the metal on a bed of sand to the required thickness. It was a peculiarity of this lead that it was always more or less harder than milled lead, which was due to the fact that it was impossible to thus cast pure pig

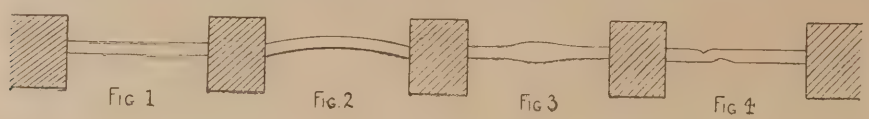


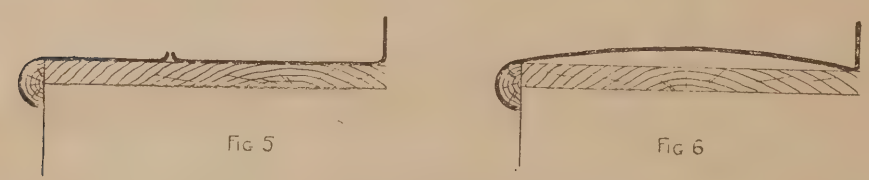
THE ANCIENT HOUSE, BUTTERMARKET, IPSWICH.

lead. It had to be largely mixed with old run-up lead, which got mixed with tin and other hard metals, and thus produced sheets of the hard character mentioned.

Now, while the soft milled lead under the influence of heat was unable (on account of friction) to slide over the wood boarding as it expanded, the hard cast lead had no difficulty in doing so; if unable to do this, it simply rose up in one great swell in heating (see Fig. 6) and went down in cooling without producing any injurious effects.

Another point in connection with the hardness of lead in relation to its durability was, that in the days of cast lead it was impossible to dress it down with such care, or set it into corners with such accuracy, as is now done with milled lead, with the result that it was left much more free to expand and contract. In those days it was not uncommon to find cast lead sheets 15ft. and 20ft. long by 4ft. or 5ft. wide which had been lying on roofs for many years, showing few signs of decay. Of course, the way to prevent defects in soft milled lead is to lay it in short and narrow sheets, so that it is free to expand and contract at the ends and sides, thus preventing buckling-up in the centre. Sheets not exceeding 10ft. long by 2ft. 3 in. wide are found to stand well, but must not be of less than 6 lb. lead; lighter lead than that should be laid in shorter and narrower sheets; while for ridge and piend flashings, flanks, &c., lengths of not more than 8ft. should be used. These remarks, however, only apply in





a general way to the lead-work of roofs. There are

Exceptional Circumstances

where one part of a sheet of lead may become heated by the rays of the sun, while the other part remains comparatively cool. This applies to lead gutters on roofs facing south, having balustrades or stone blockings in front of them: the sun's rays strike the part lying on the sloping roof, while the remainder is protected, and it is quite a common experience of plumbers to find lead badly cracked on the exposed parts, even though the stretch of lead is not unduly long. To prevent cracking in such circumstances the lead should be made 7lbs. or 8lbs. per foot; indeed it may be safely asserted that the lead generally laid on roofs at the present time is not so strong as it should be, and is far inferior to a great deal of the lead now found in good condition on old mansions, which was laid more than a hundred years ago. In connection with the valuation of fire damage at Penicuik House, which was burned down in 1898, some fragments of the lead covering of the platforms which were saved were found to be 12lbs. per foot.

Special care needs to be exercised in the covering of domes and turret roofs with lead, the tendency being for the expansion under heat to go downwards, the natural weight of the lead preventing its return on cooling. The way to avoid this is to have the lead laid in short lengths, with overlaps at the joinings, at which points the lead is free to expand. Unfortunately there is always a desire to have the lead-work on a spire with a fine smooth finish, and for this purpose the lead is dressed with special care into every corner, and all overlaps avoided. But this only secures a good appearance for a short time, for soon the heat of the sun begins its work of havoc, and destroys the fine appearance. An excellent method is to cover the spires with lead having rolls forming a herring-bone design; this will stand the wear and tear of many years because the lead is put on in small pieces. In point of fact, the more loosely lead is laid on roofs the better, provided it is sufficiently fixed to prevent its being raised by the wind.

A very notorious case of the evil effects of over-working lead on roofs came under my notice more than twenty years ago. The roof of the telling-room of the British Linen Company's bank at Edinburgh was covered with 8lb. lead, and under ordinary circumstances should have remained intact for sixty years without needing repairs. When the roof was laid it was considered to be one of the finest pieces of plumber work in the city, and many practical plumbers went to inspect it. But notwithstanding its supposed superiority, at the end of twenty-five years after it was laid numerous patches of solder had been put on to repair cracks in the lead, and the covering of the dome (which has some roof lights) was so defective and gave so much trouble on account of frequent leakages through cracks that an architect was employed to examine it, and to suggest how it could be improved. Now, in this case, although the sheets were not too large, the effects of heat and cold had been greatly ignored, as the lead was bound hard and fast, and had been greatly damaged by the plumbers overworking it.

It may be mentioned here in connection with repairing cracks in roof leads that a prevalent custom which should be carefully guarded against is the driving of nails into the cracks to keep down the edges of the lead while the soldering is being done, as the tendency is for the edges of the lead to curl up with the heat; this practice binds the lead worse than before, and it is not infrequently found that in a short time lead thus treated cracks again close to the old soldering.

A good method of protecting lead gutters and platforms on roofs is to have them covered with sparred treadle boarding. I have often been surprised at the small amount of damage done to lead so treated, where it had been laid very imperfectly. The sparred boarding prevents the rays of the sun striking the lead, and the space below allows a current of air to pass through, which keeps the lead cool. It is usual, however, to make the spaces between the spars much wider than they should be to make them efficient, either for the purpose above referred to, or to prevent the gutters, &c. becoming choked up with heavy falls of snow. The spaces between the spars should never be more than $\frac{3}{8}$in. wide.

Roofing with Zinc.

Another metal employed by plumbers for roofing purposes is zinc, and as it expands under heat more than any of the other metals, ample provision has to be made to counteract any evil effects. The expansion of zinc is 1 in 322, and this has to be overcome by the sheets being laid in short lengths and left to expand and contract with perfect freedom. To secure this as much as possible the sheets in gutters and platforms need to be laid entirely free of any connection to neighbouring sheets, the junctions being made with rolls and overlaps, and all soldering between the sheets avoided. For roofing purposes zinc is comparatively new. It has now been so employed for about fifty years, and has proved itself a dangerous rival to lead, on account of its cheapness, which arises chiefly from the fact that it is found on the whole fairly lasting and satisfactory, while not having a fourth of the weight of lead. Weight for weight zinc is much dearer than lead.

The chief deteriorating influence in the wearing-out of zinc, assuming it to be properly laid, is the effect of water lying on it for a length of time. If it could be laid in such a manner as to allow the rain to run off at once no harm would be done, but here the effects produced by changes of temperature begin to tell. The sheets of zinc on platforms (and it is for these sheet zinc is chiefly useful on roofs) are 3ft. wide; they are turned up at the two side edges to lie against wood rolls, and these upstands are covered with roll caps. The middle of the sheets under the heat of the sun expand and become blistered, while the edges are kept cool under the roll caps and scarcely expand at all. Hollows are thus formed in which pools of water lie, and chemical action takes place which in course of time produces perforations in the zinc. It is a peculiarity both of lead and zinc, and probably of other metals as well, that after being expanded by heat they do not contract to the same extent in cooling, and therefore these blisters and hollows are always increasing in size. No doubt if the sheets were made narrower this evil would be greatly diminished, and in point of fact I have never seen narrow sheets blistered to anything like the same extent as broad ones. But it is clear that whatever the breadth of the sheets may be the platform should be constructed so as to give a very rapid fall, in order that the water may be quickly and thoroughly carried off, thus preventing the destructive action to which I have referred.

Sheet Copper

is sometimes used for roofing purposes, and in this way comes into the hands of the plumber; and for this purpose there cannot be a doubt of its superiority to both lead and zinc, particularly for covering domes, turrets and spires. Copper expands to the extent of 1 in 581 up to 212 deg. Fahr., which is considerably less than the other metals. But its chief recommendation for roofing purposes is that it can be used extremely thin, and its lightness is of great advantage, as it can be easily fixed and supported. It is further practically impervious to the weather, resisting the tear and wear of time without showing the least indication of decay. A few years ago I removed the sheet copper covering of the old church spire at Lasswade, which had been in place for a hundred years. It had all the appearance of being as good then as on the day when it was first fixed. It was as thin as No. 10 zinc, which is about the thickness of a threepenny piece. Remembering these results, one is surprised that any other metal than copper should ever be used in covering domes and long tapering turret roofs. The recent covering of the dome of St. George's Church, Edinburgh, with sheet copper must strike everyone as being very superior to any other metal that could have been used for the purpose.

From the foregoing remarks it will be seen that the general rule to be observed in connection with the plumber work of roofs is that small sheets of the metal should in all cases be used; that they should be laid and fixed entirely free of one another, so far as soldering as a means of joining is concerned; and that as few nails as possible should be used in fixing the sheets. But as it is difficult in some cases to avoid soldering or nailing, this, when necessary, should be done in such a way that the natural expansion and contraction of the metals under changes of temperature are allowed to go on without damage to the materials themselves. It is not that solder as a useful alloy has any objectionable features in itself, for in point of fact the expansion and contraction of solder under changes of temperature is about the same as that of lead and zinc, but the danger always is that the edges to be joined together will be made fast to the boarding with nails, thus preventing expansion. This is frequently done from mere thoughtlessness, because for the purpose of soldering it is never necessary. Cast-iron gutters and rhones are frequently used for roofing purposes, and so far as they are affected by heat and cold they give no trouble in connection with dwelling-houses. But in long workshop buildings, granaries, bonded stores, &c., provision has to be made to break the continuity of the gutters, otherwise the expansion will damage the joints and be

the cause of trouble. We may now proceed to the consideration of our subject in relation to

Internal Plumber Work,

and here we have greater complications and difficulties to face, as we have not only the effects of heat and cold on the metals themselves, but also these effects on the liquids conveyed in the metal pipes. In this manner we are concerned with effects produced by changes of temperature from zero or lower up to 212 deg. Fahr. or higher. We will consider first the effects upon hot-water pipes. Changes of temperature in what are called cold-water pipes are so limited that no appreciable effect takes place, but in the case of heated water they become very decided. The metal pipes used in connection with pressure hot-water systems are usually of lead, galvanised iron or copper; for waste-water purposes, where hot water is conveyed, cast iron is used in addition. Referring again to our table of expansions, it will be observed that, as lead expands to such a large extent under heat, it is likely to prove very unsuitable for conveying hot water; and so it is; but that is only in certain circumstances, quite well understood by experienced plumbers. When only short lengths are required, and where the pressure is not excessive, lead pipes are found to be quite suitable, provided they are of moderate strength. For example, in houses adapted as flats, where hot-water systems are now so common, lead pipes are found to be very satisfactory; but where there is a very heavy pressure, such as obtains in self-contained houses of five or six flats, the effects of hot-water softening the lead greatly reduce the latter's strength, and unless the pipes are very strong they are liable to burst. Ground water taps, in the absence of proper air vessels to prevent water-hammer, are very destructive to lead hot-water pipes, but the prevalent custom of using screw-down valve taps has effected a considerable improvement in this respect. In long stretches of hot-water pipes the softness of the lead is an advantage, as it yields and bends to one side between the fixings, and further if in long stretches of hot-water pipe there are many bends and turns (as is frequently the case) no evil effects occur, as the expansion is relieved at the turns. No doubt the chief source of weakness in lead hot-water pipes is at the soldered branch joints, which sometimes give way; but this, I believe, is due to the pipes being rigidly fixed and bound at the joints, with no allowance for expansion. If plenty of play is given in the proximity of the joint the pipes will be found to stand well.

An attempt to overcome the tendency of lead pipes to break at the soldered branches and bends was made some years ago by the introduction of brass T-pieces and bends, which were jointed to the lead pipes with solder: this, however, was soon found to be no improvement, but rather the reverse, as it introduced a mixture of metals, which was frequently the cause of the soldered joints breaking. But the fact of having lead and brass brought together in this way does not altogether account for these breakages, because the soldering of brass taps to lead pipes seldom gives way, and the reason is obvious. In the case of the tap there is nothing bound to prevent its expansion; in the other case the pipes are generally held firmly in their place, and hence breakage occurs.

Lead hot-water pipes laid underground or embedded in concrete are subject to severe strain, and even in the case of very strong pipes very soon break; and this applies in a special way to hot-water pipes built into kitchen fireplaces and connected to brass couplings, where in the absence of room for expansion they frequently break—generally at the joining of the brass and lead. It is therefore always advisible, even when lead pipes are used throughout the house, to make the connections of boiler and pipes with harder and more enduring materials. It is my opinion that the reason why lead lost favour for the conveyance of hot water was that the pipes were made of far too light a weight, or rather because they were made of similar weights to the ordinary cold-water pipes, which, only a very few years ago, were very much below the standard of the present day. Lead hot-water pipes of the following weights will give very satisfactory results:—½in. bore, 7lbs. per yard; ¾in., 12lbs.; and 1in., 16lbs. per yard. But these weights of lead pipes cause very expensive work, which has led to the extensive use of galvanised iron pipes (and these without doubt suit the purpose very well). There is certainly a tendency for these pipes to rust, notwithstanding the fact that they are galvanised, but this is largely due to their being imperfectly galvanised. The process is very uncertain in long lengths of small piping, and the danger has to be provided against by using pipes of larger bore than would otherwise be necessary. The evils arising from expansion and contraction of galvanised iron pipes are reduced to a minimum by the very limited effects produced by the application of heat, namely—1 in 846 at 212 deg. Fahr., which is only about a third of that of lead. The result is that I suppose 90 per cent. of the hot-water pipes now fitted in dwelling-houses are of galvanised wrought iron.

The only other metal used by plumbers in conveying hot water for domestic purposes is copper, and doubtless for these purposes it is much superior to either lead or iron, but on account of its great cost it is only employed in exceptional cases. Its use assumes more the aspect of a luxury, and has an effect similar to that of expensive jewellery, as giving evidence of the good circumstances of the proprietor.

Expansion Boxes.

Previous to studying this question I always had the impression that copper expanded under the influence of heat more than any of the other metals used for hot-water purposes, and the reason was as follows. It is a common practice to use what are called expansion boxes where long stretches of copper hot-water pipe exist: these are devices to overcome expansion by allowing one pipe to slip within another when expansion occurs, the pipe slipping back when it contracts. A stuffing-box is used to prevent the moving parts leaking.

Nothing of this kind is required for lead pipes, although the expansion is nearly double that of copper. Then, again, it is quite common to find a copper hot-water expansion pipe, where it passes through and is soldered to a lead platform, forcing itself up through the lead 1in. or more and breaking away from the lead altogether. This never happens with lead pipes. The inference therefore was that copper pipes expanded more than lead, but the reason for this difference is that the copper pipe being rigid has to do all its expansion towards the ends or at bends, whereas lead pipes by their softness wriggle about and make room for themselves. The methods of

Jointing Hot-water Pipes

in view of the effect of heat upon them is a very important consideration. In the case of lead pipes, so far as I know, there is no other method than that of soldering, which, from the fact that the effects of heat upon solder are practically the same as upon lead, makes its use quite successful; and without doubt a good solder joint on a lead pipe is the most perfect form of joint in existence, as the ends of the pipes are practically fused together. In the case of galvanised wrought-iron pipes the method of jointing is with screwed couplings, the ends of the pipes being screwed up into the couplings and connections made with Vulcan cement or red lead; and the manufacture of all kinds of suitable connections, such as bends of many angles, tees, sockets, nipples, jam nuts, &c., renders the use of these pipes extremely simple in all instances.

In the jointing of copper pipes there is greater variety in the methods employed; although in my experience these have resolved themselves almost into the one now commonly followed, namely, screwing and sweating with fine solder, the connections being made of gun metal and screwed to receive the ends of the copper pipe, both being tinned and screwed up in a hot state; this makes a very superior joint. It was not uncommon in my early days at the trade to joint copper pipes for domestic use by means of a soldered joint similar to that of lead pipes, which is followed to this day with large-sized copper pipes, such as are in use in breweries and distilleries, and the joints stood well if done in a proper way. To do this it was essential for the ends of the pipes to have a slip of 1in. into each other, which was secured by one end being hammered on an iron stake and swelled out to form a small tight-fitting faucet, the outside of the spigot end and the inside of the faucet end being tinned and the pipes otherwise prepared for a wiped solder joint before being put together.

I must say I never saw a joint made in this way on a copper pipe show the least sign of decay. But there was a good deal of labour required to make such a joint, and the pipes were often put together with little more slip than edge to edge, the wiped solder joint concealing the defect; it had when finished all the appearance of a perfect joint, but often gave way by the solder joint cracking through the middle.

Brazing or hard-soldering hot-water copper pipes was not uncommon at one time. This necessitated the couplings and connections being made as near the consistency of copper as possible (pure copper cannot be cast), or with what is called brazing metal. But there was always a certain amount of risk in this method; besides the work had to be done by coppersmiths, and only specially skilled men at that, as frequently the metals were burned and weakened, and the defects not discovered for some time after the pipes were in use. By the two foregoing methods, copper tubes of light make could be used, quite strong enough to bear the pressure to which they were subjected, their only weakness being in the jointing. The copper pipes now in use are solid drawn and of sufficient strength to stand screwing with the iron pipe-dies. The usual strengths are:—½in., No. 16 B.W.G.; ¾in., No. 14; and 1in. and 1¼in., No 12. Though these heavy pipes have advantages in jointing, they far exceed the required strength to bear the pressure put upon them, and this makes their use very expensive, and therefore somewhat limited.

Choking of Pipes.

There is one consideration which cannot be overlooked in dealing with this subject, that is, the tendency for hot-water pipes to choke. This evil arises from two causes: first, from the boiling of the water in high-pressure systems, which, if occurring frequently, causes a hard corrosion to gather at the junction of the hot-water pipe to the boiler. This substance, which I suppose is really lime, is as hard as stone, and requires a chisel to remove it. If the water in the boiler is allowed to boil, this silting will often be produced, irrespective of the quality of the water. The second cause of the choking is the existence of a large solution of lime in the water, which is deposited in the pipes. In the first case the choking will take place in the circumstances described with all kinds of pipes, and the first indication of it is frequently a cracking and rather an alarming sound in the pipes when the water begins to boil, gradually getting worse as the evil increases. The sound I believe arises from the difficulty of the steam to escape through the exhaust pipe, on account of the obstruction; and this sometimes has the effect of forcing all the water out of the boiler back into the cistern, leaving nothing but steam in the boiler, which in turn results in several evils, notably the burning of the boiler by the fire, the damage to the boiler caused by the sudden rush of the cold water, and a further danger of damage to the cold water feed-pipe just where it leaves the cistern. At this point it sometimes swells out and bursts in a somewhat unaccountable manner. But it will be observed that all these effects are due to one cause, namely, the boiling of the water. This is quite unnecessary, and may be successfully prevented. The violent boiling that leads to choking generally occurs in a system possessing no circulating tank or circulation of any kind. The introduction of a circulating tank has a wonderful effect in checking the tendency to boil. But there is another method of preventing the boiling, that is, to keep the expansion pipe so low that the hot water flows out of it when it reaches a temperature of about 200 deg. As

is well known, water expands till it reaches the boiling point at the rate of $\frac{1}{23}$in. to the foot, or $\frac{1}{24}$ of its bulk. If, therefore, the expansion pipe is kept lower than $\frac{1}{24}$in. for every foot from the cistern to the boiler above the level of the water in the cistern, the water will never boil: the hot water will flow out at the expansion pipe, and its place will be taken by cold water in the boiler, and thus boiling will be prevented. It may be said that this method might lead to great waste of water; but this can easily be overcome by supplying the boiler from a cistern for its exclusive use (which even now is not uncommon), making this overflowing hot water discharge into this cistern, and thus rendering the water partially warm before it goes into the boiler.

As I have already said, this choking of the flow pipe from the boiler occurs with all the three kinds of hot-water pipes that have been mentioned; but whether it accumulates at the same rate of speed in them all I am not able to say. It is different in the case of hot-water pipes choking with lime from the water. The lime is deposited on the sides of the pipes, and to the greatest extent in the boiler itself and the pipes near it; thus showing that the evil is worst when the greatest heat exists. As a preventative it is found to be a decided advantage to use copper for both boiler and pipes. Iron pipes in such circumstances choke most rapidly, lead pipes next, and copper pipes least of all. I learned a few weeks ago of a case which proved very notably the superiority of copper over iron pipes in resisting this choking. An extensive hot-water heating apparatus had been in use in a large mansion for some time. It was gradually losing its power, and ultimately stopped working altogether. On examination it was found that the system had been constructed partly of wrought-iron pipes and partly of cast-iron pipes and a small part of copper pipe, the copper being sandwiched in between the wrought- and cast-iron portions. Both the cast-iron and wrought-iron portions were found to be almost choked up with lime, while the copper was entirely free and clear. It is difficult to account for this. It used to be held that copper had the advantage by its supposed larger expanding and contracting properties under changes of temperature, causing the lime to scale off; but this cannot be the case, as we now find that the expansion and contraction of lead pipes exceeds that of copper, and yet they choke more rapidly.

Drain, Soil and Ventilating Pipes.

We must now proceed as rapidly as possible to consider another aspect of our subject which in view of the supposed dangers to health arising from defects in connection with it is perhaps the most important—the effects of changes of temperature on drains, soil, waste and ventilating pipes. All the metals to which reference has been made are suitable for these purposes, so far as soil, waste and ventilating pipes are concerned, and the superiority of one over another depends greatly on the method of jointing employed. Undoubtedly the most perfect joint for these purposes is soldering, and in this respect lead is best, provided hot-water is left out of account, because lead expands and contracts to such an extent that it interferes very considerably with its use for the conveyance of waste hot-water, although even in this respect matters have been greatly improved by the introduction of heavy drawn-lead pipes and fittings; and lead traps are generally used, even though the waste pipes are of a different material, and they are satisfactory, provided they have perfect freedom of action. In some cases where concrete flooring is used for bath-rooms there is a danger of embedding the lead trap in the concrete: where this is done the destructive effects of hot water are very great. No doubt copper pipes for soil and waste purposes are by far the most enduring, and they can be used very thin with great efficiency, the solder jointing in their case being as satisfactory and efficient as in that of lead, if done in the manner already described. The cost of this material, however, for this purpose makes its extensive use almost prohibitive, and only in cases where expense is no object is it used. This brings us to the consideration of

Cast Iron,

which is now so extensively used for these purposes, and has proved itself a useful and efficient material. The weak point in the use of cast-iron pipes is undoubtedly the method of jointing, which is usually done with rope yarn and molten lead. This serves the purpose quite efficiently for purely soil purposes, but for drains and waste pipes where hot water is used it is proving itself quite inefficient and untrustworthy. This was brought home to me quite recently in two cases where heavy cast-iron drains (which I had laid only ten years ago) were found, when tested in the usual way, to be far from air-tight; and when opened up it was found that the lead in every joint had started out of the sockets, requiring to be remade. We are now condemning the use of fireclay drains inside houses because the effects of hot water cause rapid decay of the joints, but the use of iron, jointed as described, is only an improvement in degree; in kind the same process of decay takes place. Now it seems to me that this need not be the case. It is many years since cast-iron pipes for hot-water heating purposes were introduced, and as it was found that lead was quite useless for jointing, rust, Portland cement and Vulcan cement were used and found to be much superior to lead; and there is no reason why any of these materials should not be used in jointing cast-iron drains and waste pipes. [At this juncture the lecturer exhibited specimens of jointing on iron pipes, which had been submitted to the ordinary test of heating and cooling alternately for some days. One was an ordinary lead joint, another was made with rust, the third with pure Portland cement, and the fourth of cement and lime, rope yarn being used in all. In the case of the lead joint the effect was just what might have been expected. The jointing started clearly out of the socket. In the cases of the rust and pure cement there was not the slightest indication of movement, thus proving their superiority.] The principle to be observed in jointing, in all cases, is that the jointing material in its expanding and contracting properties should be as nearly as possible the same as the metal jointed, and in this respect rust is the best for cast-iron pipe, as it is in this respect practically the same. For a good rust joint (slow setting) the following can be used:—Sal-ammoniac, 2 parts; flour of sulphur, 1 part; iron borings, 200 parts. Care must be taken, however, in making rust joints that the coating of Smith's solution is entirely removed from the inside of the joints. There is one difficulty in connection with iron drains where rigid jointing of this kind is done. The lineal expansion of the whole stretch has to be provided for, but this could be done by using a simple cast-iron expansion-box placed in the manhole near the disconnecting trap, and it would be a further improvement if iron drains under the house were laid in an open channel to allow the expansion and contraction to go on freely.

There is still a part of our subject to be considered which is of considerable interest. I refer to the effects produced by the

Freezing of Water in Pipes.

I need hardly say that the bursting of water pipes has given rise to quite a number of theories as to the exact cause. As you all know, it is in freezing that the damage is done, *not* in the thawing, as many imagine. Water, in the process of freezing, expands to the extent of one-ninth of its bulk; that is, a column of water 9ft. long would be 10ft. long when frozen, and the same expansion takes place laterally. Now in view of this large expansion, our first idea is one of surprise that so comparatively little damage is done to pipes in freezing. Like the expansion that takes place in metals by the application of heat, this expansion of water in freezing is practically irresistible, and it may be asked, where does this large increase in bulk go when the water in a pipe is frozen? Now there are several reasons for these effects being much more limited in practice than theory would suggest. In the first place water begins to expand at a point three or four degrees above the freezing point, and therefore the water has expanded freely in a liquid state to a large extent before it has frozen at all. In the next place, water, in freezing in a pipe, cannot solidify right into the centre all at once. It must do so more or less gradually, and therefore will expand inwardly, pushing the water before it till it has nearly reached the centre, where the deadly grip will take place, and the weakest part of the pipe within a limited distance yields to the internal pressure. I say advisedly a "limited" distance, for I have frequently seen pipes burst within a very short distance of an open end, showing that only to a very limited extent does the lineal expansion relieve the lateral, that being subject to the strength of the pipe. There are other theories advanced for the bursting of water-pipes by frost which are interesting, but in my opinion they are worthless.

One is that water in freezing parts with a large quantity of air, which accumulates at bends in the pipe, and when a rise in temperature takes place this air expands and bursts the pipe. This may be termed the "pneumatic" theory. Another is that bursting is caused by freezing taking place at two places at one time in a pipe containing water, and the ice expanding at these two points produces such a pressure on the water between the two that the pipe is burst. This may be called the "hydraulic" theory. But burst water-pipes in their frozen state have always ice protruding from the fracture, which could not be the case in any of these theories, as air in the one and water in the other are presumed to be inside the pipe at the point where it bursts. A new form of lead pipe was patented a few years ago by Messrs. Adams and Co., of Leeds, which was expected to entirely obviate the bursting of water-pipes from frost. It had an indentation on one side, and when the water in this pipe freezes the ice pushes out the indented part without doing any harm. But you will observe that this only puts off the evil day, as when the water thaws the indentation does not resume its old shape, and the next time it froze there would not be the same power to resist the pressure, and the pipe would probably burst. This is an expensive form of pipe, for in making it as much material is required for a pipe of the capacity of $\frac{3}{4}$in. bore as is needed for an ordinary pipe of 1in. bore.

After all that has been said it will appear that it serves little purpose to discuss theories on such a complex question. The cause and effect are quite well known, and what is required is that ample means of protection are adopted to prevent damage: this means just thoroughly wrapping up all water pipes in the least degree exposed to the action of frost, and this applies most particularly to supply and expansion pipes of pressure boilers, the simultaneous freezing of which leads sometimes to very direful results.

I have thus endeavoured in a very general way to point out some of the effects of heat and cold on plumber work, which have been drawn chiefly from my own experience. It will be observed that trustworthy information of this kind can hardly be gained in any other way. The reading of books, giving the results of other men's experiences, and the studying of the laws of nature as they bear on the question assist us only to a very limited extent; and I trust the remarks that have been made will have the effect of fostering the desire and sharpening the observation of the members of this Association in gaining a fuller personal knowledge of the subject.

A New Organ Screen of carved oak has been erected in the Unitarian Church, Blackwater Street, Rochdale. It is in the Perpendicular Gothic style, and is a part-closed screen. The lower parts are raised and ornamented with "linen panels," the moulds and general arrangement of the wood taking the form of folded drapery. The transom line is carved, and rising from this are four bays pierced in their lower parts and above, having ogee and crocketed heads. Still higher is lined flowing tracery. The whole is surmounted by a carved and embattled cornice. This screen, like the font cover, the carved screen in the vestibule, etc., was designed by Messrs. Butterworth and Duncan, and has been carried out by Messrs. Harry Hems and Sons, of Exeter.

THE EFFECT OF FREEZING ON CONCRETE.*

BY WALTER A. ROGERS.

WITH the constantly-increasing use of concrete, questions as to its qualities are continually arising. It has been a commonly accepted opinion among engineers that the building of concrete masonry, especially above ground, during freezing weather is bad practice and one to be avoided if possible. The writer has frequently found it necessary to put in Portland-cement concrete footings during the winter months and considerable care has always been taken to protect the freshly-mixed concrete from freezing. There has, however, been a feeling of uncertainty as to the effect of freezing if it should take place before the concrete has thoroughly set.

In order to determine as far as possible by experiment the result of freezing Atlas Portland-cement concrete and Louisville-cement concrete, which were taken as types of Portland and natural cements, eight 12-in. cubes of each kind of concrete were made and tested as described in the accompanying tables:

as made, and left to freeze and thaw until broken at the end of 28 days.

Referring to Table No. 1, showing the effects of freezing on the Atlas-cement cubes, it will be seen that the two cubes which were left in the office, Nos. 103 and 104, developed an average strength at the end of 28 days of over 185,000lbs.—which was the capacity of the testing machine employed; but probably the strength of these cubes did not much exceed this amount, as one of them began to fail at that load.

The two cubes which were placed outside in a temperature of about 15 degs. below zero immediately after being made, Nos. 147 and 148, developed an average strength of 115,000lbs. The two cubes made at the same time and left out-of-doors for the same length of time and then kept in a warm room for 28 days more developed a strength of over 185,000lbs., probably greater than that shown by the two cubes left in the office for 28 days, since no sign of failure by either of these cubes was manifest, indicating that the freezing of these four cubes had the effect merely of causing the concrete to harden more slowly than it would have done under more favourable conditions of temperature. The two cubes mixed with salted water and then exposed to the cold for 28 days developed a strength of over 185,000lbs., probably about the same as that of the two unexposed cubes.

at the end of 28 days. Cubes Nos. 157 and 158, made at the same time as the last two and left out in the cold for the same length of time and then kept in a warm office for 28 days longer, had an average breaking-strength of 52,500lbs. The two cubes mixed with salted water and exposed for 28 days developed a strength of 35,000lbs., being but little more than those treated in the same way and mixed with fresh water.

The same deductions may be made from the tests of Louisville-cement concrete as from the Atlas tests, with the exception that the use of salt seemed to have had little, if any, effect on the strength of the cubes exposed to the cold. The fact that the extreme cold seems to have merely caused the hardening of the concrete to proceed more slowly than under more favourable conditions of temperature is brought out in a marked manner by the fact that the cubes left out in the cold for 28 days and then kept inside for 28 days developed a strength of 20 per cent. greater than those which were kept inside for 28 days and then broken.

A certain retaining wall was built of Louisville-cement concrete, faced on the top and front with Portland-cement mortar. The weather was quite cold part of the time while the concrete was being mixed, and part of it must have frozen before setting had entirely taken place. The 2-in. plank form was left in position until the Spring, and about 4in. or 5in. of sand was placed on the top of the wall. In removing the form last Spring it was found that the body of the concrete, to all appearances, was in good condition. About 6in. from the top, however, the Portland-cement facing was badly cracked, and by sounding occasional spots were found both in the Portland-cement facing and in the back of the wall, where there seemed to be a thin loose shell. Evidently these are surface defects, and the wall itself appears to be in good condition.

The writer believes that the foregoing tests indicate that concrete work with cement possessing qualities similar to those tested may be carried on safely during moderately cold weather by using proper precautions, such as warming the materials and the water, and by so protecting each layer of concrete that its top shall not freeze before the next layer is laid.

[NOTE.—The temperatures recorded are Centigrade.]

TABLE No. I.

TESTS TO DETERMINE THE EFFECT OF FREEZING ON ATLAS-CEMENT CONCRETE.

Concrete composed of 1 *part cement*, 3 *parts gravel*, 4 *parts broken stone.*

No. of Cube.	Date made.	Date broken.	Variation of Temperature. Max.	Min.	Treatment of Cube.	Crushing-stress in lbs.	Behaviour in Testing-machine.
103	*Feb. 6, 1899.	Mar. 6, 1899.	80°	18°	Kept in warm office from time made until broken.	Over 185,000	Unbroken, slight flaking, no cracks.
104						185,000	Slight flaking, split on one side in line of stress.
147	Feb. 6, 1899.	Mar. 6, 1899.	57°	-24°	Placed in open air as soon as made and left to freeze and thaw until broken.	130,000	Split and flaked in line of stress.
148						99,600	
149	Feb. 7, 1899.	Mar. 7, 1899.	57°	-24°	Mixed with salt water, placed in open air as soon as made and left to freeze and thaw until broken.	Over 185,000	Unbroken, slight flaking, no cracks.
150						185,000	Slight flaking, split on one side in line of stress.
151	Feb. 7, 1899.	Apr. 4, 1899.	57° Outside and 85° Inside.	-24° 32°	Placed in open air as soon as made and left to freeze and thaw for 28 days, then placed in warm office for 28 days more, then broken.	Over 185,000	Unbroken, slight flaking, no cracks.
152						Over 185,000	

* Fire went out and temperature dropped below freezing for a short time on two nights.

TABLE No. II.

TESTS TO DETERMINE THE EFFECT OF FREEZING ON LOUISVILLE-CEMENT CONCRETE.

Concrete composed of 1 *part cement*, 2 *parts gravel*, 4 *parts broken stone.*

No. of Cube.	Date made.	Date broken.	Variation of Temperature. Max.	Min.	Treatment of Cube.	Crushing-stress, in lbs.	Behaviour in Testing-machine.
119	Feb. 13, 1899.	Mar. 13, 1899.	85°	40°	Kept in warm office from time made until broken.	43,400	Gradually failed by splitting and flaking in line of stress.
120						Defective	
153	Feb. 11, 1899.	Mar. 11, 1899.	57°	-10°	Placed in open air as soon as made and left to freeze and thaw until broken.	28,700	—
154						37,000	
155	Feb. 13, 1899.	Mar. 13, 1899.	57°	-10°	Mixed with salt water, placed in open air, and left to freeze and thaw until broken.	34,200	—
156						35,700	
157	Feb. 11, 1899.	Apr. 8, 1899.	57° Outside and 85° Inside.	-10° 40°	Placed in open air as soon as made and left to freeze and thaw for 28 days, then placed in warm office for 28 days more, then broken.	54,200	—
158						50,900	

The gravel was composed of about two-thirds clean coarse sand and one-third small stones. The crushed stone was crusher-run limestone. The cubes were all made by the same man and those for the same kind of cement were made on the same or on succeeding days. The specimens were moulded in boxes made of 1-in. boards, and left in these until taken out to be broken. Two of the eight cubes of each kind of concrete were mixed with salted water in the proportions of one pint of salt to ten quarts of water. The other six were mixed with ordinary hydrant water. Two of the latter were kept in a warm office until broken; they were used for purposes of comparison. Four were placed out of doors as soon as mixed in a temperature considerably below zero, and left outside for 28 days, when two of them were broken and two taken into the warm office and left for 28 days more before breaking. The two cubes of each test which were mixed with salted water were placed outside as soon

* A paper read before the Western Society of Engineers, U.S.A.

Bricks and Mortar.

APHORISM FOR THE WEEK.

Whoever has so far formed his taste as to be able to relish and feel the beauties of the great masters has gone a great way in his study.—SIR JOSHUA REYNOLDS.

Our Plates. THE stables which form the subject of Mr. W. Lee Clarke's drawing were designed by Mr. F. Dening. The new High School at Clonmel (Mr. W. Doolin, architect) is interesting as the first of a type of school new to Ireland. The educational system in vogue in that country has not conduced to the development of school planning on anything like the advanced lines prevalent in England and on the Continent for years past. While higher education has, from a certain standpoint, maintained a very high comparative level, and Trinity College, Dublin, counts herself second to no university in Europe, elementary and secondary education has not kept pace with modern developments; hence the average Irishman who cannot afford a University course is placed at a distinct disadvantage. This is the reason why the planning of schools is deficient. The elementary schools are invariably planned on the obsolete models of the Irish National Board of Education, who, by an iniquitous system, supply plans and specifications of the most primitive kind to any school manager who chooses to apply, and even in cases where private practitioners are employed the same planning is more or less adhered to, the guiding principle being the maintenance of the "large schoolroom plan" to the exclusion of the modern "classroom system," so obtaining the maximum of noise with a minimum of educational results. The Roman Catholic Order of Christian Brothers, in order to overcome the evils of the old system, have decided to erect a series of High Schools for secondary education in the principal towns. The school at Clonmel is but a modest attempt in this direction, but it is hoped in the near future to effect greater results. The building is situated very favourably on an open site at the outskirts of the town. The materials used are red brick of a pleasing variegated purple-red, from the Cork Brick Company's works, with light-blue local limestone dressings. The brickwork is strongly pointed white, and all the woodwork is painted ivory white. The roofs are covered with thick heavy Killaloe slates of a grey-green tone. The school has two classrooms on each floor, hall, cloakroom and lavatory, teachers' room and separate lavatory. Seating accommodation is provided for every pupil (an unusual feature in Irish schools), and the pupils' sanitary building is situate in the playground. The general contractor was Mr. Patrick Costen, Waterford; Mr. D. P. Curtis, of Dublin, carried out the sanitary plumbing, drainage and lighting. Movable partitions were supplied and erected by the North of England School Furnishing Company, of Darlington.—The design for the new Baptist Church at High Street, Willesden Green, N.W., was submitted in a limited competition, and the author (Mr. E. Harding Payne, A.R.I.B.A.) has been selected to carry out the work. Accommodation is provided for seating 418 persons on the ground floor and for 338 in the galleries, a total of 756 adults. An organ gallery is provided at the back of the pulpit. The various vestries will be used in conjunction with the Sunday School, which will be at the back of the church with entrance in Huddlestone Road. The Sunday School is arranged on two floors, and will accommodate about 500 children. The estimated cost for chapel and schools is £5,500.

The South Kensington Appointments. COMMENTING on the appointments of new professors at South Kensington the "Daily Chronicle" says: "As for Mr. Lanteri, he has been for years in the employ of the Board of Education as Teacher; he now becomes Professor—of Sculpture or Modelling. Mr. Moira, the Professor of Painting, has, it is true, done some very accomplished work in decoration and painted a few pictures. But what does he know about teaching? It is an astonishing choice, but it may turn out a good one. Mr. Beresford Pite is favourably known to architects, while to Mr. Lethaby seem to fall the favours, not only of the County Council, but now of the Board of Education. But none of these appointments can be compared to the tardy and unaccountable move of the Royal Academy in choosing Mr. Alfred Gilbert as Professor of Sculpture. It is another of the occasions when the Academy saves itself just when it was given up as hopeless. No better choice could have been made, though it would have been a far greater honour to South Kensington had he been called there. But, as it is, Mr. Gilbert's election is an extremely honourable acknowledgment on the part of the Academy. If Academicians will now abolish the system upon which their schools are run, make Mr. Sargent Professor of Painting, Mr. Abbey Professor of Illustration, Mr. Norman Shaw of Architecture, Mr. Frampton or Mr. Onslow Ford of Decoration, they might be able to compete successfully with private schools, and thus attract the better-class students."

Teaching of Archæology in Schools. AT the recent Headmasters' Conference, held at Bradfield College, Dr. Gow (Nottingham) said the main function of archæology was to quicken their imagination of the lives of the men who made the history and literature that they were all studying. Professor Gardner and his brother were moving in this matter, and he hoped the conference would give it respectful consideration, and thus add more life and vividness to classical studies. It was out of the question to establish a decent archæological museum, but the conference might pass a resolution that the paper of Professor Gardner and his brother should be referred to the committee for the purpose of obtaining more definite information and advice on the subject. The committee, he understood, were willing to undertake that responsibility. Dr. Field (Radley) seconded the motion. Dr. Fearon strongly agreed with the general principle of Dr. Gow's speech and resolution. He was very much in favour of having a room filled with casts, models and photographs, and this could be done at a very small expense. After a few words from Mr. Fausset, the resolution was carried.

Irregularities in Italian Mediæval Architecture. IN the course of a lecture delivered before the Architectural Association of Ireland on "Some Intentional Irregularities in Italian Mediæval Architecture," Mr. C. J. MacCarthy, city architect of Dublin, dealt with a number of articles published a few years ago in an American architectural magazine by Mr. W. H. Goodyear, a well-known American authority on architecture and archæology. These articles attracted a great deal of attention. Mr. Goodyear, a considerable number of years ago, when he was spending a holiday in Italy, noticed certain peculiar irregularities which he thought could not be due to mere accident. A few years ago he was sent by the Brooklyn Institute of Arts to pursue investigations, and in the articles which he published he had shown by illustrations that there were in many churches in Italy deviations from straight lines. He had come to the conclusion that these deviations were found in reality to be curved lines. Mr. Goodyear had also given a series of photographs of these buildings, and some of these would be found in the Dublin Science and Art Museum. Amongst other irregularities which struck one in these churches was the diminution of the space between the pillars in the nave arcade, and this diminution was always in the same direction, namely, from the west end, or entrance front of the church, towards the east end. Mr. Goodyear's view was that these things were done intentionally, with the view of producing an increased appearance of length, and consequently an increased appearance of size in the building, by methods very similar to the methods adopted by theatre scene-painters to-day.

A Relic of Milton's London. A genuine bit of Milton's London is to be moved in Fore Street, E.C. Every antiquary knows the fine old gateway leading into the churchyard of St. Giles's, Cripplegate, with its inscribed date, 1660, and its emblems of the flight of time—a scythe, hour-glass, skull and cross-bones, &c. This gate, known locally as the "Great Gateway," is a notable relic of London before the Great Fire. Through it Milton must have been carried to his resting-place in the church, and its grim sculptures must often have caught the young eye of Daniel Defoe, who was born in Fore Street. It is not without misgiving that one learns that this gateway is to be set back several feet. The four quaint houses which adjoin it, and which are of even older date, are also to come down.

New London Theatres. IN the early part of 1895, says the "Daily Chronicle," theatrical managers and speculative builders were seized with an epidemic of theatre building which has swept over the suburbs of London, carrying with it fortunes for some and ruin for others, but, so far, mainly the former. Between 1884 and 1894 there were only four recognised theatres in the suburbs—the Grand, Islington; the Parkhurst, Holloway; Morton's, Greenwich; and the Theatre Royal, Stratford, which still exists in spite of the close proximity of the more pretentious Borough Theatre. But the house whose success gave rise to the present theatre-building craze is the Metropole at Camberwell, opened in October 1894. Since then no less than seventeen new theatres have been opened, and eight have been projected, most of the latter being now in course of completion. It is calculated that the aggregate capital sunk in the building of these new theatres, apart from the working capital, is about half a million sterling, and a further sum of £180,000 is represented by the eight projected houses. As regards the latter, the new Camden Town Theatre was opened at Christmas, the houses for Chelsea, Holloway, and Wimbledon are rapidly approaching completion, those for Dulwich and Poplar are well in hand, and the Hampstead and Walthamstow plans are completed. Kilburn, although not marked on the map for a new theatre, will probably have one before long, the little make-shift theatre of some three or four years' life having been recently converted into a music-hall. For some time a site near the Royal Oak Station was labelled for "a new theatre," but the label has lately disappeared. A Jewish theatre is in contemplation for the East End. All this building of theatres in the suburbs will naturally have an effect on those places of amusement inside the metropolitan area and it will be interesting to watch the changes which will undoubtedly take place.

Rochester Castle. THE repairs to the keep of Rochester Castle arranged to be executed during 1900 are now completed. The work has been carried out under the supervision of Mr. G. Payne, F.S.A. The southern interior half of the building, as far down as the floor level of the State Chamber, has been restored, and certain arches which were structurally unsafe have been made good. Abundant traces were discovered while the central wall was being repaired that the keep had at some period suffered from the ravages of fire. Both faces of the wall were covered with drips of molten lead, which had run down from the roof and gutters, and a thick layer of that metal was also found lying on the projecting capitals of the columns. The cleaning out of the well of the keep proved to be a laborious work. The total depth from the top of the central wall of the keep to the bottom of the well was found to be 136ft., and the diameter of the well shaft from 2ft. 9in. to 4ft. At low tide the water in the well stands at a normal depth of 18in., but at high tide it becomes increased to 9ft.

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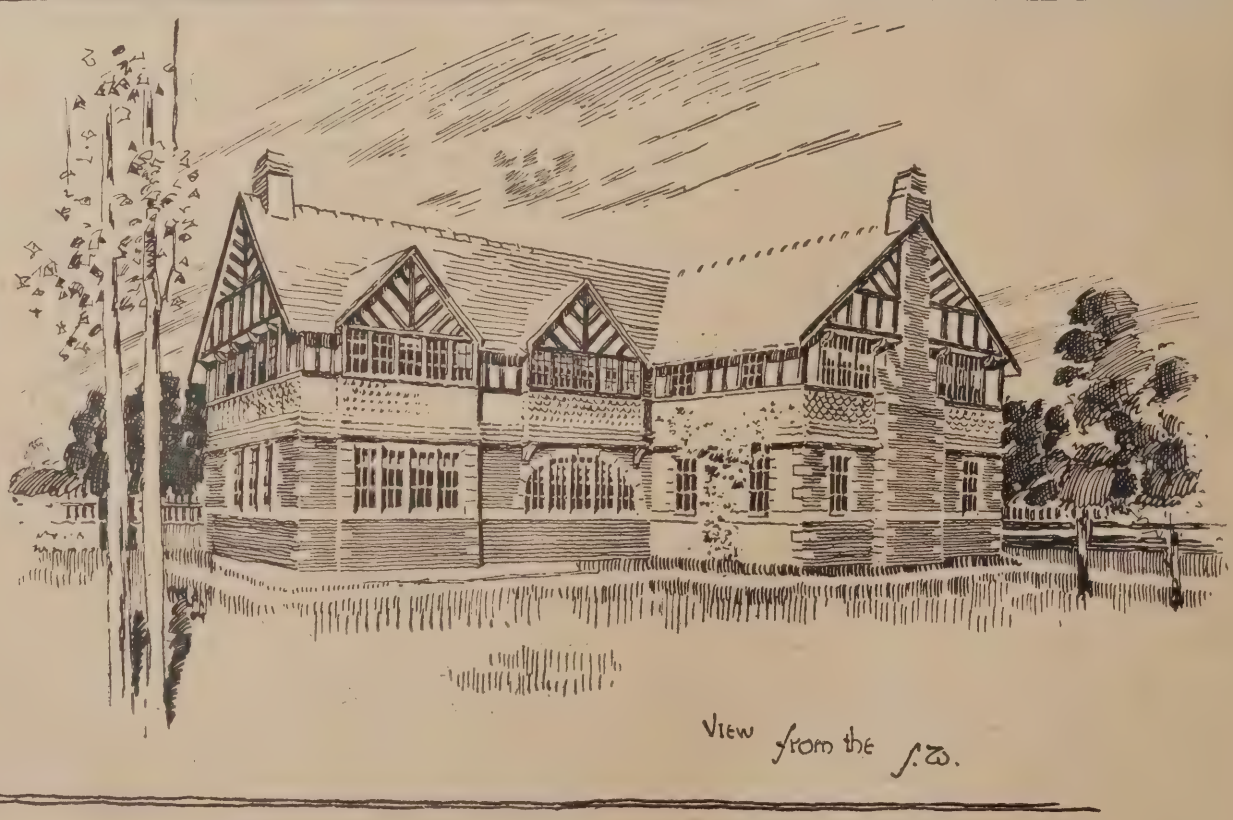
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Wednesday, January 2nd, 1901



DESIGN FOR STABLES, by F. DENING. Drawn by W. LEE CLARKE.

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DESIGN FOR A COUNTRY HOUSE. W. LEE CLARKE, Architect.



DESIGN FOR BAPTIST CHURCH AT WILLESDEN GREEN, LONDON. E. HARDING PAYNE, A.R.I.B.A., Architect.

DESIGN FOR A HILLSIDE HOUSE



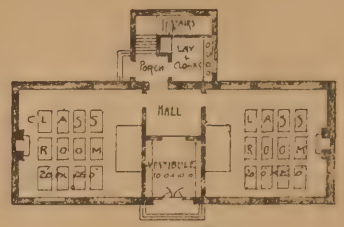
T. MCLAREN, Architect.

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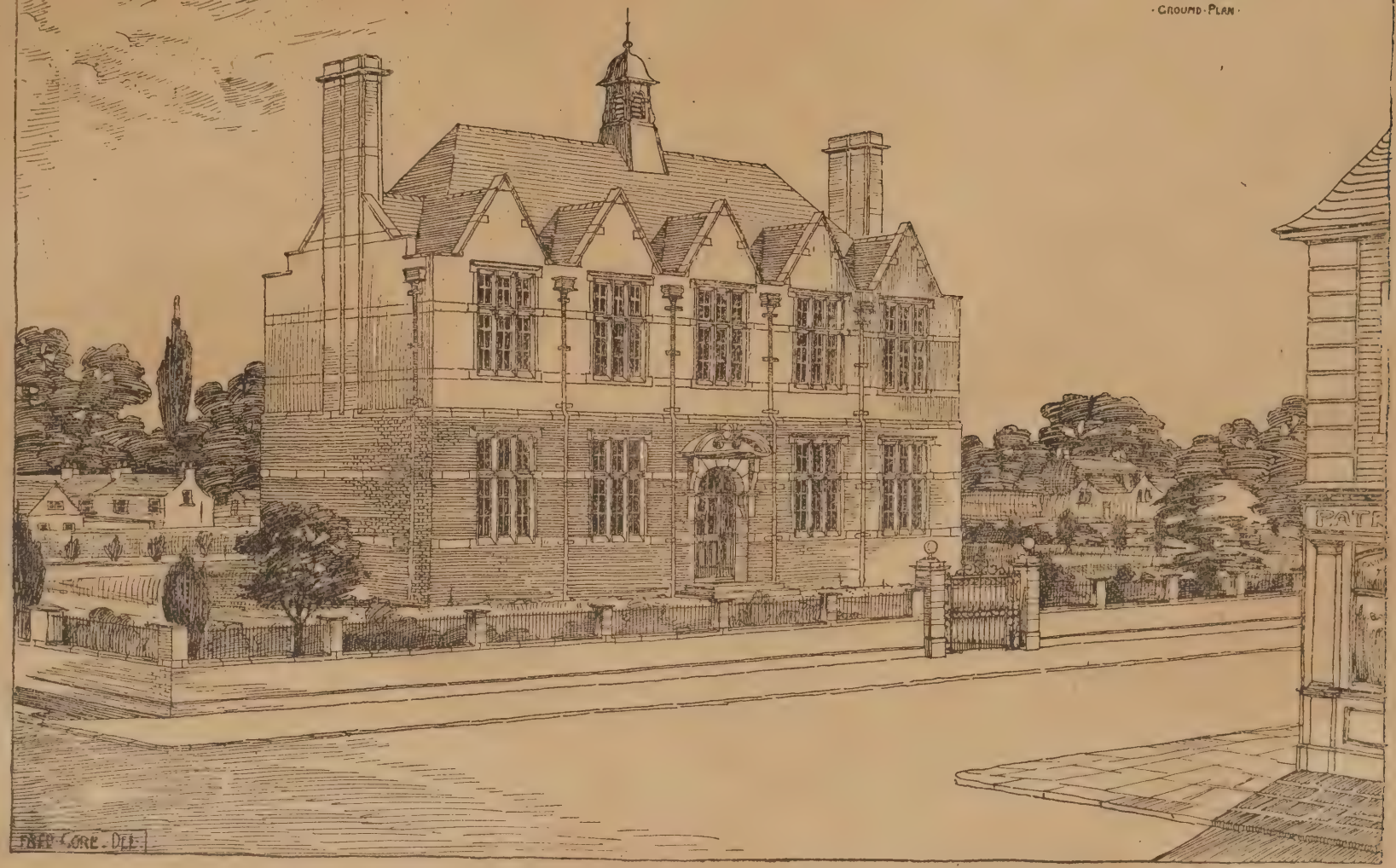
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CLONMEL · CHRISTIAN · SCHOOLS :

WALTER G. DOOLIN. M.A. ARCHITECT :



· GROUND · PLAN ·



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Enquiries Answered.

The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional, or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Forming a Tennis Court.

LONDON.—INQUISITIVE writes: "(1) How is the turf removed for levelling a tennis court? (2) How are the levels staked out as a guide to the workman? (3) Must new ground be made higher to allow for settlement? (4) What are the dimensions of a full-size court? (5) What is the best time to start such a work?"

(1) Roll it and cut it about 1½in. thick, 3ft. long, and 1ft. wide. (2) After settlement of the level proposed, if only a straight-edge and an ordinary spirit-level are available, drive a peg in at the finished level and place on it the straight-edge, which would probably be 10ft. long. Having placed on this a spirit-level, drive in at its end another peg so that these two pegs are level. If boning-rods are available (that is, pieces of wood 3ft. high by 3in. wide by ½in. thick, with cross-pieces nailed on, 1ft. long by 2in. by ½in., all being of the same length, making a T), hold two of these boning-rods on two of the pegs, and, looking along the line of the top cross-pieces of the boning-rods, drive in a third peg in the same line and level with the first two; this would be done in the length of the court and across it. If the tennis court is to have a slope in one direction the two ends would have to be levelled as described and a level surface obtained by means of the boning-rods. (3) In newly-filled ground ½in. to the foot of depth should be allowed for settlement, unless it is rammed. (4) The dimensions of a full-size court are 78ft. by 36ft., but a levelled space of at least 10ft. should be left all round the actual court measurement. (5) The present time is suitable for starting such work. Querist says nothing about the drainage or treatment of the ground. According to the nature of the ground drains should be put in having a fall of not less than 1 in 60 about 2ft 6in. deep and 25ft. apart. On the top of the drain pipes there should be a filling of burnt ballast or cinders mixed with the filled-in soil to within 6in. of the surface, and connected with a layer of ballast. A tennis ground should have 6in. of soil overlying ½in. of burnt ballast or cinders connected with the ballast filled in over the drains. Underneath the top 6in. of soil the ground should be broken up. A. E. M.

Bearing Pressure on Bolts in Roof Truss.

ST. LEONARDS-ON-SEA.—E. D. R. writes: "I find Mr. Adams gives in his book on 'Practical Designing of Structural Ironwork' a ⅞in. bolt for the connection of a short strut with 1⅛in. tie-rod of an iron roof-truss. Does he then neglect the thrust of the strut which would require a larger bearing area than that afforded by the ⅞in. bolt? My calculation is as follows according to Rivington, Part IV., page 144:—Thrust on strut 1·71 tons; size of strut 2in. × 2in. × ½in. angle iron. Taking resistance to bearing as 5 tons, $\frac{1\cdot71}{5}$ = number of square inches required for bearing area. Bearing area of bolt = ½in. (that is thickness of strut) × diameter of bolt; therefore $\frac{1\cdot71}{5} \div \frac{1}{2}$in. = diameter of bolt = $1\frac{71}{100} \times \frac{1}{5} \times \frac{4}{1} = \frac{171}{100} \times \frac{1}{5} \times \frac{4}{1} = \frac{684}{500} = 1\frac{92}{500}$; say 1⅞in. bolt."

In the book referred to, namely, "The Practical Designing of Structural Ironwork," the bearing pressure in wrought iron is given at p. 30 = 5 tons per sq. in. for ordinary cases, or 7½ tons per sq. in. as a maximum. In the case of a roof truss the maximum might certainly be adopted. $\frac{1\cdot71}{7\cdot5 \times \cdot25} = \cdot91$ diameter of bolt, and the ⅞in. bolt shown in design would be sufficiently large. As a rule no calculation is made for bearing area of bolts in a roof truss although of course it should be duly considered in a properly designed roof.

HENRY ADAMS.

Strength of Rolled Joist.

ILKLEY.—R. F. writes: "What is the safe distributed dead load to put on a steel joist 16in. by 8in. by 20ft. clear span, the bottom flange of average ⅞in. metal? (This question was set at the R.I.B.A. Final Examination held last June.)"

At an examination the candidate is dependent upon his own resources and has no manufacturers' lists to refer to for strength of rolled joists. The well-known formula for bending moment under uniformly-distributed load of $\frac{Wl}{8}$ will occur to him as more useful than the special formula for rolled steel joist $\frac{10\,ad}{L}$ because the a in the latter includes the flange and one-sixth area of web of which he has no particulars. Then $\frac{Wl}{8} = \frac{W \times 20}{8} = 2\cdot5$ W in foot tons. This divided by the depth in feet $\frac{16}{12}$ gives the stress in flange $= \frac{2\cdot5 \times W \times 16}{12} = \frac{10}{3}$ W, in tons. The flanges being each 8in. × ⅞in. the sectional area will be 7 sq. in. and allowing a working stress of 10 tons per sq. in., which is a medium allowance for rolled steel joists if the flange alone be taken into account, we have $\frac{10}{3}W = 7 \times 10$, whence $W = \frac{7 \times 10 \times 3}{10} = 21$ tons. On reference to several catalogues of rolled joists we are unable to find a 16in. joist with a greater width of flange than 6in., and a 16 × 6 × 62 lb. R.S.J. will, according to one of the best lists, permit a uniformly distributed load of 24 tons to be carried on a 20ft. span with a maximum stress of 8 tons per sq. in.

HENRY ADAMS.

Architectural Prospects in Australia.

YORKS.—QUERIST writes: "Can you give me any information in regard to the prospects for a chief assistant or a young architect in Australia? Which part of the country would be likely to be the most suitable?"

[We are informed by the Chief Clerk to the Managing Committee of the Emigrants' Information Office, that he has no information that architects are wanted in any colony of Australia.]

Ventilating Shafts.

LLANGOLLEN.—SANITAS writes (in a very rambling manner—querists should be as explicit as possible): "(1) Must the ventilating shafts on the gable and back elevation shown on the enclosed sketch (not reproduced) be of exactly the same height? (2) Is it necessary to carry the shaft on the gable more than 18in. or 2ft. above the wall plate? (3) Is this shaft big enough (it is of 2½in. pipes)? (4) On page 298 of your issue for November 14th last you show the fresh-air drain entering at the top of a manhole. Unfortunately I have taken my fresh-air drain lower down. Is it necessary to alter it?"

(1) There is no advantage in having the two ventilating shafts of exactly the same height. (2) The ventilating shaft fixed at the gable end of the building should be carried above the ridge, so that the wind may blow freely over and around the upper end of the shaft. By this means the action of the wind assists in the extraction of the vitiated air within the drains. At the same time care should be taken that the ventilating shaft terminates a few feet away from the chimney, so as to avoid the risk of direct down-draught between the ventilating pipe and the chimney. (3) The ventilating shaft should not be less than 4in. in diameter. (4) It is desirable to place the fresh-air inlet near the top of an ordinary disconnecting chamber for the reasons already stated (see issue for November 14th). Under the circumstances mentioned by querist, however, it seems unnecessary to reconstruct the existing manhole and fresh-air inlet if thoroughly satisfactory in other particulars. Coleman's "Sanitary House Drainage" (E. and F. N. Spon, Ltd., 6s.) is a well-known practical work on this subject, containing full information respecting the details and principles of construction of house drainage and sanitary plumbing. T. E. C.

Gods and Goddesses of the Greeks.

SUNDERLAND.—ENQUIRER writes: "Is there a book published on the Gods and Goddesses of the Greeks in relation to the dedication of their temples, with any legends that are connected with them?"

"Olympos: Tales of the Gods of Greece and Rome," with forty-seven woodcuts and six full-page photographic plates. Crown 8vo. 7s. 6d. By Talfourd Ely. "Excursions in Greece to Recently Explored Sites of Classical Interest" (Mycenæ, Tiryns, Dodona, Delos, Athens, Olympia, Eleusis, Epidauros, Tanagra: illustrated. Crown 8vo. 7s. 6d. By Prof. Charles Diehl (translated). "Manual of Mythology in Relation to Greek Art," with 140 illustrations. Crown 8vo. By Maxime Collignon, translated and enlarged by Jane E. Harrison. Price 7s. 6d. The three above-mentioned books are published by H. Grevel and Co., 33 King Street, Covent Garden, W.C. "Mythology and Monuments of Ancient Athens." Fully illustrated. 8vo. By Jane E. Harrison. (Macmillan and Co., St. Martin's Street, Leicester Square, W.C. Price 6s.) J. A. M.

Bacterial Treatment of Sewage.

G. O. writes: "I shall be glad to know where to obtain information about the bacterial treatment of sewage, and the best method of putting it into practice."

A great deal of information relating to the bacterial treatment of sewage has been published in THE BUILDERS' JOURNAL. Mr. Scoble's paper on this subject was printed in our issue for February 21st last, the general conclusions derived from the experimental bacterial treatment of raw sewage in coke beds at the outfalls of the London sewage into the Thames will be found in the issue for March 21st last, "Sewage Disposal," by D. Balfour (May 17th, 1899), "Bacterial Treatment of Sewage," by George Thudichum (December 14th and 21st, 1898); and other particulars can be obtained by referring to back volumes. A number of books have been written on the subject, one of the most recent of which is "Sewage and the Bacterial Purification of Sewage," by Dr. Rideal (Robert Ingram, Pleydell House, Pleydell Street, Fleet Street, E.C., price 14s.). In our issue for December 19th we published a report of Dr. Adeney's lecture on sewage disposal, which will no doubt be of interest to our correspondent.

Brick Culverts.

RAILWAY writes: "I should be glad to know whether 'Engineering,' 'The Engineer,' or any other magazine has ever published any working drawings of small brick or concrete culverts for a single line of railway."

Our correspondent had better apply to the papers he names. The office of "Engineering" is at 35 and 36 Bedford Street, Strand; and that of "The Engineer" at 33 Norfolk Street, Strand.

A Legal Point about Contracts.

DURHAM.—F. C. writes: "A tendered for the erection of a building for B, and his tender was accepted. After going on satisfactorily for some time A was compelled (owing to losses on other contracts) to give up this job, when B took possession of all the prepared material and left the completion to C (whose tender was next above A's), but without any fresh competition. B now proposes to allow A for the work he did, and for the materials prepared, not according to A's schedule of prices, which formed part of the conditions of contract, but just as much, or as little, as C says he can allow. I shall be glad to know if he is justified in doing this, in view of the fact that some of C's prices are simply impossibly low; in fact,

although C's tender was 17½ per cent. above A's for the whole work, yet the amount he offers is 25 per cent. below A's claim."

B is bound by his contract. Even if the withdrawal of A raised any difficulty, the taking possession of the prepared materials by B overcame that difficulty. B is therefore liable to pay for the work done and materials prepared according to the original tender.

A. O. H.

Rendering Plasterwork Weatherproof.

A. T. P. writes:—"I should like to know how to prepare plaster of Paris so that it will resist the effects of the weather. Can signs be made in plaster or cement? If so, which is the best method to adopt?"

Plaster can be indurated so as to resist the effects of weather by painting the surface with litharge oil: made by mixing litharge with hot linseed oil in the proportion of one part of litharge to three parts of oil. The plaster surface must be perfectly dry before the oil is applied, and the oil should be warm when used, so as to fill the pores of the plaster. Two coats will be sufficient. Plaster is also indurated by painting with a strong oil paint. The painting must be done periodically to ensure success. Fibrous plaster signs have been used with success in various districts. "Petrura" signs, which are strong, weatherproof, light and readily fixed, are the latest in plaster signs. They are made in various ornamental designs and colours. Further particulars and prices of these signs can be had from W. Millar, No. 1 & 3 Arches, Battersea Park Station, London.

W. M.

Waste from Photographic Dark-Room.

TROON.—CAMERA writes: "If the waste from a photographic dark-room were discharged into a lead gutter on the roof, would the chemicals act injuriously on the lead?"

Chemical compounds containing acetic glacial acid, hydrochloric acid, nitric acid, pyrogallic acid, sulphuric acid, &c., in a concentrated form are destructive to lead; but the weak and diluted solutions ordinarily used in photography would have no appreciable effect on a lead gutter laid to good falls, more especially as the liquid waste from a dark-room generally includes a large volume of water used for washing plates, prints, &c. If practicable, it would be better to remove the refuse liquids from the dark-room by means of a cast-iron waste pipe, arranged to discharge over a surface gully at the ground level.

T. E. C.

Architects' Registration.

DUDLEY.—B W. writes: "In October, 1897, I was articled for three years—I was then fifteen years old. My time is now up, and I should be glad to know whether, in the event of the Architects' Registration Bill coming into force, I should have to pass the examination in order that I might be enrolled"

This query is practically answered by the one printed on page 355 of our issue for December 5th last. Any person who has served as apprentice or assistant to an architect for seven years in the aggregate, after having attained the age of fifteen years *prior* to the passing of the Act, shall, on payment of certain fees and the making of a declaration, be entitled to be registered. An applicant for admission *after* the passing of the Act must not be less than twenty-one years of age, and must (except in certain specified cases) have served as an apprentice to a registered practitioner, and have passed a qualified examination in accordance with the Act.

New Patents.

CARLISLE.—J. L. H. writes: "In the list of patents published in your issue for December 12th is one numbered 1899—18,322, Cameron, Commin and Martin, apparatus for regulating the delivery of sewage to filters or on to land. Where can I obtain further particulars of this apparatus?"

Specifications of patents can be obtained from the Patent Office Sale Braneh, 25 Southampton Buildings, Chancery Lane, W.C., price 8d. each, post free. For ordinary specifications the name of the patentee and the number and year of the patent must always be given.

R. I. B. A.

PROPOSED REVISION OF THE "SUGGESTIONS" FOR ARCHITECTURAL COMPETITIONS.

AT the business meeting of the Royal Institute of British Architects to be held on Monday, January 7th, the chairman will move the adoption of the amendments and additions indicated below, in the "Suggestions for the Conduct of Architectural Competitions." The paper as revised reads as follows:—

1. The promoters of an intended competition should, *as their first step*, appoint one or more professional assessors, architects of established reputation, whose appointment should be published in the original advertisements and instructions, and whose decision should govern the selection of the designs.

The president of the Royal Institute of British Architects is always prepared to act as honorary adviser to promoters in their appointment of assessors.*

All the designs sent in should be submitted to the assessors.

2. The duty of assessors should be—

(*a*) To draw up the particulars and conditions as instructions to competitors, and to advise upon the question of cost;

(*b*) To determine which of the designs conform to the instructions, and to exclude all others;

(*c*) To advise the promoters on the relative merits of the designs admitted to the competition, and to make a selection in accordance with the conditions.

3.† Every promoter of a competition, and every assessor engaged upon it, and any employé of either, should abstain absolutely from competing, and from acting as architect, for the proposed work.

4.† The number and scale of the required drawings should be distinctly set forth, and they should not be more in number, or to a larger scale, than necessary to clearly explain the design. If perspective views be required, it should be so stated; and they should be uniform in size, number, mode of colouring, mounting, or framing (if any), &c.

5. Competitions should be conducted in one of the following ways:

(A) By advertisement, inviting architects willing to compete for the intended work to send in designs. The promoters, with the advice of the assessor or assessors, should make their selection from such designs. The author of the design awarded the first place should be employed to carry out the work.

(B) By advertisement, inviting architects willing to compete for the intended work to send in their names by a given day; with such other information as the candidate may think likely to advance his claim to be admitted to the competition. From these names the promoters, with the advice of the assessor or assessors, should select: (*a*) an architect to carry out the work; or (*b*) a limited number to compete, and each competitor thus selected should receive a specified sum for the preparation of his design. The author of the design awarded the first place should be employed to carry out the work.

(C) By personal invitation to a limited number of selected architects, to join in a competition for the intended work. Each competitor should receive a specified sum for the preparation of the design. The author of the design awarded the first place should be employed to carry out the work.

6. No design should bear any motto, device, or distinguishing mark; but all designs should be numbered by the promoters in order of receipt. Any attempt to influence the decision of the promoters, or of the assessor or assessors, should disqualify a competitor.

7. In every case the amount of premium or remuneration for the competitive designs should be fixed‡ under the advice of the assessor or assessors, *and should be paid in addition to the usual professional charges for carrying out the work.*

8. Where a deposit is required for supplying the instructions, it should be returned on the receipt of a *bonâ fide* design; or if the applicant declines to compete and returns the said instructions within a month after their receipt.

9§ Each design should be accompanied by a declaration, signed by the competitor, stating that the design is his own personal work, and that the drawings have been prepared under his own supervision.

10. A design should be excluded from a competition—

(*a*) If sent in after the period named (accidents in transit excepted);

(*b*) If it does not substantially give the accommodation asked for;

(*c*) If it exceeds the limits of site as shown on the plan issued by the promoters, the figured dimensions on which should be adhered to until officially altered;

(*d*) If the assessor or assessors should determine that its probable cost will exceed the outlay stated in the instructions, or the estimate of the competitor should no outlay be stated; provided always that should the assessor or assessors not have been consulted in the first instance respecting the cost, as recommended in paragraph (*a*) of clause 2, and should he or they be of opinion that the outlay stated in the instructions is inadequate for the proper execution of the proposed works, the assessor or assessors shall not be bound in the selection of a design by the amount named in such instructions, but the question of cost shall nevertheless be a material element in the consideration of the award;

(*e*) If any of the other instructions are violated.

11. It is desirable that all designs submitted in a competition, except any excluded under clause 9, should, with the consent of their authors, be publicly exhibited after the award has been made, which award should be published at the time of exhibition.

12. The architect whose design may be selected as the best should be employed to carry out the work, and he should be paid in accordance with the schedule of "Professional Practice as to the Charges of Architects" sanctioned and published by the Royal Institute. If no instructions are given to him to proceed within 12 months from the date of the selection, he should receive adequate compensation in addition to the premium (if any) awarded to him. In the event of a part only of his original design being carried out, he should be paid a sum to be agreed upon in respect of the deferred portion, such sum to be merged in the usual professional charge when the completion of the design is proceeded with.

*** *It should be understood that the Royal Institute issues these Suggestions as a guide to promoters where a competition has been decided upon, but not as necessarily recommending the principle of competition.*

* This sentence is new.

† Clauses 3 and 4, as they stand in the existing document, are as follows:—

3.—Every promoter of a competition, and every assessor engaged upon it, should abstain absolutely from competing, and from acting as architect, for the proposed work.

4.—The number and scale of the required drawings should be distinctly set forth, and they should not be more in number, or to a larger scale, than necessary to clearly explain the design. If perspective views be required, it should be so stated; and they should be uniform in scale, number, mode of colouring, &c.

‡ The existing clause reads:

7. In every case the amount of premium or remuneration for the competitive designs should be fixed *by the promoters, acting* under the advice of the assessor or assessors, and should be paid in addition to the usual professional charges for carrying out the work.

§ Clause 9 is entirely new, and the following clauses have been re-numbered.

The Status of the Profession.

At the same meeting Mr. Lewis Solomon has given notice of his intention to move the following resolution:—"That the Institute is responsible for the inferior position of architects as compared with that of other professions, and that a committee be appointed to enquire into the causes of this inferiority of status and to suggest remedies."

New Patents.

The following specifications were published on Saturday last, and are open to opposition until February 12th. A summary of the more important of them will be given next week. The names in italics within parentheses are those of communicators of inventions.

1899.—24,062, BOUGHTON AND SMITH, planes for producing channels in wood and other materials. 24,317, SLACK, furnace-grates. 25,215, HEYL-DIA, insulating floor covering. 25,239, BALDWIN, apparatus for breaking, crushing and screening refuse ashes from furnaces. 25,359, DUNCAN AND NEW SUNLIGHT INCANDESCENT COMPANY, LTD., incandescent bodies suitable for use with gas and like burners.

1900.—23, EDMUNDSON, apparatus for the production of acetylene gas for street lamps, &c. 550, SMITH AND PIONEER INVESTMENT TRUST, LTD., bacterial treatment of sewage effluent. 2,364, SOLOMON, fastening door knobs and the like. 2,534, COCHRANE AND COCHRANE, apparatus for driving piles. 3,108 JOHNSON AND WUNDERLICH, arc lamps. 3,127, BERRY, locks and latches. 5,205, BURTLES AND SIGURDSSON, means for automatically turning gas on or off at predetermined times. 13,752, FREYSOLDT, method of and apparatus for purifying sewage and other effluents, especially of municipal drainage systems. 15,901, FONTANELLA, clinometer, level, square, and plumbing instruments. 17,466, ADOLFSSON, acetylene-gas-generating apparatus. 18,071, NEWMAN, appliances to be employed in the opening and closing of fanlights, &c. 18,437, LAKE (*Universal Safety Tread Company*), manufacture of non-slipping treads, paving, &c. 19,608, EUSTANCE AND COLLEY, plaster sheets or slabs for ceilings, walls, &c. 19,646, WOODWARD AND COLLIER, kilns for burning earthenware and other articles. 19,697, GUIMARAES, gas lamps. 19,807, CLARK AND MARPLES, manufacture of trowels. 19,886, GREEN, fasteners or catches for windows, doors, &c. 19,934, WOITTEQUAND, mounting of electric bells. 20,055, LION AND STERN, iron staircase.

The Glasgow and West of Scotland Technical College is insufficiently and inconveniently housed, and a fund is now being raised to erect new buildings at a cost of £150,000. About £70,000 has already been promised.

Law Cases.

Dispute about Extras.—At the Nottingham County Court, before his Honour Judge Masterman, John Hammersley, timber and slate merchant, carrying on business under the style of E. Hammersley and Sons, recently sued John Alfred Catlin, residing at West Bridgford, for the sum of £11 15s. 10d., extras in connection with the building of a greenhouse, and for the erection of a rustic fence.—Plaintiff stated that in July, 1898, he agreed to build a conservatory for the defendant for £42 10s., but subsequently Mr. Catlin desired a hot-water apparatus, a cistern, and a brick floor put in, and also gave orders for a rustic fence to be erected. The claim was for these extras, which defendant had refused to pay.—The defendant alleged that the sum of £42 10s. was to include everything in connection with the greenhouse, and it was expressly stipulated that there were to be no extras. He denied ordering any extras at all. He ordered the rustic fencing, but the price ought not to be more than £6 10s. There were two small items, amounting to 15s. 10d., which were admitted. This brought up the total to £49 15s. 10d., but as £50 had been paid, he was not indebted to Mr. Hammersley at all. Witnesses were called to speak as to the value of the rustic fence, and his Honour gave judgment for plaintiff for £7 10s. with costs.

Frontages: a Scotch Case.—The First Division of the Scottish Court of Session recently disposed of an appeal from the Dean of Guild Court of Glasgow at the instance of John Whyte, Master of Works for the city, in a petition for a lining by Peter Glass, builder, of Glasgow. The petitioner craved the Dean of Guild Court for a warrant to take down existing buildings at 88-94 Rutherglen Road, Glasgow, and to erect in their place two new tenements of shops and dwelling-houses. The Master of Works objected to the lining being granted, as it was proposed to erect the buildings 16ft. from the centre of the road, which is a turnpike road, whereas, by the terms of the Turnpike Roads Act, 1831, section 91, and the Glasgow Police Act, 1866, section 366, the buildings should be erected 25ft. from the centre of the road. The Dean of Guild Court overruled the objections and granted the lining, holding that the Turnpike Roads Act did not apply to the re-erection of buildings on sites on which the existing buildings had been erected prior to the passing of the Act. The petitioner was found entitled to expenses. On December 20th the Dean of Guild's decision was recalled, and the case was remitted back in order that the restriction on the Turnpike Roads Act should be given effect to. The Master of Works was found entitled to expenses to date. The Lord President, in disposing of the appeal, said that section 366 of the Police Act prohibited the Dean of Guild from granting warrant to erect any building except a stone wall, not exceeding 7ft. in height, within 25ft. of the centre of the Rutherglen Road. He, therefore, thought that the interlocutor of the Dean of Guild should be recalled, and the case remitted to him to give effect to the restrictive provision contained in section 91 of the Turnpike Roads Act of 1831. The distance mentioned in section 366 of the Police Act was applicable to turnpike roads, and required 30ft. to be left, but there was a provision at the end of the clause to the effect that a building might be erected at a less distance. He, therefore, thought that a building might be erected 25ft from the centre of the road without contravening section 91 of the Turnpike Act.

An Important Right of Light Case.—In the Chancery Division of the High Court of Justice on December 21st Mr. Justice Joyce gave judgment in the case of the *Home and Colonial Stores* v. *Colls*. In this action the plaintiffs claimed an injunction to restrain the defendant, J. H. Colls, from erecting on the site of 44 Worship Street, E.C., any building or erection so as to darken, injure, or obstruct any of the ancient lights of the plaintiffs as the same were enjoyed previously to the taking down of 44 Worship Street. The facts sufficiently appear from the following judgment of Mr. Justice Joyce:—The plaintiffs are entitled for the residue of a term, having about 17 years unexpired, to a considerable block of buildings situated on the east side of Paul Street, at the corner between that street and Worship Street, which runs westwards from Paul Street, so that the plaintiffs' building has a west front to Paul Street and a south front of about 150ft. in length to Worship Street. Worship Street is a tolerably broad thoroughfare, being 41ft. or thereabouts across. Opposite a portion of the south front of the plaintiffs' premises in Worship Street is the site of some buildings recently removed, which is about 36ft. in width and numbered 44 in the street. The buildings which formerly stood on this site were 19ft. 6in. in height, and the defendant has entered into a building agreement to erect on this site a building which, if and when completed, would be 42ft. in height. On the west of the defendant's premises and at the corner between the south side of Worship Street and the east side of Wilson Street there is a public-house 33ft. in height, and none of the buildings in Worship Street on the east of the defendant's premises exceeds that height. It is, I think, tolerably clear, and I find as a fact, that the defendant's building if erected to the height of 42ft. as proposed would not materially interfere with the access of light to any window on the first floor of the plaintiffs' premises, or with any light to which the plaintiffs are entitled in respect of their basement. The real and only question, in my opinion, is with respect to apprehended injury to the third and fourth windows—counting from Paul Street—on the ground floor of the plaintiffs' building. These windows are of large size, but, although the top light is said to be the most valuable and important, the uppermost part of each of the windows is filled with coloured glass to a depth of 20in. from the top, and there are wire blinds fixed at the bottom of each window. The portion of the ground floor of the plaintiffs' building which is opposite the defendant's premises is used as an office. It consists of a large room 11ft. 10in. high and of unusual depth, the back wall being upwards of 50ft. from the Worship Street front, and it has no window nor source of natural light at the back. This room contains several desks used by clerks in the employment of the plaintiffs for the purposes of their business. It is fitted with electric light, there being five rows of lamps in or near to the ceiling and arranged parallel to Worship Street. It is, I think, the result of the evidence that it has ordinarily, if not always, been the custom to use the electric light in the back part of the room, and it would require a most extraordinary amount of light from the windows in Worship Street to enable such use of the electric light to be dispensed with even on ordinary days. Practically, I think it may be assumed that the use of electric or some other artificial light is now, and must always be, necessary in order to illuminate the back part of the room even in the day time. There is no evidence to show that any such extraordinary amount of light from the Worship Street windows has been enjoyed or required for anything like the period of twenty years. Probably the ground-floor rooms in the plaintiffs' premises were reconstructed or rearranged as they now are within quite a recent period. Various expert witnesses were examined, and as the result of their evidence I am of opinion that the proposed new building of the defendant would not affect the selling or letting value of the plaintiffs' premises. If erected to the proposed height of 42ft. no part of the defendant's building would be high enough to reach any line drawn at an angle of 45deg. to the horizon from any point in the base or sill of either of the windows in question belonging to the plaintiffs. But the defendant's building would, for its width of 36ft. directly south of these windows, cut off a portion of the sky area now visible from within the plaintiffs' office, and it would, I think, to some extent necessitate, more frequently and during somewhat longer hours than at present, the use of artificial light in the front part of the office. It is practically admitted that the defendant's building might be raised a certain height—the plaintiffs' principal witness said to a total height of 25ft. from the ground—without any material injury to the plaintiffs. Apart from any question with respect to the back part of the plaintiffs' premises and to the extraordinary amount of light required (if it could possibly be obtained) therefore in the absence of illumination by artificial light, the plaintiffs' premises would still, in my opinion, after the erection of the defendant's building be well and sufficiently lighted for all ordinary purposes of occupancy as a place of business. If they were of only ordinary depth, they would have amply sufficient light—at present they have abundance of light, and in fact are, in my opinion, unusually well lighted. If, as was contended on their behalf, the plaintiffs are entitled to the full amount of light now enjoyed without appreciable diminution, they would have a good cause of action upon the erection of the defendant's building, though it may perhaps be doubted whether the diminution of light that would result would be sufficiently serious to entitle the plaintiffs to an injunction. In my opinion it is not possible to reconcile the numerous authorities that were cited before me in the arguments of counsel. But the defendant insists upon the most recent decision—namely, that of Mr. Justice Wright in the case of *Warren* v. *Browne* (1900, 2 Q.B., 722), and, after considerable hesitation, I have come to the conclusion that that decision, if it is not reversed by the Court of Appeal, ought to govern the present case, and I think that, sitting as a Judge of first instance, I am bound to follow it. Assuming, therefore, that I am right in this view, I am of opinion that this action fails and must be dismissed with costs.

Builders' Notes.

At the Bournemouth and District Master Builders' and Decorators' Association's annual meeting Mr. George McWilliam was elected president.

American Cement.—The Atlas Cement Company, one of the largest concerns of its kind in America, recently broke all records by turning out at its plant at Northampton, Pa., 15,000 barrels of cement in a run of twenty-four hours. The plant is now in course of enlargement.

For Using Improper Mortar in building houses in Sidney Road, Leyton, at Stratford Police Court Charles White, builder, of Warren House, Leyton, was summoned. For the defence it was stated that the inferior mortar was used owing to a labourer's oversight. The wall had since been pulled down and properly rebuilt. Defendant was fined £5 and costs 7s. 6d.

Building at Woking.—There is a great demand for houses at Woking, and estates are being sold up rapidly, affording excellent opportunities for speculative building. Messrs. Alexander H. Turner and Company, auctioneers, of 199 Piccadilly, W., will sell at the Mart on the 16th inst. a freehold building estate, comprising 72 acres, on Church and Kettlewell Hills, Horsell, with frontages to the main road to Chobham and to Horsell Common, on gravel and sand, with gas, water and electric light mains close at hand.

Building in Hull.—A slump in the building trade in Hull seems to have commenced in earnest. There are now two firms in the Bankruptcy Court, the creditors of whom met the other day. In one case in particular a most unsatisfactory state of affairs was disclosed, no doubt largely attributable to the "financing" system under which those firms seem to have been nurtured. Within the last year or two, helped possibly to some extent by the builders' strike, there have sprung into existence a great number of small firms who commenced operations with practically no capital of their own, but who got land first of all on mortgage, and were enabled to build by the aid of financiers, who advanced them money according to the progress of the building. The only chance of getting anything out of the transactions is by a favourable sale of the equity, and this has not always turned out a very large item after all expenses have been paid. The least little depression and the difficulties of these small firms are increased tenfold. When one of these firms has to pay about nearly one-tenth of the value of the houses in arranging the mortgages it will be seen that their position is not a very stable one.

Professional Practice.

Burton.—The Primitive Methodist Chapel in Wetmore Road is being enlarged. The chapel is to be increased in length, and additional seating accommodation will be provided for 50 persons. A front entrance porch is to be built, and an inner lobby formed, the upper portion of which will be glazed with amber cathedral glass. The buildings at the back of the chapel will comprise on the ground floor a minister's vestry and class-room, kitchen and accommodation for the boys and girls attending the Sunday schools, and on the first floor will be two class-rooms. The chapel will be heated with a powerful stove, and the class-rooms with open fire grates. The existing front of the chapel is to be remodelled; the old windows are to be taken out and substituted by three new ones, having stone quoins, arches, mullions and tracery heads, the centre being a four-light, with a cusped and quatre-foiled tracery, with two side lights. The gable will be taken down, and rebuilt with panelled and cusped stonework and stone copings. The glass used in the windows will be of a rich amber tint, leaded in plain ecclesiastical designs set into the framework without wood frames. The ventilation of the chapel is secured by inlet panels, and a powerful air outlet pump is fixed on the ridge of the roof. The buildings have been designed by Mr. Thomas Jenkins, architect, and are in the early English Gothic style. The general contractor is Mr. J. Harlow, the stonemasons being Messrs. Parker and Stamp, of Dallow Lane.

Edinburgh.—A new Board school is to be erected facing Ashley Terrace, North Merchiston, and will contain one and a quarter acres of ground. The main feature of the plan is a central hall both on the ground and on the first floor, with class-rooms grouped round them on each floor, the ground floor being devoted to the infant department, and the first and second floors to the juvenile department. The second floor will contain, besides the ordinary class-rooms, a combined workshop and cookery class-room and gymnasium. The class-rooms contain an average number of 60 pupils, and there being 27 class-rooms in all, accommodation is provided for 1,586 pupils. The school has been designed in a simple treatment of English Renaissance, the windows lighting the juvenile hall on the first floor being marked by semicircular heads. An ornamental belfry surmounts the central floor. The building will be heated by means of hot-water pipes on the low-pressure system. Ventilation is obtained by means of electrical fans extracting the vitiated air from all the rooms. Mr. Robert Wilson, of Queen Street, Edinburgh, is the architect.

Glasgow.—The Executive Committee of the subscribers to the Queen's Diamond Jubilee Fund for the reconstruction of the Royal Infirmary have decided between the various plans sent in by the ten competitors. Dr. Rowand Anderson was the assessor, who placed plans marked F first. A vote was taken, when 8 members voted for plan F, 10 for plan E, and 3 for plan B. Plan B being struck out, its supporters voted on the other two plans, with the result that plan E had 11 votes and plan F 10 votes. The Lord Provost having opened the sealed envelope marked E, the author was declared to be Mr. James Miller, I.A., West George Street, Glasgow. The committee then unanimously appointed Mr. Miller architect for the reconstruction of the Infirmary—the work to be carried out in such manner and to such extent as the committee may from time to time determine. The plan provides for the reconstruction of the whole of the present buildings, adapting them in every respect for the purpose for which they are intended. The cost of the reconstructed buildings is estimated at £224,500. Mr. Miller is also the architect for the Glasgow International Exhibition. The official description of the new buildings states that the arrangement of plan follows very closely the lines of Plan No. 5, issued by the committee to the competitors, and shows a great quadrangle towards Castle Street, 430ft. long by 190ft. deep. The front, or Jubilee, block faces Cathedral Square, and occupies very nearly the position of the Adams front of the present building. This block has a frontage to Cathedral Square of about 216ft., and a prominent and striking feature in this elevation is the great central tower, 32ft. square, rising to a height of 160ft. The distinctly Scottish flavour which characterises the whole design is a marked feature in the tower. At the angles of the tower are circular turrets carried up through the parapet, and from the top of the square tower rises a spire, which, together with the turrets, forms a striking group. The plan is divided into three sections, or blocks, viz., the Medical Block, Surgical Block, and Special Diseases Block. The former is contained in the front, or Jubilee, block, and is six storeys in height, and contains 10 large wards and 20 single wards, accommodating in all 225 beds. In the centre there is a large and well-lighted central hall, extending the whole height of the building, right and left of which are the wards and the various rooms connected therewith. The Surgical Block is placed at the north end of the site, and is six storeys high, and contains 18 large wards of 14 beds each, and 24 small wards containing in all 42 beds, the total number of beds in the Surgical Block being 296. This block is 290ft. long. In the centre, as in the Medical Block, is a great central hall, 40ft. square, with galleries all round, which give access to the corridors. This hall is lighted by a large glass cupola at the top, as well as by side windows on every floor. Grouped round the central hall are the various rooms in connection with this important part of the institution—namely, nurses' room and ward kitchen, outdoor patients' room, day rooms, lavatories, linen rooms, &c. The operating theatre is a large and well-proportioned apartment, 30ft. by 20ft. It is lighted on three sides, the chief light being from the north. Immediately adjoining the operating theatre are the sterilising room, splint room and microscopic rooms, also a recovery room. A special lavatory is provided for the operating staff near to the operating theatre. The Central Block contains the wards for special diseases. On the ground floor are the administrative offices, board room, doctors' and matrons' dining rooms; also a large dining room for 80 nurses at a time. On the top floor of this block are placed the kitchen and other apartments connected therewith. On the top floor is a service corridor, which extends throughout the entire building. Service trolleys, containing food, etc., are run from the kitchen along this corridor to the large service lifts, which are provided in the centre of each block. In each block accommodation is provided for the resident doctor or surgeon on every floor, containing a sitting room, bed room and bath room, with lavatory and w.c. The entire building provides beds for 700 patients. The main elevations, while they have been treated in a simple manner, show a fine sense of massing and proportion; and the outcome of the plan is, as it should be, clearly indicated in the elevations. The great height of the buildings, and their breadth and dignity, is impressive and monumental. A special feature in the design is a flat garden roof on the top of the central block, extending nearly 500ft. in length, with a width of about 32ft., and surrounded by a stone balustrading. This will be laid out with shrubs and seats, and formed into a pleasant airing space for patients. Passenger lifts communicate direct with this airing space, in addition to the staircases. At the immediate front of the great quadrangle, facing and adjoining Castle Street, are the gate-house block and isolation blocks. These buildings are only one storey in height, with stone parapets and flat roofs, so that the view of the quadrangle from Castle Street might be interfered with as little as possible. They are treated in a style in keeping with the main buildings, and, on account of their lowness, help to give scale to the great mass behind. A careful examination of the plans shows that great consideration has been given to obtaining the greatest possible amount of light and air to the various apartments, and especially the wards, and, as far as possible, keeping them free from projecting wings. In this respect the plan differs very much from the usual hospital plan, where the various wards are ranged in parallel blocks at comparatively short distances apart, thereby creating confined air spaces and giving a gloomy aspect to the wards, as the side windows of the ward must necessarily overlook the windows of those adjoining, which tends to have a depressing effect on the patients. In the accepted plan these defects have been to a great extent overcome, all the wards having a free and open outlook. The method of heating and ventilating is the plenum system, whereby the entire building will be heated by means of hot air being forced into the apartments by fans in cold weather, and fresh cooled air in hot weather. The air before being admitted into the building will be washed and purified, so that even in foggy weather nothing but pure air will be admitted, all windows being hermetically sealed. The volume of air forced into the building will be such that the air in the wards and other apartments will be completely changed every six or seven minutes, this process going on continuously. There are six large lifts provided in the building—two in each of the three main blocks—besides which there are several smaller lifts in connection with the kitchen and dining-rooms. All lifts will be controlled by electricity. The buildings will be entirely lighted by electricity, with special movable fittings at the bed of each patient. The style of architecture is based on examples of Scottish Baronial work, as practised in the sixteenth and seventeenth centuries. When completed it will be one of the greatest buildings of its kind ever erected.

Llandaff.—The two side-lights of the triplet of windows in the west front of Llandaff Cathedral have just been filled with stained glass, thus completing the entire suite of the group and that in the gable above. The light on the north side has been erected in memory of the late Dean Williams, who completed the restoration of the edifice. It represents Nehemiah superintending the building of the walls of Jerusalem. Both below and above this panel are large figures of angels, one bearing a model of the church to symbolise the special work of the deceased dean. This window is the gift of Mr. J. P. Seddon, the cathedral architect. The window on the south side has similar angels to those described in the other light above and below a panel, and both are surmounted by rich canopy work, and surrounded by ornamental scroll work, &c. Both these windows are from the designs of Mr. J. P. Seddon, the diocesan architect, of the firm of architects, Messrs. Seddon and Carter, of Cardiff, and have been drawn and executed by Mr. H. G. Murray, of London.

Seaton, Devon.—The ancient parish church of St. Gregory, which is apparently late fourteenth century work, has been reopened after renovation. The works now completed consist of the substitution of an open timbered roof with carved wood bosses at the various intersections in place of the lath and plaster ceiling, whilst the walls throughout have been thoroughly overhauled and ornamented by colour. There are new clergy prayer-desks of oak, and a beautiful new pulpit of carved oak has been set up on the north side. This has been carried out by Messrs. Harry Hems and Sons, of Exeter, who are also making the new font which is not yet fixed. The bowl of this font is of Beer stone, and will be carved upon each of its eight faces, and, when complete, will stand upon alabaster columns resting upon a double row of octagonal steps. The architect of the work is Mr. Strawbridge, of Taunton. The work has been carried out by Mr. H. Abbot, of Seaton.

British Institute of Certified Carpenters.—The annual report and statement of accounts for the session 1900 states that the Institute has progressed very favourably. This year 15 new members have been enrolled, which brings the total now on the books to 123, not including the hon. members. There have been 8 ordinary meetings, 3 council meetings, and 2 special meetings for the revision of rules. The balance sheet shows an income of £57 12s. 5d., including balance for 1899 of £27 12s. 5d., and an expenditure of £32 16s. 4d., leaving a balance of £24 16s. 1d.

Keystones.

A Workmen's Club at Bamfurlong has been erected at a cost of £900.

Messrs. E. H. Shorland and Brother, of Manchester, have just supplied their patent Manchester grates to the new Cottage Hospital at Carnarvon.

Mr. F. R. Pickersgill, a retired Royal Academician, died recently in his 81st year. He was elected R.A. in 1857, and was Keeper of the Royal Academy from 1873 to 1887.

Two Threatened Buildings.—The Fish Market at Minehead, Somersetshire, and the Market House at Godalming, in Surrey, are threatened with demolition. In neither case is there sufficient ground for doing so.

The "Temple," Paris, or old clothes mart, which since the days of Louis XVI. and Jacques Molay has been the central mart for cast-off garments and other domestic frippery, is threatened with demolition. Of late prosperity has not attended the male and female vendors, and many of the stalls are unoccupied.

At Ashill Parish Church two memorial windows have been erected. The one at the east end consists of three lights. The other is on the south side of the chancel, within the sacrarium, and immediately over the piscina, and contains two lights. The new stonework in the windows is by Messrs. Cornish and Gaymer, of North Walsham, and the glass by Messrs. Levers and Westlake, of London. Mr. Arthur Reeve was the architect of the stonework.

Bushey House, in the old Deer Park at Richmond, is to be the future home of the National Physical Laboratory. The rooms are of the wide dimensions befitting a Royal residence, so that no structural alterations will be required beyond the putting in of concrete floors and stands for instruments. A new engineering laboratory will be provided, and a boiler house and engine room erected. The estimate of the Office of Works of the cost necessary to make Bushey House suitable for a laboratory amounts to £14,296, which includes the engine and dynamo for the supply of light and power.

The Foreign Office.—There has lately been placed in Lord Salisbury's new private room at the Foreign Office an interesting series of historical portraits in oils. Among them are the Earl of Bath, the well-known seventeenth-century statesman, by Sir Joshua Reynolds, which has been lent by the trustees of the National Portrait Gallery; Lord Clarendon, the Duke of Wellington, Lord Chancellor Camden (a copy of Sir Joshua Reynolds's canvas), Lord Chancellor Thurlow, in an unfinished state (probably painted by one of the pupils of Sir T. Lawrence); and Spencer Perceval, the Prime Minister who was murdered in the Commons Lobby. The apartment also contains a costly piece of Chinese tapestry, which was presented by a Special Ambassador some time ago. Several additions have also been made to the oil paintings in the new Cabinet Room, including a replica of Angeli's Jubilee portrait of the Queen, Queen Caroline, Charles II., and some of the Georges.

Art in Whitechapel.—The first loan exhibition in the new Whitechapel Art Gallery will be held from about February 22nd to April 15th, this period including the Easter and Passover holidays. About 220 pictures have already been promised, including several by Watts, Burne-Jones, Rossetti, Ford Madox Brown and Gainsborough. The public will have the right of voting for "the three most popular pictures," though as a means of discovering the public taste this system is admittedly imperfect—for many of the most appreciative visitors do not vote at all, and others are so enthusiastic as to come in day after day to vote for their favourite works. Another feature of the exhibition will be lectures given in the gallery by artists and others explanatory of the various subjects; and the catalogue will also be of a distinctly expository kind. The gallery will be open from 10 A.M. to 10 P.M., Sundays included, while the exhibition lasts. £500 is still required for the building fund of the gallery.

A new Prince of Wales' Theatre at Nuneaton is being erected. The architects are Messrs. Owen and Ward.

Mr. Edmund M. Wimperis, vice-president of the Royal Institute of Painters in Water-colours, died on Christmas Day. He was born in 1835.

A Stained Glass Window has been erected in the new Congregational Chapel at Upton. Messrs. Williams Brothers, of The Kaleyards, designed and executed it. The colouring of the window is quiet and effective.

At St. Catherine's Church, Hatcham, a stained-glass window has been unveiled: the subject of the window, which has been inserted in the Lady Chapel, is St. Catherine, the patron saint of the church. The window is the work of Messrs. Simpson and Co., of Charing Cross.

The Market Cross at Inverness has been restored. Since the late Mr. Gladstone restored the Edinburgh Cross fifteen years ago what may be termed a "Market Cross Renaissance" has set in throughout Scotland, and the restoration of the Inverness Cross is one of the most recent renewals successfully carried out. The Old Cross has been placed in front of the Town Hall, the work of restoration including some fine carving work, notably the Scottish Unicorn supporting the Inverness Town Arms.

Memorials to Actresses.—In the Royal Pavilion, Brighton, by Sir Henry Irving, a bust of the late Miss Amy Sedgwick (Mrs. Goostry), an actress whose liberality locally was much appreciated, has been unveiled. The marble memorial of the late Helen Faucit (Lady Martin), which Sir Theodore Martin has presented to the Shakespeare Memorial Buildings, Stratford-on-Avon, has also been unveiled. The memorial was intended for the chancel of the parish church, opposite Shakespeare's monument, but the offer was withdrawn owing to strong protests.

The Glasgow and West of Scotland Technical College Architectural Craftsmen's Society held a meeting on Friday, December 21st last, Mr. Isaac Low presiding. Papers were read on the subject of "Conditions of Contract"—by Mr. James A. Ferguson on joiner work, Mr. Robert Aitkenhead on mason work, and Mr. Isaac Low on plumber work. Deducing the contents of the three papers, the following were the most important of the items commented on. The upholding of work for the customary two years by the contractor was considered excessive, six months to one year being suggested as ample. Arbitration in case of disputes arising in the carrying out of the contract. It was suggested that in conditions wherein disputes were to be referred to the architect, whose decision would be final and binding, this might be more justly dealt with by the appointing of a representative of both the architectural and legal professions as arbiters. The questions of time clauses, extras, after-measurement system, testing of materials, &c., were also discussed.

The Northamptonshire Architectural Society held its annual meeting recently, the Rev. A. W. Pulteney occupying the chair. The Rev. A. K. Pavey and Mr. C. A. Markham were elected hon. secretaries. The Rev. E. L. Tuson was appointed treasurer and Mr. E. M. Brown auditor. Certain alterations to the rules of the society were approved. The chairman, in reply to a question, said it had been thought undesirable to amalgamate with the Northamptonshire Natural History Society. It was decided that the title of the society should be in the future the Architectural and Archæological Society for the Archdeaconries of Northampton and Oakham. The fifty-fifth annual report stated that four members of the society had died during the year and one had resigned; nine new members had been elected during the year. The treasurer's report showed total receipts, including a balance in hand of £18 11s. 2d., of £64 13s. 2d. The expenditure amounted to £48 13s. 6d., leaving a balance in hand of £15 19s. 8d. Both reports were adopted. A paper on "Some Remarks on the Characteristics of North Northamptonshire Churches" was then read by Mr. R. P. Brereton.

Surveying and Sanitary Notes.

Cleethorpes Improvements.—The need for sea defence works and other improvements at the south end of Cleethorpes is receiving the serious consideration of the Urban District Council, whose committee now recommends them to adopt a scheme including the acquiring of the golf links (about 45 acres in extent), the erection of a sea wall, the making of roads, &c., at a cost of between £20,000 and £25,000. A sub-committee has been appointed to confer with the representatives of the Sidney Sussex College, which owns the major part of the land at Cleethorpes.

Tottenham Court Road Improvement.—The City Lands Committee have reported to the Corporation on the question of dealing with the Corporation's property on the east side of Tottenham Court Road. Alfred Place, which is parallel to Tottenham Court Road, has, the committee reports, at its north and south ends, short streets (Chenies Street and Store Street), the houses in which are arranged in the form of a crescent. Such planning was quite out of date, and was to be deprecated for many reasons. The abolition of these crescents was, after some negotiations, approved by the late St. Giles's District Board of Works, and the formation of two new streets, 50ft. wide, had now received the sanction of the London County Council. Alfred Place is to be prolonged northward and southward—on the north to meet Alfred Mews (to be widened to 50ft.), and on the south to meet a new street which runs into Tottenham Court Road, also 50ft. wide.

The Institute of Sanitary Engineers.—At the half-yearly general meeting on December 12th, 1900, the following officers were elected for the year 1901:—*President*: Dr. J. B. Wilkinson, D.P.H., &c., M.O.H. County Borough of Oldham, and Consulting M.O.H. County of Huntingdonshire. *Vice-Presidents*: Dr. Thresh, M.O.H. Chelmsford; Messrs. S. I. Adams, Mem.San. Inst., &c.; H. M. Dove, Assoc.San.Inst., &c.; J. Farley, C.E.; S. Minty, Assoc.San.Inst., &c.; W. J. Wells, M.S.A., Assoc.San.Inst., &c. *Honorary Directors*: Messrs. H. M. Dove, J. Farley, and W. J. Wells. *Council*: Messrs. J. Allan, F. P. Barber, E. Berrington, C. E. Butcher, H. G. Beams, G. H. Carter, E. D. Cecil, W. H. Coltart, T. W. Deadman, C. Dobbs, J. T. Griffin, R. Horton, N. W. Hoskins, A. R. Hutson, J. Jenkins, W. E. Markham, F. W. Mason, T. R. Nash, E. R. Palmer, F. B. Patch, F. J. Rayner, W. Strachan, T. M. Taylor, J. Thompson. *Auditor*: Mr. R. J. Ward, C.A., 2 Clement's Inn, W.C.

Bacterial Treatment of Sewage.—The third report under the London County Council by Dr. Clowes and Dr. Houston on the bacterial treatment of crude sewage has just been issued. The first report dealt with the bacteriological examination of crude sewage as it arrived at the outfalls at Barking and Crossness. The second gives the results obtained by the chemical and bacteriological examination of the crude sewage of the effluent from the coke beds at Crossness. The present report gives a similar statement of the results secured in the experimental bacterial treatment which has been carried out at the northern outfall, Barking, and of the experimental treatment put in force at the southern outfall, Crossness, since the issue of the previous report. As regards the general bacteriological aspect of the treatment of London sewage, Dr. Houston gives a statement of the conclusions at which he has arrived after two years' study. He concurs in the advisability of adopting the bacterial method of treatment of London sewage in place of the chemical treatment, and maintains that under the conditions existing in the lower river and at the outfalls this system would furnish a more satisfactory result. But he states that though the effluent from the bacterial beds would not lead to nuisance in the river, it would be by no means a satisfactory liquid to introduce into a part of the river which was used for drinking purposes.

Engineering Notes.

Electrical Engineer to the L.C.C.—This appointment, which carries with it a salary of £1,000 a year, is open till January 14th.

The Channelling of London Bridge is being repaired without inconvenience to the public, the work being done between the hours of nine p.m. and six a.m. The example thus set by the City Surveyor (Mr. A. Murray) will not, it is to be hoped, be disregarded by the Postmaster-General.

"The Theory of Engineering Construction" is the title of a book by Mr. Ernest H. Essex, A.M.I.C.E., just published by the St. Bride's Press, Ltd., 24 Bride Lane, Fleet Street. Mr. Essex is the assistant engineer and surveyor to the Leyton Urban District Council. The book comprises a selection of notes and formulæ on the theory of construction arranged in the form of answers to the questions set at examinations for the election of associate members of the Institute of Civil Engineers. The price of the book is 5s. nett.

Bridge across the Swale.—The Conservators of Milton Creek, Sittingbourne and the Kent and Essex Brickmakers' Association have definitely decided to oppose the Bill which is being promoted in Parliament by the South Eastern and Chatham Railway Company for the substitution of a fixed bridge over the river Swale at King's Ferry, near Queenborough, in lieu of the swing bridge authorised by the existing powers; as the effect would be to permanently close Milton Creek to all vessels that cannot lower their masts. It is expected that the Sittingbourne and Milton Urban District Councils will support the bodies named in opposing the Bill.

New "Tube" Railways in London.—The following tabulated statement shows the final extent of mileage of the underground electric railways in London constructed, authorised and proposed:—

	Miles.
CONSTRUCTED.	
Central London	5½
City and South London	3½
Waterloo and City	1½
OLD SCHEMES, CONSTRUCTING OR AUTHORISED.	
Baker Street and Waterloo	5
Brompton and Piccadilly Circus	2
Charing Cross, Euston, and Hampstead	5
City and Brixton	3½
City and South London (Moorgate Street to Angel Extension	2
District Railway Deep Level (Mansion House to Earl's Court)	4½
Great Northern and City	3½
Great Northern and Strand	5
Whitechapel and Bow	2
NEW PROJECTS AND EXTENSIONS OF RAILWAYS ALREADY AUTHORISED.	
Brompton and Piccadilly Circus	4
Central London (Extension to Liverpool Street and loop lines)	1
Charing Cross, Euston, and Hampstead Extensions	5
Hammersmith and District	5
City and North-East Suburban	17
City and West End	6½
Islington and Euston	1½
King's Road	2¾
North-East London	11
Piccadilly and City	2
Victoria, City, and Southern	7
West and South London Junction	4½

This is a total of more than 140 miles. Calculated on a basis of £600,000 a mile, which was said to be the cost of the Central London, the capital necessary to construct the new railways will amount to well over £60,000,000; and another million would have to be spent in converting the present Inner Circle Railway into an electric railway.

Oldham Electric Tramways.—The Middleton Road section of these tramways was opened recently. The work was commenced at the beginning of last year and the route has gradients varying from 1 in 10 to 1 in 27. The gauge is 4ft. 8½in. The system of the electrical equipment is the centre under-running overhead trolley. The steel standards are of the side bracket type, with cast-iron ornamental bases and ornamental wrought-iron scroll work and collars designed by the borough engineer. The electrical energy is being supplied by the Electricity Committee of the Corporation from their present power station. A new generating station is under construction, and will when completed be capable of supplying about 20,000 horse power. In addition to the section just opened seven miles of track are already completed, and the electrical equipment is being pushed rapidly forward. The total estimated cost of the whole system, excluding the new power station but including the permanent way, electrical equipment, cars, and car depots, is £400,000. Messrs. Hewitt and Rhodes, of Manchester, are the consulting engineers, and the whole of the work is being supervised and carried out under the direction of the borough engineer and surveyor, Mr. S. A. Pickering, A.M.I.C.E.

ARCHITECTURE IN CORNWALL AND THE WEST.

LECTURING recently at Plymouth on "British Architecture in the Locality," Mr. Edmund Sedding claimed that the art of the great masters or craftsmen of old was the outcome of intense religious fervour, when Europe laboured for one creed. When our churches were richest in imagery and carved work, art received an irrecoverable shock under the chilly influence of Puritanism. Naves of great churches were blown up, and commodious edifices of whitewashed iron erected. Art was swept out of the churches, and the arts and crafts of Britain drifted into a domestic channel. Then it was that the love of art grew less, and Charles Church, Plymouth, and Falmouth Parish Church bore witness to the forlorn state of seventeenth-century art in the West. A century later it arrived at its worst condition. Churches erected at the beginning of this century had been mistaken for a pile of mine buildings. From that time a reaction set in. Religion revived, but art, smothered by indifference and want of exercise, was dead. It remained for future generations to rekindle this love, but it could not be done without religion. During the last twenty years much had been done to pick up the threads of art and build again, not simply for utility, but for beauty also. We could not do better than take a lesson from nature, and combine beauty with usefulness. Mediæval art was developed, not by the aid of books, but from nature. The art of the Greeks was gradually superseded by that of Rome; in the fifth century Gothic art pervaded Europe and the pointed arch became general. Nature told us that this was the more beautiful form, for she terminated her leaves in this manner. In no county, perhaps, did nature and art more closely commingle than in Cornwall. There was no architectural evidence, either in Devon or Cornwall, of Roman occupation yet discovered, nor were there any remains of Saxon art, which was but a childlike development of Roman work. With the Normans, however, England became transformed with splendid cathedrals and churches, of which the Western peninsula contained considerable remains. It was remarkable that the finest doorways of this period were found in England. There was less thirteenth-century, or first pointed, work in Cornwall than in Devon. Of fourteenth-century, or middle-pointed, work both counties had little to show. It was in the fifteenth century that fully four-fifths of the churches were remodelled and enlarged, which entailed the removal of much earlier work. The lecturer showed slides illustrating the various phases of local architecture in the Norman font of Bodmin and St. Feock, and the west front of St. Germans. Exeter Cathedral represented the fourteenth century; the churches of Ottery St. Mary, Plymton, Chittlehampton, St John's-by-Antony, St. Andrew's (Plymouth), St. Mary Magdalene (Launceston), and Lewannick, were partly of fifteenth- and sixteenth-century date. Screen work was universal in old Western churches and cathedrals, but nine-tenths of this beautiful handicraft had been superseded by the preference for plaster and whitewash, under Puritan influence. Remains of old screens at Dartmouth, Altarnum, and Laneast, were also shown on the screen. Incidentally the lecturer made a plea for the sustenation of old thatched cottages, as they were a relic of traditional art in which utility and beauty were combined.

Quarry Notes.

Sale of Granite.—A sale of the sequestrated stock of Mr. Thomas J. Blann, granite merchant, Pittoddrie Street, Aberdeen, was held recently, and fairly good prices were realised for granite, especially for bases. Mr. J. Reid was auctioneer. The principal purchasers were, Councillor Boddie, Mr. Robert Gibb, Mr. Douglas, Mr. Hood, Wick Mr. Hadden, Messrs. Simpson Brothers, Constitution Street; ex-Councillor Robert Simpson; Mr. Cran, Ellon; Mr. Riley, Aberdeen; Mr. A. Morgan, Mr. R. Lawrence, Mr. W. Edwards, of the Nelson Granite Works; the new proprietor of the yard, and others. At the close of the sale of the granite, tools, steel bars, grindstones, and a number of miscellaneous articles connected with the granite dressing industry were sold and realised fair prices.

A Large Gritstone Block.—There was recently lowered from the overhanging quarry at Stancliffe, Darley Dale, formerly the seat of the late Sir Joseph Whitworth, and now belonging to the Stancliffe Estates Co., a solid, absolutely flawless block of fine gritstone, 30ft. long, 13ft. wide, 18ft. thick, and computed to weigh 540 tons. One of the largest blocks of stone ever got locally was also recently blasted at Mr. Robert Simpson's Peasonhurst deep stone quarry, Ashover, about three miles from Darley Station. The block measured 33ft. long, by 31ft. wide, and 23ft. thick, and contained upwards of 23,500 cubic feet of stone, its computed weight being about 1,680 tons. The stone was moved 12in. from its bed by a charge of 40lbs. of powder, in one bore hole, 20ft deep, and was riven into three sections.

Craig Dhü Quarry, situated within ten miles of Creetown, one of the principal granite quarrying centres in the south of Scotland, has been opened by the North British Granite and Whinstone Company, Ltd. It is said that the supply of good rock in that locality is practically inexhaustible, but the facilities for dispatch are not as good as they are at some of the other quarries in the vicinity of Creetown. This, however, may be improved. Creetown stone is one of the finest granites for close-axed work that can be obtained in the United Kingdom. It is light grey in colour, close grained, and resembles the silver-grey granite of Kemnay, Aberdeenshire. When fine-axed it looks like marble, and in polished work it forms an excellent contrast to the dark Swedish or deep blue Russian granites. Orthoclase appears in the form of grey irregular crystals, while plageoclase is fairly abundant, and in characteristic striated layers. The quartz is in the form of clear glassy masses, and the mica is almost wholly of the biotite variety.

A Masonry Dry Dock at San Francisco is to be built 750ft. long from gate seat to coping at head, 122ft. wide at coping, 74ft. wide at the bottom, and 32½ft. deep from coping to sill. The facing of sides of the approach, seat for caisson, and gate arch will be of cut granite. The dock will have eleven altars at top and five at bottom, from a point 100ft. from the gate seat to within 150ft. of the head of the dock. The keelson will be 4ft. wide. Transverse sills of 12in. by 12in. timbers must be laid on both sides of the keelson, 10ft. apart, from apron to head of dock. Bilgeways must be located at these sills. The walls will be of concrete, backed with dry yellow clay, well puddled and tamped, but the top 18in. will be rock filling covered with a macadam surface. The concrete is to be composed of one barrel of Portland cement to 20 cub. ft. of broken rock and 5 cub. ft. of sand. For the altars the proportions will be one barrel of cement, 18 cub. ft. of rock, and 4 cub. ft. of sand. The walls will be anchored to the rock stratum by posts of 60lb. flange rails, 10ft. apart let into the rock and embedded in the concrete. The concrete facing of walls, altars, &c., will be strengthened by a web of expanded metal of No. 18 gauge steel, about 50,000 sq. ft. of this being required. The altars will be extra well tamped, the corners and angles moulded, and the treads and risers plastered with a mortar of sand and cement 1 to 1. The keelsons and transverse sills will be secured to the rock by anchor bolts, 6ft. long, 6ft. apart, the holes being grouted with lime-stone.

COMPLETE LIST OF CONTRACTS OPEN.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
	BUILDING.		
Jan. 4	Bowness—Residences..	T. Harrison	R. Walker, Architect, Windermere.
„ 4	Fersfield, near Diss, Norfolk—School and Residence, &c.	School Board	H. Winkworth, 3A Hatton Court, Ipswich.
„ 5	Halifax—45 Houses		R. Horsfall and Son, 22A Commercial Street, Halifax.
„ 5	Larne, Ireland—Painting and Repairs at Town Hall ..	Urban District Council	W. G. Younge, Clerk, Council Chamber, Town Hall, Larne.
„ 5	Pickering, Yorks—Vicarage, Stable, &c.		J. Kirk and Sons, Crown Hotel, Roscdale Abbey.
„ 5	Holt, Denbigh—Alterations, &c. to Police Station ..	Denbigh County Council	Police Station, Holt.
„ 5	Mytholmroyd, Yorks—Stables and Coachman's House..		T. H. Healey and F. Healey, 42 Tyrrel Street, Bradford.
„ 5	Mytholmroyd, Yorks—Vicarage		T. H. Healey and F. Healey, 42 Tyrrel Street, Bradford.
„ 6	Siddick, Cumberland—Schools	Workington School Board	Donald and Tate, 14 John Street, Workington.
„ 6	Llandrindod Wells—Alterations, &c., to Hotel		R. W. Thomas, Architect, Llandrindod, Wells.
„ 7	Eastbourne—Chimney Shaft	Electric Lighting Committee	Borough Engineer, Town Hall, Eastbourne.
„ 7	Halifax—Masonry to Bridge	Improvements Committee	J. Lord, Borough Engineer, Town Hall, Halifax.
„ 7	Beeston Hill Leeds—Church and School	Primitive Methodist Connexion	W. G. Smithson, 13 Bond Street, Leeds.
„ 7	Rochford—Isolation Hospital	Rural District Council	C. and W. H. Pertwee, Architects, Chelmsford.
„ 8	Glanamman, Carmarthenshire—Station Buildings ..	Great Western Railway Company	Engineer, Neath Station.
„ 8	Halifax—Five Houses		R. Berry, Architect, Commercial Street, Halifax.
„ 8	Salford—Shed Roof	Lighting and Cleansing Committee ..	Superintendent, Wilburn Street Depot, Salford.
„ 8	Whitby—Esectric Light Station and Destructor ..	Urban District Council	W. S. Gray, Clerk, Council Offices, Whitby.
„ 9	Heamoor, Cornwall—Mixed School	Madron School Board..	O. Caldwell, Architect, Penzance.
„ 9	Stockport—Tramcar Shed, Workshops, &c.	Tramways Committee	A. Atkinson, Borough Surveyor, St. Petersgate, Stockport.
„ 9	Manchester—Roof over Laundry, &c.	Baths, &c. Committee	City Surveyor, Town Hall, Manchester.
„ 10	Kilkenny—Supply Bricks and Slates	Guardians	K. Comerford, Clerk, Kilkenny.
„ 10	Low Row, Yorks—Wesleyan Chapel		Secretary, Chapel Building Committee, Kearton, Reeth, Yorks.
„ 10	Sandbach—Shop Fittings, &c.	Co-operative Society, Limited	A. Price, Architect, Elworth, Sandbach.
„ 10	Lambourn, Berks—Fire Engine House	Parish Council..	H. J. Maberly, Clerk, Market Place, Lambourn.
„ 10	Cricklade, Wilts—Police Station	Standing Joint Committee	C. S. Adye, County Surveyor, County Offices, Trowbridge.
„ 10	Mawgan, Cornwall—Dwelling-house		Miss Tom, Fair Street, Colomb.
„ 11	Dalton-in-Furness—Building Wall	District School Board	Clerk, 68 Market Street, Dalton-in-Furness.
„ 12	Maldon, Essex—Coach House and Stables		P. M. Beaumont, Architect, Maldon.
„ 12	Maldon, Essex—Alterations to House	C. W. Bunting..	P. M. Beaumont, Architect, Maldon.
„ 12	Minehead, Somerset—Market	Urban District Council	W. J. Tamlyn, Architect, Minehead.
„ 13	Stretford Combined Bowl House and Shelter	Urban District Council	H. Royle, Surveyor, Council Offices, Old Trafford.
„ 14	London, W.—Schools, Offices, House, &c...	Hanwell School Board	W. Pywell, 40 Great James Street, Bedford Row, W.C.
„ 14	Uppermill, near Oldham—Cement, Bricks, Flags, &c..	Saddleworth Urban District Council ..	T. S. McCallum, Trevelyan Buildings, 52 Corporation Street, Manchester.
„ 14	Birkenhead—Boundary Walls, &c.	Corporation	C. Brownridge, Borough Engineer, Town Hall, Birkenhead.
„ 14	Leeds—Underground Transformer Chambers	Lighting Committee	H. Dickinson, 1 Whitehall Road, Leeds.
„ 14	Sutton, Surrey—Buildings and Ironwork	Gas Company	G. M. Robins, Engineer, Company's Offices, Sutton.
„ 14	Lerwick, Shetland—Cottage Hospital		W. A. B. Laing, 13 George Street, Edinburgh.
„ 15	Wolverhampton—School Buildings		F. T. Beck, Wulfrun Chambers, Darlington Street, Wolverhampton.
„ 15	London, S.W.—Postmen's Office	H.M. Commissioners of Works, &c. ..	J. Wager, H.M. Office of Works, Storey's Gate, S.W.
„ 17	Andover—Alterations, &c., to Workhouse	Guardians	J. Wormaid, Surveyor, Andover.
„ 17	Preston, Lancs.—Extension of Police Station	Corporation	Borough Surveyor, Town Hall, Preston.
„ 19	Walker, Northumberland—Refuse Destructor	Urban District Council	Handcock and Dykes, 1 Victoria Street, Westminster, S.W.
„ 21	London, N.—Brick Storm-Water Culvert..	Hornsey Urban District Council	E. J. Lovegrove, Offices, Southwood Lane, Highgate, N.
„ 23	Surbiton—Mortuary	Urban District Council	S. Mather, Surveyor, Council Offices, Ewell Road, Surbiton.
„ 25	Branksome, Dorset—Repairing, Painting, &c., Police Station	Standing Joint Committee	County Surveyor, County Council Offices, Sherborne.
„ 25	Dungeness, Kent—Coastguard Buildings..	Admiralty	Coastguard Watch Room, No. 2 Battery, Dungeness.
„ 29	Dartford—Fire Station and Cottage	Urban District Council	W. Harston, Surveyor, High Street, Dartford.
„ 30	Swanley, Kent—School for Children	Metropolitan Asylums Board	Newman and Newman, 31 Tooley Street, London Bridge, S.E.
„ 31	Kingsbridge—Board Schools	School Board	T. W. Latham, Architect, Kingsbridge.
	ENGINEERING.		
Jan. 4	Manchester—Twenty-two Electric Cranes	Ship Canal Warehousing Company, Ltd. ..	W. H. Hunter, 41 Spring Gardens, Manchester.
„ 5	Baltinglass, Ireland—Iron Pump, &c.	Rural District Council	J. R. Dagg, Clerk, Baltinglass.
„ 7	Glasgow—Superstructure of Central Station Extension	Caledonian Railway Company	Engineer, Buchanan Street Station, Glasgow.
„ 7	Clitheroe, Lancs.—Steel Girder and Concrete Bridge ..	Corporation	A. R. Bleazard, Borough Surveyor, Clitheroe.
„ 7	Belfast—Travelling Crane	Harbour Commissioners	G. F. L. Giles, Harbour Engineer, Harbour Office, Belfast.
„ 7	Kingstown, Ireland—Fire Brigade Appliances	Urban District Council	J. Donnelly, Clerk to Council, Kingstown.
„ 7	Belfast—Ten Tramway Trucks	Harbour Commissioners	G. F. L. Giles, Harbour Engineer, Harbour Office, Belfast.
„ 7	Partick—Dynamos, Booster, and Balancer	Provost, Magistrates, and Commissioners..	Town Clerk, 97 West Regent Street, Glasgow.
„ 7	Clacton-on-Sea—Gas meters	Urban District Council	S. Francis, Town Hall, Clacton on-Sea.
„ 7	Leavesden, Caterham, and Darenth—Radiators, &c. ..	Metropolitan Asylums Board	T. D. Mann, Clerk, Board's Offices, Embankment, E.C.
„ 7	Southampton—1½ miles of Tramway	Corporation	Borough Engineer, Municipal Offices, Southampton.
„ 8	Thame, Oxon—Trial Boring	Urban District Council	J. Taylor, Sons, and S. Crimp, 27 Great George Street, Westminster.
„ 10	West Bridgford, Nottingham—Refuse Destructor, &c...	Urban District Council	W. Pare, Surveyor, George Road, West Bridgford.
„ 10	Rathmines, Ireland—Plant	Electric Lighting Committee	R. Hammond, 64 Victoria Street, London, S.W.
„ 10	Farnworth, Lancs—Eight Tramcar Bodies	Urban District Council	Lacy, Clirenugh and Sillar, 2 Queen Anne's Gate, S.W.
„ 15	Wolverhampton—4½ Miles of Tramway Track	Tramways Committee	J. W. Bradley, Borough Engineer, Town Hall, Wolverhampton.
„ 15	London, N —Machinery and Fittings at Laundry ..	Metropolitan Asylums Board	T. D. Mann, Clerk, Board's Offices, Embankment, E.C.
„ 16	London, E.—Electric Cranes	Poplar Borough Council	Borough Electrical Engineer, Electricity Works, Glaucus Street, Bromley-by-Bow, E.
„ 17	Herne Bay, Kent —Laundry Machinery	Metropolitan Asylums Board	T. D. Mann, Clerk, Board's Offices, Embankment, E.C.
„ 19	Rothernam—Electricity Meters	Corporation	H. Copnall, Town Clerk, Council Hall, Rotherham.
„ 21	Sheffield—Engine	Tramways Committee	A. L. C. Fell, General Manager, Town Hall, Sheffield.
„ 22	London, E.C.—Locomotives and Tenders..	H.H. the Nizam's State Railways Co., Ltd.	H. Rendel, 50 Old Broad Street, E.C.
„ 31	Cardenas Bay, Isle of Cuba—Dredging		United States Consulate, London.
Feb. 1	Sunderland—Electricity Plant, &c.	Corporation	J. F. C. Snell, Engineer, Dunning Street, Sunderland.
„ 1	London, S.W.—Electricity Meters	Battersea Borough Council	Town Clerk, Municipal Buildings, Lavender Hill, S.W.
„ 11	Edinburgh—Gasworks, Plant, &c. (10 Contracts) ..	Gas Commissioners	W. R. Herring, Manager Gasworks, New Street, Edinburgh.
„ 28	Wellington, New Zealand—Engines	Corporation	J. Duthie & Co., Limited, 23 Lime Street, London, E.C.
Mar. 11	Santandar, Spain—Floating Dredger	Committee of Works	Corporation Offices, Santander.
April 10	Rosario—Harbour Works	Argentine Government	Commercial Department, Foreign Office, S.W.
	IRON AND STEEL.		
Jan. 4	Stockholm—Steel Girders	Swedish State Railways	Commercial Department, Foreign Office, S.W.
„ 5	Halifax—Castings, Ironmongery, &c.	Waterworks Committee	J. A. Paskin, 22 George Street, Halifax.
„ 8	Farnworth, Lancs—Tramway Rails, &c...	Urban District Council	W. J. Lomax, 11 Fold Street, Bolton.
„ 10	Bradford—Lamps and Tops..	Gas Committee	C. Wood, Gas Engineer, Town Hall, Bradford.
„ 14	Birkenhead—Wrought-iron Fencing	Corporation	C. Brownridge, Borough Engineer, Town Hall, Birkenhead.
„ 14	Uppermill, near Oldham—Girder, Manhole Covers, &c.	Saddleworth Urban District Council ..	T. S. McCallum, 52 Corporation Street, Manchester.
	ROADS AND CARTAGE.		
Jan 5	Hampton-Wick—Broken Granite	Urban District Council	J. N. Horsfield, Surveyor, Hampton Wick, Middlesex.
„ 5	St. Annes-on-Sea—Making-up Streets	Urban District Council	T. Bradley, Clerk, Council Offices, Park Road, St. Annes-on-Sea.
„ 7	Kingstown, Ireland—Whinstone	Urban District Council	J. Donnelly, Town Clerk, Town Hall, Kingstown.
„ 8	Croydon—Road Repair	Town Council	Borough Surveyor, Town Hall, Croydon.
„ 8	Acton—Road Materials	Urban District Council	D. J. Ebbetts, 242 High Street, Acton.
„ 10	Hurst, near Ashton-under-Lyne—Street Works.. ..	Urban District Council	S. Shirt, Surveyor, Council Offices, King Street, Hurst.
„ 11	Nottingham—Granite and Slag	County Council	E. P. Hooley, Shire Hall, Nottingham.
„ 14	Birkenhead—Paths	Corporation	C. Brownridge, Borough Engineer, Town Hall, Birkenhead.
„ 14	Kendal—Road Works	Corporation	R. H. Claucas, Borough Surveyor, Town Hall, Kendal.
„ 17	London, W.—Watering Roads	St. Marylebone Borough Council	J. P. Waddington, Surveyor, Town Hall, St. Marylebone, W.
„ 23	Surbiton—Making-up Roads, &c.	Urban District Council	S. Mather, Surveyor, Council's Offices, Ewell Road, Surbiton.
	SANITARY.		
Jan. 4	Pudsey—Sewage Works	Corporation	J. Jones, Surveyor, Council Offices, Pudsey.
„ 5	Mansfield Woodhouse, Notts—Sewer	Urban District Council	F. P. Cook, Engineer to Council, Mansfield Woodhouse.
„ 5	Larne, Ireland—Sewers, &c.	Urban District Council	W. G. Younge, Clerk, Town Hall, Larne.
„ 5	Gosforth—Cleansing Ashpits, &c.	Urban District Council	R. Reay, Clerk, Council Chambers, Gosforth.
„ 7	Gildersome, Yorks—Sewage Disposal Works	Urban District Council	J. Waugh, Engineer, Sunbridge Chambers, Bradford.
„ 8	Dunham Massey, Bucklow, Cheshire—Sewerage Works	Rural District Council	J. McD, McKenzie, 7 Market Street, Altrincham.

COMPLETE LIST OF CONTRACTS OPEN—*continued.*

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
	Sanitary.—*Continued.*		
Jan. 10	London, W.—Scavenging	St. Marylebone Borough Council	W. H. Garbutt, Town Clerk, Town Hall, St. Marylebone, W.
„ 10	Tewkesbury—Stoneware pipes	Corporation	W. Ridler, Borough Surveyor, Town Hall, Tewkesbury.
„ 12	Manchester—Sewer Diversion	Paving, Sewering, and Highways Committee	City Surveyor, Town Hall, Manchester.
„ 15	Bingley, Yorks—Scavenging	Urban District Council	A. Platts, Clerk, Town Hall, Bingley.
„ 17	Easingwold, Yorks—Sewerage Works	Rural District Council	Fairbank and Son, 13 Lendal, York.
„ 17	Lutterworth—Pipe Sewers	Rural District Council	W. H. Simpson, Engineer, Corridor Chambers, Market Place, Leicester
„ 21	London, N.—Sewers, &c.	Hornsey Urban District Council	E. J. Lovegrove, Engineer, Council Offices, Southwood Lane, Highgate, N.
„ 28	Dartford—Stoneware and Iron Sewers	Rural District Council	G. H. Tait, Engineer to Council, Lowfield Street, Dartford.
„ 28	Dartford—Stoneware and Iron Pipe Sewers and Pumping Station	Rural District Council	G. H. Tait, Engineer to Council, Lowfield Street, Dartford.
„ 29	Dartford—Pipe Sewers, &c.	Rural District Council	W. Harston, Surveyor, Sessions House, Dartford.
	TIMBER.		
Jan. 5	Windsor—Deal and Batten ends	Workhouse Guardians	Master, Workhouse, Old Windsor.
„ 5	Manchester—Wood Blocks	Tramways Committee	J. M. McElroy, General Manager, Tramways Department, Town Hall, Manchester.
„ 10	Kilkenny—Timber for 12 months	Workhouse Guardians	K. Comerford, Clerk, Kilkenny.

COMPETITIONS OPEN.

DATE OF DELIVERY.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	BY WHOM ADVERTISED.
Jan. 18	Hindley—Public Offices	£50, £25, £10	A. Holden, Surveyor, Hindley.
„ 28	Tanfield, Tantobie, 3- and 4-roomed Workmen's Cottages	£10, £5	R. Heslop, Surveyor to Urban District Council, Dean View, Burnopfield
Feb. 13	Bristol—Alterations, &c., to Petty Sessional Court	£100, £50	P. Addie, City Valuer, Market Chambers, Bristol.
„ 14	Ballarat, Australia—Statue		J. W. Nedwell, Hon. Sec. Soldiers' Statue Fund, Ballarat, Australia.
March 25	Basford—Sewerage Scheme		C. J. Spencer, Clerk, Public Offices, Basford.

New Companies.

Eldon Engineering Company, Limited.

This company was registered on December 8th, 1900, with a capital of £2,000 in £1 shares to carry on the business of consulting, mechanical, electrical, manufacturing, drying, ventilating and mining engineers, shipowners, builders, agents, &c.

London and County Land Development Co., Ltd.

This company was registered on December 12th, 1900, with a capital of £16,000 in £5 shares (2,000 preferred). The first directors (to number not less than three nor more than five) are P. W. Dolton, W. C. Dolton, J. Allen and P. Allen. Registered office: 6 Great Winchester Street, E.C.

Portsmouth Dwellings Company, Limited.

This company was registered on December 7th, 1900, with a capital of £10,000 in £1 shares to acquire land and buildings in Hampshire or elsewhere, and in particular certain land and buildings at Portsmouth, and to carry on the business of builders, contracters, brick and tile makers, slate, chalk, and sand merchants, financiers, &c. The first directors (to number not less than three nor more than five) are F. Worley (chairman), F. Worley, John J. White and J. Smith.

Bituminous Rock Asphalt Company, Limited.

This company was registered on December 11th, 1900, with a capital of £25,000 in £1 shares to carry on the business of asphalt manufacturers, manufacturers of mastic and asphalt powder, contractors, coalmasters quarry-owners, paviours, &c. The first directors (to number not less than three nor more than five) are to be appointed by the subscribers.

Carter Brothers (Manchester), Limited.

This company was registered on December 11th, 1900, with a capital of £5,000 in £1 shares to acquire the business of engineers and girder-makers carried on at Temple Street Ironworks, Manchester, and Sussex Street, Sheffield, as Carter Brothers and Co., and to adopt an agreement with F. J. Fitzsimons and A. Brier. The first directors (to number not less than two nor more than five) are to be appointed by the subscribers. Registered office: Temple Street Ironworks, Manchester.

Wood and Co. (Brick and Tile Manufacturers), Limited.

This company was registered on November 28th, 1900, with a capital of £100,000 in £1 shares generally to work, develop, and maintain brickfields, clayfields, &c., to raise, work, and sell clay, stone, coal, and other minerals, and to carry on the businesses of potters, china, stoneware, brick, tile, and terra-cotta manufacturers, coal, slate, and cement merchants, builders, &c. The first directors (to number not less than three nor more than seven) are to be appointed by the subscribers.

Westcotes Estates Company, Limited.

This company was registered on December 8th, 1900, with a capital of £60,000 in £1 shares to acquire land and buildings in Leicester or elsewhere, and in particular the Westcotes estate, to adopt an agreement with J. M. Harris, W. C. Harris, and H. B. Harris and to carry on the business of builders, contractors for public and other works, decorators, miners, mechanical, electrical and general engineers, timber merchants, brick, stone, gravel, sand, and lime merchants, estate agents, &c. The first directors (to number not less than two nor more than five) are J. M. Harris, W. C. Harris and H. B. Harris.

Norwich Mutual Plate Glass Insurance Association, Limited.

This company was registered on December 10th, 1900, with 100 members, each liable for 5s. in the event of winding up, to mutually insure plate glass belonging to members of the association, and to insure against loss or damage occasioned by the breakage of plain and ornamental glass, mirrors, and glass articles of all kinds. The first directors are H. L. Curl, H. Curl, E. St. John Theobald, E. Cordor, F. W. Doggett, E. H. Buckingham and S. Buckingham. Registered office: 3A St. Giles Street, Norwich.

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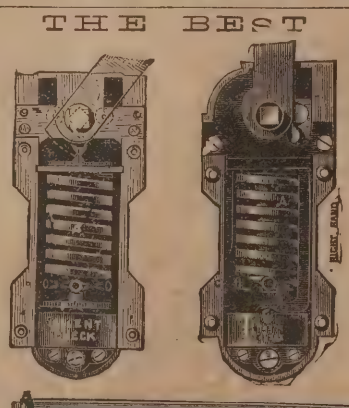
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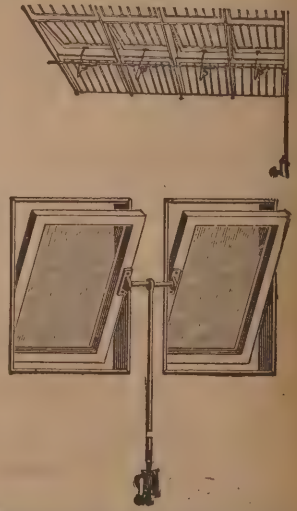
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BOLTS.

CASEMENTS.

ETC.



65 & 67 NEWINGTON CAUSEWAY, LONDON.

Deal Potteries, Limited.

This company was registered on December 13th, 1900, with a capital of £5,000 in £5 shares (200 preference) to take over the business of brick and tile manufacturers, clay workers, potters and manufacturers of and dealers in terra-cotta and sanitary ware, carried on by Dorrington Boyle at Deal, as the Deal Terra-Cotta Works. The first directors (to number not less than three nor more than five) are E. Chitty, E. S. G. Warren, F. W. Hardman, and Dorrington Boyle (managing director and secretary). Registered office: Western Road, Deal, Kent.

Masters and Men.

The Northern Lock-out.—The bricklayers at Blyth have been locked out by the Blyth Master Builders' Association in support of the Newcastle master builders in their dispute with the bricklayers. The bricklayers affected number about seventy. A number of labourers and others are also idle. The Master Builders' Association at Middlesbrough have also joined the master builders connected with the Northern Counties Federation in locking out the bricklayers in their employ. About fifty or sixty bricklayers are affected. The attitude of the master builders at Middlesbrough has caused much unfavourable comment in the town, as they held a meeting a few weeks ago, and decided that as they were on excellent terms with their workmen, and had a Conciliation Board which settled all disputes between them, they declined to join in the lock-out by the master builders of Newcastle and other places in the North. It is now stated that the Middlesbrough master builders, who are members of the Northern Counties Federation, are bound to support any action taken by a two thirds majority of the Federation, and such majority was obtained. The Middlesbrough members had, therefore, no alternative. The men's association, it is stated, intend to consider the question of taking or contracting for work, so as to give employment to the hands compelled to be idle. The Lancashire and Cheshire and North Wales Building Trades' Federation have also unanimously decided to support the Newcastle employers. The effect of this decision is that if necessary the operatives over the area, including Manchester, Salford, and surrounding towns, shall be locked out. The committee has power to proceed with the arrangements for a lock-out when the situation requires it without taking a further vote. Nothing, however, is likely to be done in this direction for a few weeks yet.

CURRENT PRICES.

		£	s.	d.	£	s.	d.
FORAGE.							
Hay, best	per load	4	0	0	4	7	6
Sainfoin mixture	do.	3	10	0	4	0	0
Clover, best	do.	4	5	0	5	0	0
Beans	per qr.	1	8	9	1	9	0
Straw	per load	1	8	0	1	18	0
OILS AND PAINTS.							
Castor Oil, French	per cwt.	1	10	0	1	11	6
Colza Oil, English	do.	1	11	3	—		
Copperas	per ton	2	0	0	—		
Lard Oil	per cwt.	1	19	0	1	19	6
Lead, white, ground, carbonate	do.	1	4	10	—		
Do. red	do.	1	0	4½	—		
Linseed Oil, barrels	do.	1	11	0	—		
Petroleum, American	per gal.	0	0	6	0	0	6½
Do. Russian	do.	0	0	5½	0	0	5½
Pitch	per barrel	0	7	6	0	8	0
Shellac, orange	per cwt.	3	0	0	—		
Soda, crystals	per ton	3	2	6	3	5	0
Tallow, Home Melt	per cwt.	1	5	6	—		
Tar, Stockholm	per barrel	1	8	6	—		
Turpentine	per cwt.	1	8	0	—		
METALS.							
Copper, sheet, strong	per ton	86	0	0	—		
Iron, Staffs., bar	do.	8	0	0	10	10	0
Do Galvanised Corrugated sheet	do.	12	0	0	12	10	0
Lead, pig, Spanish	do.	16	5	0	16	7	6
Do. do. English common brands	do.	16	12	6	16	15	0
Do. sheet, English, 3lb. per sq. ft. and upwards	do.	21	0	0	22	0	0
Do. pipe	do.	23	0	0	—		
Nails, cut clasp, 3in. to 6in.	do.	12	0	0	13	0	0
Do. floor brads	do.	11	15	0	12	15	0
Steel, Staffs., Girders and Angles	do.	8	0	0	8	5	0
Do. Mild Bars	do.	8	5	0	8	15	0
Tin, Foreign	do.	122	0	0	122	10	0
Do. English ingots	do.	123	0	0	—		
Zinc, sheets, Silesian	do.	22	10	0	—		
Do. do. Vieille Montaigne	do.	23	2	6	—		
Do. Spelter	do.	18	15	0	—		
TIMBER.							
SOFT WOODS.							
Fir, Dantzic and Memel	per load	3	0	0	4	0	0
Pine, Quebec Yellow	do.	4	7	6	6	0	0
Do. Pitch	do.	2	18	0	3	6	0
Laths, log, Dantzic	per fath.	4	10	0	5	10	0
Do. Petersburg	per bundle	0	0	9	0	0	10½
Deals, Archangel 2nd & 1st	per P. Std.	12	15	0	17	0	0
Do. do. 4th & 3rd	do.	—			0	11	5
Do. do. unsorted	do.	—			—		
Do. Riga	do.	6	15	0	8	10	0
Do. Petersburg 1st Yellow	do.	14	15	0	15	5	0
Do. do. 2nd „	do.	8	15	0	14	15	0
Do. do. Unsorted „	do.	5	5	0	13	0	0
Do. do. White	do.	9	10	0	11	5	0
Do. Swedish	do.	8	10	0	13	0	0
Do. White Sea	do.	12	15	0	16	15	0
Do. Quebec Pine, 1st	do.	19	5	0	—		
Do. do. 2nd	per P. Std.	18	15	0	—		
Do. do. 3rd &c.	do.	9	0	0	9	15	0
Do. Canadian Spruce, 1st	do.	10	10	0	11	15	0
Do. do. 3rd & 2nd	do.	8	15	0	9	0	0
Do. New Brunswick	do.	7	5	0	8	0	0
Battens, all kinds	do.	7	10	0	8	0	0
Flooring Boards, 1in. prepared, 1st	per square	0	11	0	—		
Do. 2nd	do.	0	9	0	0	11	3
Do. 3rd &c.	do.	0	8	6	0	10	6

COMING EVENTS.

Wednesday, January 2.

INSTITUTE OF SANITARY ENGINEERS. — Council meeting at 7 p.m.

Thursday, January 3.

ROYAL INSTITUTION.—Sir Robert Stawell Ball on "Great Chapters from the Book of Nature."—IV., 3 p.m.

LONDON INSTITUTION.—Professor W. B. Bottomley, M.A., F.L.S., on "Flowers: III.—Unbidden Guests," 4 p.m.

CIVIL AND MECHANICAL ENGINEERS' SOCIETY.—Mr. W. B. Esson, M.I.C.E., M.I.E.E., on "The Case of Electric Power Distribution," 8 p.m.

Friday, January 4.

ARCHITECTURAL ASSOCIATION.—Messrs. Beresford Pite and R. Weir Schultz on "Hints on the Preparation of Studentship Drawings," 7.30 p.m.

ARCHITECTURAL ASSOCIATION OF IRELAND.—Technical Demonstration at the works of Messrs. J. and C. McGloughlin, 47 Great Brunswick Street, Dublin. Mr. John McGloughlin on "Forging Iron," 4.30 p.m.

Saturday, January 5.

ROYAL INSTITUTION.—Sir Robert Stawell Ball on "Great Chapters from the Book of Nature."—V. 3 p.m.

SANITARY INSPECTORS' ASSOCIATION (Carpenters' Hall, E.C.).—Annual Address by the Chairman, 6 p.m.

BRITISH INSTITUTE OF CERTIFIED CARPENTERS.—Meeting at Carpenters' Hall at 6 p.m.

ROYAL VICTORIA HALL (Waterloo Road, S.E.).—Professor Capper on "Niagara Water-Power Installation," 8 p.m.

Monday, January 7.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.—Business meeting at 8 p.m.

LONDON INSTITUTION.—Professor W. B. Bottomley, M.A., F.L.S., on "Flowers: IV.—Place in Nature," 4 p.m.

LIVERPOOL ARCHITECTURAL SOCIETY.—Mr. M. H. Baillie Scott on "The Planning of Small Country Houses."

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.—Professor Baldwin Brown on "The Old English Village Church," 6.30 p.m.

Tuesday, January 8.

ROYAL INSTITUTION.—Sir Robert Stawell Ball on "Great Chapters from the Book of Nature."—VI., 3 p.m.

ARCHITECTURAL ASSOCIATION OF IRELAND.—Debate at 7.45 p.m.

GLASGOW ARCHITECTURAL ASSOCIATION.—Mr. Archibald Livingston on "Measuring of To-day."

CARDIFF, SOUTH WALES AND MONMOUTHSHIRE ARCHITECTS' SOCIETY.—Mr. A. Gladding, A.R.I.B.A., on "Wren's City Churches."

Wednesday, January 9.

GEOLOGICAL SOCIETY OF LONDON.—Meeting at 8 p.m.

INSTITUTE OF SANITARY ENGINEERS.—New Year's Presidential Address.

NORTHERN ARCHITECTURAL ASSOCIATION. — Mr. Allan Greenwell, F.G.S., A.M.I.C.E., M.S.I., on "Bitumen: Its Application in Architecture and Engineering," 7.30 p.m.

SANITARY INSTITUTE.—Finance Committee meeting at 4.30 p.m. Council meeting at 5 p.m.

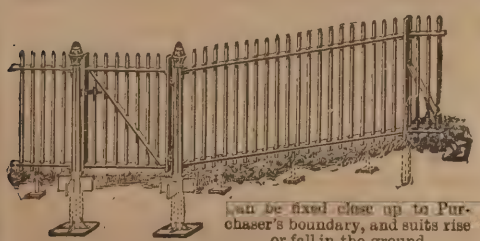
Thursday, January 10.

SHEFFIELD SOCIETY OF ARCHITECTS AND SURVEYORS. Mr. H. J. Potter, A.R.I.B.A., on "The Housing of the Working Classes."

SURVEYORS' INSTITUTION.—Meeting of Sessional Papers Committee at 4 p.m.

SOCIETY OF ANTIQUARIES OF LONDON.—Meeting at 8.30 p.m., Ballot for the Election of Fellows.

INSTITUTION OF ELECTRICAL ENGINEERS.—Meeting at 8 p.m.



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TENDERS.

Information from accredited sources should be sent to "The Editor." Results of tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the Work.

DUNSTABLE.—For the construction of sewerage and sewage disposal works for the Corporation. Mr. W. H. Radford, C.E., Albion Chambers, King Street, Nottingham :—

Hiram Morecroft	£17,500 0 0	Johnson Bros.	£12,516 0 0
Cook & Co.	16,687 0 0	C. F. Tomlinson	12,400 0 0
Thos. Adams	15,967 0 0	Clift Ford	12,389 0 0
W. Manders	15,587 4 0	W. Cunliffe	12,370 0 0
R. Ballard, Ltd.	15,377 0 0	Geo. Bell	12,290 0 0
Geo. Osenton	15,334 0 0	Siddons & Freeman	12,055 0 0
Joseph Young	13,783 0 0	H. H. Barry	11,890 10 0
Geo. Powdrill	13,736 0 0	Bower Bros., West Bridgford *	11,200 0 0
James Dickson	13,498 11 0	Jowett Bros. (withdrawn)	10,443 0 0
Wilkinson Bros.	13,161 0 0		
John Jackson	13,086 14 8		
Nowell & Son	13,000 0 0		

* Accepted.

FISHPONDS, Bristol.—For the erection of Headquarters of Children's Homes, for the Bristol Board of Guardians, at Snowdon Road, Fishponds. Mr. W. S. Skinner, architect, Edinburgh Chambers, Baldwin Street, Bristol :—

	Alternative A.	Alternative B.	Total.
Church	£380 0	£357	£7,637 0
Fource	385 5	69	7,804 5
Walters	380 0	85	7,110 0
Gowett	378 0	76	6,742 0
Cowlin & Son	384 0	20	6,658 0
Dowling	350 0	10	6,394 0
J. Browning, Fishponds*	324 0	69	6,189 0

* Amended tender, £6,769 18s. 9d., accepted. [Rest of Bristol.]

LONDON, N.E.—For erecting a pair of semi-detached houses at Wanstead, N.E., for Mr. C. G. Poupard. Mr. S. Jackson, architect, 65 Fenchurch Street, E.C. :—

J. W. Jerram, East Ham	£3,500
G. B. Hutchins, Wanstead	3,000
C. North, Stratford	2,750
J. Jolliffe, Wanstead*	2,735

* Accepted.

RAUNDS.—For erecting shopsand factory, Raunds, for Mr. W. Lawrence. Mr. H. Knight, architect, Rushden :—

Kettering Co-operative Builders, Limited	£1,405	F. Barlow	£1,255
W. H. Lovell	1,300	R. Marriott	1,248
T. Swindall	1,288	Hacksley Bros.	1,189
Freeman & Son	1,260	J. Lawrence	1,155
		Smith & Sons	1,147

RUSHDEN.—For erecting a factory for Messrs. Skerritt & Co., Sarton Road, Rushden. Mr. H. Knight, architect, Rushden :—

H. Sparrow	£1,313	Freeman & Sons	£1,200
The Kettering Co-operative, Builders, Limited	1,257	Thos. Willmott, jun.	1,199
		R. Marriott, jun.	1,190
		Thos. Swindall	1,147
Geo. Henson	1,224	Wm. Packwood	1,108
Fred Barlow	1,200	Hacksley Bros.	1,099

TWICKENHAM.—For rebuilding the Red Lion public-house, Twickenham. Messrs. Foulsham and Herbert Riches, architects, 3 Crooked Lane, King William Street, E.C., and Bromley-by-Bow, E. Quantities supplied :—

J. Dorey & Co.	£4,687	Sheffield Bros.	£4,451
W. Slark	4,640	Courtney & Fairbairn *	4,297
Adamson & Sons	4,515	W. H. Pearce	4,220
T. Grant	4,500		

* Accepted.

CONTRACTS OPEN.

COUNTY OF WILTS.
STANDING JOINT COMMITTEE.

Builders disposed to CONTRACT for the work of BUILDING a COUNTY POLICE STATION at Cricklade, in the County of Wilts, for the Standing Joint Committee, can see the revised plans and specification at the County Offices, Trowbridge, between the hours of HALF-PAST NINE a.m. and FIVE p.m.

Copies of the revised bill of quantities can be obtained from the County Surveyor, on written application, accompanied with a deposit of £1 1s., which will be returned on receipt of a bonâ-fide Tender.

Sealed Tenders, endorsed "Tenders for County Police Station, Cricklade," may be sent to the County Surveyor on or before the 10th day of JANUARY, 1901, but no pledge is given to accept the lowest or any Tender.

Builders wishing to view the site can do so by application to the Police Inspector at Cricklade.

CHARLES S. ADYE,
County Surveyor.

County Surveyor's Department,
County Offices, Trowbridge,
December 1900.

THE COUNCIL of the METROPOLITAN BOROUGH of FULHAM hereby give notice that they will be prepared at their meeting to be held on WEDNESDAY, the 9th JANUARY, 1901, at SEVEN p.m. to receive TENDERS for MAKING-UP and PAVING FOOTWAY and STRIP of CARRIAGEWAY of Dawes Road (Sec. I.)

Plans and specifications of the works may be seen and any information obtained from Mr. CHARLES BOTTERILL, Surveyor.

The contractors are to attend personally or be represented at the Council meeting to deliver their own Tenders, together with a £10 note and a schedule of prices, upon which the value of any extras or omissions shall be based, and to make a declaration that they pay the union rate of wages, observe such hours of labour as are generally accepted as fair in their trade, and that all unskilled labour shall be paid the minimum wage of sevenpence per hour.

The Council do not pledge themselves to accept the lowest or any Tender.

W. J. H. DENSELOW,
Acting Town Clerk.

Town Hall, Walham Green, S.W.

METROPOLITAN ASYLUMS BOARD.
TO BUILDERS.

The Metropolitan Asylums Board invite TENDERS for the ERECTION of a SCHOOL for CHILDREN at Swanley, Kent, according to drawings, specification, articles of agreement, and schedule of conditions, which may be seen at the Offices of the Architects (Messrs. NEWMAN and NEWMAN), 31 Tooley Street, London Bridge, S.E., between TEN and FIVE. Bills of quantities, prepared by Messrs. W. H. and P. B. STRUDWICK, may be obtained at the Office of the Architects, as above, upon payment of a deposit of £10 in gold or Bank of England notes, which amount will be returned to persons sending in a bonâ-fide Tender. Tenders, sealed and endorsed, "Tender for Erection of White Oak School," and accompanied by original priced bills of quantities in separate sealed packets, must be delivered at the Office of the Board, Embankment, E.C., not later than TEN a.m. on WEDNESDAY, JANUARY 30th, 1901.

The Board do not bind themselves to accept the lowest or any Tender.

By order.
T. DUNCOMBE MANN,
Clerk to the Board.

December 1900.

HORNSEY URBAN DISTRICT COUNCIL.
TO SEWER CONTRACTORS AND OTHERS.

The Hornsey Urban District Council are prepared to receive TENDERS for the CONSTRUCTION of about 3,500ft. run of BRICK STORM-WATER CULVERT varying from 3ft. to 6ft in diameter, and about 550ft. run of 12-in. STONEWARE PIPE SEWER with Bellmouths, Side Entrances, Manholes, &c., at Hornsey (from the foot of Muswell Hill, along Priory Road, through Rectory Grounds to Pembroke Road).

Plans and specifications may be seen, and copies of the quantities and forms of Tender and all information obtained, on application to Mr. E. J. LOVEGROVE, Engineer to the Council, at the Offices mentioned below, on any morning between the hours of TEN and TWELVE o'clock, on a sum of £2 being deposited with the Clerk to the Council, which sum will be retained by the Council, and deemed to be forfeited if a bonâ-fide Tender is not made by the depositor.

If a Tender is made which is not accepted, the sum deposited will be returned, and if a Tender is accepted, such sum will be retained by the Council until the Contract has been executed by the depositor, and will be forfeited in the event of his or his sureties failing or neglecting to execute such Contract, or the bond accompanying the same, within seven days after he or they respectively shall have been requested to execute the same.

No Tender will be considered except on the prescribed form. Sealed and endorsed Tenders are to be delivered or sent by post so as to be deposited in the Tender box in my department not later than FOUR o'clock p.m. on MONDAY, the 21st day of JANUARY proximo. The quantities, duly completed, must accompany the Tenders.

The Council reserve to themselves the right to decline all or any of the Tenders so sent in.

By order,
F. D. ASKEY,
Clerk to the District Council.

Offices : Southwood Lane,
Highgate, N.
December 1900.

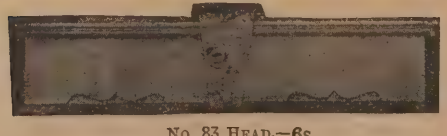


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THE BUILDERS' JOURNAL & ARCHITECTURAL RECORD

JANUARY 9, 1901. No. CCCIX.

EFFINGHAM HOUSE, ARUNDEL STREET, STRAND, W.C.

An Architectural Causerie.

Overloaded Floors. AN accident occurred in London last week which serves to draw attention to the very great danger of overloading floors in workshops, factories, and similar buildings. The accident in question happened on the first-floor of some premises in Gunpowder Alley, Shoe Lane, which have recently been acquired by Messrs. Eyre and Spottiswoode. This floor suddenly gave way, killing one man and injuring two others. The building is practically a new one and there appears to be no other reason to account for the catastrophe than that too much weight was put on the floor. In this case the floor was subjected to a weight of 20 tons, and one of the girders having a span of about 15ft. snapped in the middle across the bolt holes. If there is one place more than another where such overloading has to be guarded against it is on the landings of iron staircases; and this is particularly applicable to premises used by printers, who continue to pile up their "formes" till the aggregate weight on the floor is enormous. Cast-iron staircases, it must be remembered, give very little indication of collapse; the last straw, metaphorically speaking, accomplishes the feat, and then we have the coroner's warning, or perhaps his censure. But the men have been killed by that time, and what is required to be done is to see that materials or articles are not piled up on floors in the needless and ignorant manner so common nowadays. There should be a thorough, periodical official examination to enforce this requirement.

A Fen Church. WHAPLODE PARISH CHURCH, in Lincolnshire, is described by its historian, Mr. W. E. Foster, as the finest and most interesting of the Fen churches. Latterly, however, it has been disfigured by a chancel which, in the words of the vicar himself (the Rev. J. W. Rhodes), is an "unutterably mean erection." The Rectors of Whaplode are responsible for this. They were bound by covenant to repair and maintain the chancel and all the buildings on the glebe, but, instead, they have destroyed the ancient chancel and wiped away the buildings on the maintenance of which their right to hold the title depends. To quote the vicar again, the chancel which has been built to their authority is "a wretched thing, a disgrace to them, a disfigurement to the noble church to which it is attached, and an eyesore and a soul-sore to every faithful child of God who loves His house and glory." This is a strong censure, but it is well deserved. The way in which many fine old churches in different parts of the country have been treated is disgraceful; two extremes are generally arrived at—the buildings are either allowed to go to rack and ruin or some nabob or other misguided person "restores" them out of all semblance to their former selves. The vicar of Whaplode Church is now zealously advocating a scheme for the rebuilding of the chancel, a work which is estimated to cost £3,000. The late Mr. Pearson measured the building with a view to making drawings, and there is no reason why, if the rebuilding were placed in such sympathetic and trustworthy hands as his were, the scheme should not be quite successful.

Across London. AT the present time the facilities for travelling from one part of London to another are most inadequate. Suppose, for instance, a person wished to go from Somerset House to Hampstead, or from Battersea to the Bank, think of the long journey by omnibus and tramcar which would be necessary. The Central London Railway has shown that rapid travel underground can be made most comfortable, and the success of this line has promoted the numerous proposals for new underground railways mentioned in our last issue. But the chief feature about these is their utter "singleness"; there is no suggestion of intercommunication between them, though this is, of course, most requisite if matters are to be improved. As Mr. Twelvetrees points out in the "Times," it would be a good thing if a Royal Commission of experts were appointed to systematise the transport facilities of the metropolis, and to formulate some practical solution of a most difficult problem. Such a commission was appointed by the State Legislature of Massachusetts to deal with the traffic of Boston and it effected most satisfactory results; the Paris Metropolitan Railway is the first instalment of a complete system, as is also the underground line in the comparatively insignificant city of Budapest. Unless some sort of systematic control is exercised, the public will never have half the facilities for travelling about London that most certainly should be provided.



EAGLE HOUSE WIMBLEDON · THE GARDEN FRONT.
MR. JACKSON'S HOME.

T. G. JACKSON, ARCHITECT.

Mr. Jackson's House. THE house of Mr. T. G. Jackson, R.A., at Wimbledon, illustrated on this page, is a characteristic piece of work. The variety in the treatment of the details and the refinement and restraint displayed in the whole design at once stamps it as the work of a true artist. This refinement of detail is especially noticeable in Mr. Jackson's most representative work at Oxford: he knows how to get interest by varying the design of bosses and crestings and he is careful about such apparently unimportant points as the width of the leads in his glass-work and the fittings and fastenings generally. Mr. Jackson was born in 1835 and he is consequently just entering his sixty-sixth year.

RAMSAY HOUSE.

SOME SKETCHES BY W. BEVAN.

THE easy acceptance which has established the inexact saying that the site of our National Gallery in Trafalgar Square is the finest site in Europe seems to justify the statement that Ramsay House, Edinburgh, occupies the finest site in the British Isles. As the Trafalgar Square site claims a Classic building, so does the Edinburgh site demand a building designed in sympathy with the Gothic sentiment; but while few people would consent to the National Gallery being considered adequate for its important institution, or fitly availing of the opportunities afforded by the site, there are few who pass along Princes Street in Edinburgh without a full satisfaction and pleasure at the picturesque cluster of buildings which soring upward out of the steep grass-covered slopes of the Castle hill above them. It should be made clear to those who do not know Edinburgh what position the building holds in a city the natural configuration of whose site and the traditions and culture of whose inhabitants have made second to none in the world for stately romantic beauty.

Edinburgh, if we disregard the widespreading suburbs which are springing up upon all sides, may be described are being laid out in two divisions, which by a strange coincidence are as distinct in social style and in the character of their architecture as they are in locality. Each of these divisions is built upon a hill which is separated from its neighbour by a considerable depression with steeply-sloping sides. This valley, which was once filled by a lake—the S. Mary's Loch of history—and is now laid out in public gardens, is traversed by a bridge and an embankment known as the Mound, and the green grass rolls between the two. The hill upon which Ramsay House stands is occupied by the Edinburgh of mediæval days and rises in a sloping ridge which culminates in the famous Castle Rock whose sides fall away in rugged precipitous masses into what were once the waters of the S. Mary's Loch, above referred to. Ramsay House stands conspicuously out upon the face of this ridge, where it rises steeply towards its rocky summit; it forms the outermost and most lofty corner of the old town, and looks out and downward across the valley to the wide Boulevard of Princes Street on the opposite side, along which the restrained stone frontages of the middle of last century are, alas! giving place to florid shop fronts and the gewgaw of modern hotel and commercial architecture.

Ramsay House is so called after Allan Ramsay, the author of "The Gentle Shepherd," who built himself a house on this spot which still forms the nucleus of the group of buildings; it is distinguished in the plan shown on page 434 and may be identified in Mr. Bevan's sketches by the wide bay which characterises its front. The name of Allan Ramsay, though it may recall little or nothing to the Englishman who does not happen to be a student of literature, is familiar to all Scotsmen, and is a household word in Edinburgh, where Ramsay remains one of the most conspicuous figures in the traditions of literary and social Edinburgh. Ramsay was born in Lanarkshire in 1686. His poems, mostly printed as broad sheets, became widely known among all classes, when at the age of thirty he gave up his trade of wigmaking and became a bookseller, at the same time starting the first lending library ever opened in Scotland. The innovation gave rise to strong objection, and the magistrates tried to put an end to the library, but without success. He published several volumes of poems, and then in 1825 there appeared his "Gentle Shepherd," which established his fame upon a sure footing. He became a conspicuous citizen, and having made a comfortable competency he decided twelve years before his death to retire from literary activity, although he kept his shop going till near the end of his life. It was at the time of this "retirement" that he built himself the octagonal villa which has given his name to the block of buildings illustrated by Mr. Bevan in these pages. The house was the subject of a good deal of clumsy banter and ridicule, which Ramsay seems to have resented. Many trivial stories, tiresome and without point to those to whom the name of Ramsay does not recall familiar scenes, personalities, and associations, are told in this connection. One of them is that his house was likened to a goose-pie, by reason of some conspicuous quality of the roof which suggested the relation; and it is told that on Ramsay complaining of the injustice of this comparison to Lord Elibank, his Lordship replied: "Indeed, since I see you in it, I think the wags are not far wrong." This was said 150 years ago, and is still considered a famous joke in Edinburgh.

It must be remembered that in Ramsay's day the whole of the eighteenth-century Edinburgh was undreamed of, and the bow windows of Ramsay House looked northward to the Forth over the wide open country. Grant, in his "Old and New Edinburgh," thus describes the house at this time. "Apart from the city embosomed among trees—and though lower down than the reservoir, yet perched high in the air—upon the northern bank of the esplanade stands the little octagonal villa of Allan Ramsay, from the windows of which the poet could enjoy the extensive view of all the fields, farms, and tiny hamlets that lay beyond the loch below, into the vast panorama beyond the Firth of Forth, with the hills of Fife and Stirling." Ramsay died in 1757, and saw none of the great projects planned by James Craig in 1767, which were to grow into accomplished fact beneath his windows. He was buried in the Greyfriars Churchyard, and in more recent years an iconic statue to his memory has been set up in Princes Street Gardens. The poet's house passed to his son Allan, who became an eminent portrait-painter in London. He enlarged the house, and also erected the extensive buildings to the eastward, known as Ramsay Gardens. He died in 1784, after which the property passed in turn to his son, General John Ramsay, from whom it passed out of the family. Of



RAMSAY HOUSE, EDINBURGH, FROM ESPLANADE. DRAWN BY W. BEVAN.

late years the whole block of buildings has been in use as lodgings for the students at the university, and a large part of the buildings as now existing and shown in Mr. Bevan's sketches is, I believe, due to the skill and taste of Mr. Sidney Mitchel, architect, of Edinburgh.

The Pan-American Exposition.

THE Pan-American Exposition, to be opened at Buffalo, New York, on May 1st next, is the first big experiment in the United States in civic buildings embodying certain new ideas of modern architecture. The Pan-American buildings will be the first working-out on a large scale of certain ideas of modern Renaissance in architecture. Renaissance will be used as the only defined style that could be used to adequately express the desire for richness of detail, permitting, by the variety of its forms, interpretation of the individuality of buildings, and allowing by its lack of definition (in a classical sense) the possibility of suggestive treatment; besides, it is appropriate to the style of the exhibition — that is, Pan-American—since the architecture of South America and Mexico is virtually Spanish Renaissance.

The idea of the Pan-American Exposition is, generally, to carry on the good work of commercial and industrial exhibitions, and it will give the smaller states of South and Central America a chance of showing that they are no longer provincial countries. With the exception of the Horticultural Building space is given free. The site, consisting of 350 acres, of which 133 acres are improved park-lands, is in Buffalo's beautiful Delaware Park. Ground was broken at the end of 1898, and by now most of the buildings have reached their full height, and the grounds are well mapped out. The characteristic of the scheme of the Exposition will be, besides the embodiment of the ideas of modern Renaissance, the introduction on a lavish scale of colour and sculpture, not as adjuncts, but as complementary factors in an architectural whole.

To ensure harmony of work, general schemes, as decided by the Directors and the Board of Architects, were put in the hands of Messrs. Carrère and Hastings, Karl Bitter, and C. Y. Turner, as head architects, sculptor and colourist. At first every member of the Board of Architects was asked to submit a block-plan, in which competition the plan that Mr. John M. Carrère offered was considered the best. It was, however, given to Mr. Peabody, of Peabody and Stearns, of Boston, to complete. Mr. Peabody's plan had been the most like that of Mr. Carrère's. It was later decided that Mr. Carrère should have entire supervision of the block-plan, though accepting certain changes suggested by Mr. Peabody, and for more than a year the work has gone on under Mr. Carrère's management, including all the landscape gardening and the landscape architecture, with many important constructions, such as the monumental entrance bridge. The different buildings were assigned to different architects of reputation in New York and New England, their work being supervised by Carrère and Hastings and the Board of Architects. In the same way the work in decorative sculpture has been going on under Mr. Bitter, while the colour-scheme has been worked out entirely in the studio of Mr. Turner.

It was thought best not to depend for the general effect upon natural surroundings more than to the extent of giving the buildings an advantageous position on top of the high ground beyond the wooded land of Delaware Park. The making of the Exposition a complete composition in itself has been followed by interlacing the buildings in their design by waterways, lagoons, rows of richly-foliaged trees, and masses of shrubbery and flower-beds, a heavy border of canals and fenways encircling the whole. The Exposition is not to be a mammoth affair.

A uniform height of caves-line of 50ft. has been conformed to in the case of all the main buildings, upon which, with the red roofs and tinted walls, the unity of the whole will largely depend. Columns have been little employed, the character of the buildings depending more upon long lines of arcades and richly-detailed openings. "Staff" is the material being used. In composition the buildings have been grouped around a main court—"The Court of Fountains"—500ft. wide and over 1,000ft. long, and an almost equally large transverse court—"The Esplanade"—the plan of the grounds being like an inverted T, the main court for the perpendicular and the transverse court for the horizontal. At points of interest—the ends and intersections of the courts—between the lines of low roofs, the buildings are to be heavy in mass, while the lines of the composition will be supplemented by smaller buildings and features of the landscape gardening. The outside boundary of the grounds is rectangular, the corners being occupied, at the north-west, by a Midway Plaisance, at the north-east by a Stadium for sports, while along the east and west sides, respectively, will be open-air exhibits of agriculture and horticulture.



RAMSAY HOUSE, EDINBURGH, FROM PRINCES STREET GARDENS. DRAWN BY W. BEVAN.

Approaching the grounds from the city, one will pass through Delaware Park, with its lakes, arriving in a forecourt. To the left and right lie lagooned parks in which will be State buildings, colonial exhibits, music gardens, &c. From this point the transverse courts can be seen in profile, while the chief vista of the Exposition lies before—the view up the Court of Fountains, with the main buildings on either hand, the tall and monumental "Electric Tower" at the end. Balancing the composition, a massive bridge having four tall and heavy pylons, with richly decorated festoons between them and at each end, will lead across the lagoon from the forecourt to the esplanade. "The first impression" has been constantly thought of by Mr. Carrère, and he has forced his wish in this by having but two main entrances—one at either end.

At the right and left ends of the transverse courts stand the first two main buildings, each having a central part, square in plan, curved arcades on either side coming out to the front and ending in large wing structures, each group of one design. The United States Government Buildings, the group to the right, designed by James Knox Taylor, head of the Government architectural bureau at Washington, consists in the central part of a well-massed, high-domed structure, flanked by pavilions at the ends of a big columned portico, the base of the dome above the portico being banked in heavy decoration. The arcades and wings are simple, having plane surfaced piers and wall-spaces, all as shown in a centre plate in this issue. The buildings of Forestry and Mines, Horticulture and Graphic Arts, the group at the left of the transverse court, were assigned to Mr. R. S. Peabody, of Peabody and Stearns, Boston. They are much more elaborate in design, and suggest the naturalistic qualities of their exhibits. The central portion, balancing the dome of the Government Building, is a pagoda-like affair with tiers of straight and curvilinear roofs, corner towers and small Palladian arcades. As with the main building, all open places and much of the wall space are richly embossed in coloured decoration.

In line with the inside wings of the end buildings, and forming the intersections of the two main courts, stand, to right and left, the Ethnology Building and the Temple of Music, designed respectively by Mr. George Cary, of Buffalo, and Mr. August C. Esenwein, of Esenwein and Johnson, Buffalo. Both are massive domical buildings of considerable height, similar in mass and general design—symmetrical, with high columned base and protruding porches at the four sides, a drum of about half the area rising from the top, richly corniced and surmounted by a low dome. The Ethnology Building is circular in plan throughout, a Corinthian-columned arcade encircling the building between the projecting porches, arcade and porches being surmounted by statuary. The Temple of Music is octagonal in plan. The walls and domed vestibules have blind colonnades; the lines of the building are somewhat broken, and the whole is ornate in coloured and relief decoration.

The four main buildings flanking the Court of Fountains—Manufactures and Liberal Arts, Agriculture to the east, Machinery and Elec-

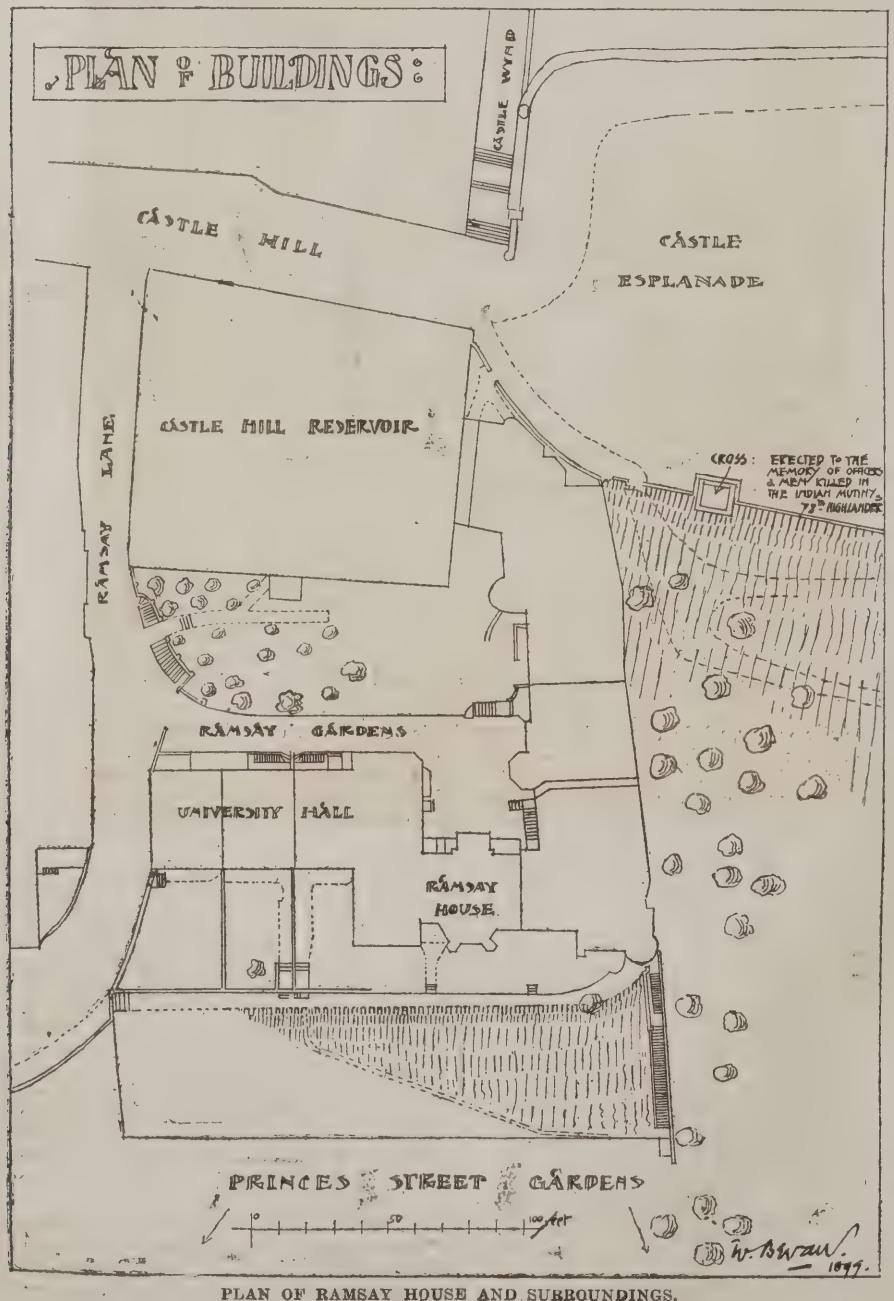
tricity to the west—have been made, roughly speaking, the same in mass and effect, though of very different designs. In the centre of the façades are entrances reaching high above the roof-line and encased within the heaviest architectural features of the buildings. With the exception of the Agricultural Building all have smaller tower constructions at the corners and between low, long arcades, for the most part simple. On each side the two buildings are designed by the same architect—the Manufactures and Liberal Arts, and Agricultural Buildings by George F. Shepley, of Shepley, Rutan and Coolidge, Boston; Machinery and Electricity Buildings by Edward P. Green, of Green and Wicks, Buffalo. The placing of the individual buildings accords more with the arrangement at Chicago than with that of the late Paris Exposition. Between the first two buildings on the main court and the building of the transverse court there will be two fountained courts, and a poplar-lined avenue will run between these first two buildings and the buildings of Agriculture and Electricity, the other sides of which will be the outlining canal and trees. On the minor courts—to the west, and to the east—and on the dividing avenue will be the main entrances of the four buildings. The Manufactures and Liberal Arts Building is the heaviest of all in design. The arcades are simple, single columns with small capitals supporting unmoulded arches. The wall space above is the least decorated of any, and there are but small brackets supporting the deep eaves. Corner towers are simple in treatment. The main entrance is ponderous in base, having a high-arched portico with columns and pediment of Classic lines. Corner piers, the height of the columns of the portico, are capped with richly sculptured lanterns, while from the middle, rising higher than all, is a crowned and ribbed dome. The Agricultural Building is the simplest of all in design. It has no corner constructions and with the exception of four entrances its main lines are unbroken. In outline the entrance consists of a wall-surface bounded by straight sides and a peaked and gabled roof penetrated by one high-arched opening. All the decorated parts are planned with the idea of the supplementation of colour, upon which will depend the interpretation of the form in this as in most of the detailed work of the Exposition.

The Machinery and Electricity buildings are at the west of the Court of Fountains. The main entrance of the Machinery Building is a big square pile surmounted by a low attic storey with open loggias and a low-peaked roof. In front rise two plain-shafted towers, which, from the height of the level of the top of the basal construction, continue in storied towers, capped by low steeples. Between the shafts of the towers, and protruding slightly, two single and two double columns form an entrance portico. The treatment of the lateral arcades is elaborate only in colour and grille work. Low corner towers surmount ornate entrances, having loggias under the eaves. The entrance on the main court and the one at the other end of the building are backed by domes, white drummed and finished with Spanish tiles, these forming a very important feature of the composition. The Electricity Building is Spanish in style. The arcades are similar to the other buildings, but having a colonnade supporting vine-racks. There are corner domed towers, and two high towers flank the entrance.

The Electrical Tower, designed by John G. Howard, of New York, is the most important building of the Exposition. Standing at the head of the Court of Fountains, rising from its water-basin three times higher than its surrounding buildings, and being the one purely monumental building in the grounds, the Electric Tower is the architectural climax of the Exposition. The tower is 350ft. high, having a rich shaft surmounted by three columned stories, rich in sculptural decoration. Colonnades come forward from the base, curving towards the south or main court, ending in small pavilions, elaborate with niches and statues. Water will flow from a cavernous niche at the base of the tower, descending over a series of steps and architectural interruptions, gushing from vases and motives in its descent to the expansive basin below, whence it seeks its way under the foreground to furnish the gorgeous display in the Court of Fountains.

Surrounding the Plaza behind the Electrical Tower are two large flanking buildings to be used for restaurants, a Propylæa, suggesting strongly the entrance structures at the Paris Exposition, and a Stadium for sports. All these are by Walter Cook, of Babb, Cook and Willard, New York. The entrance to the Midway (at the west side) and its balancing building, the entrance to the Stadium (at the east), consist in design of a long, low, hip-roofed building, pierced by arcades of nine arches, over which are windows on the one, and an open loggia on the other, this motive being flanked by telescoped towers at each end. The Propylæa, forming the north side of this supplementary court, screens the railroad-station beyond. It consists of a curved colonnade, above which is an arbour running the entire length of the colonnade and terminated at each end by a monumental arch.

Outside the Exposition grounds to the south, in the Park just before the causeway is crossed to the forecourt, a Greek temple composition is being erected at a cost of $350,000, in permanent material, to serve as the Fine-Arts Building. It has been designed by Edward P. Green. The ultimate object of the building is to furnish a home for Buffalo's Academy of Fine-Arts.



PLAN OF RAMSAY HOUSE AND SURROUNDINGS.

Nineteenth-Century Architecture.

CHIEF BUILDINGS ERECTED IN LONDON.

THE following is a list of the chief architectural works erected in London during the nineteenth century:—

Work.	When completed.	Architect.
Royal Mint	1811	Johnson and Sir Robert Smirke
Regent Street Buildings	1815	John Nash
Custom House	1817	David Laing and Sir Robert Smirke
Waterloo Bridge.. ..	1817	John Rennie
St. Marylebone Church...	1819	Thomas Hardwick
Southwark Bridge ..	1819	John Rennie
Bank of England ..	1821	Sir John Soane
Haymarket Theatre ..	1821	John Nash
St. Pancras Church ..	1822	H. W. Inwood
St. Luke's Church, Chelsea	1824	James Savage
Colosseum, Regent's Park	1827	Decimus Burton
Screen, Hyde Park Corner	1828	Ditto
University College, Gower Street	1828	William Wilkins
United Service Club, Pall Mall	1828	Decimus Burton
King's College	1829	Sir Robert Smirke
General Post Office ..	1829	Ditto
Sun Fire Office, Threadneedle Street	—	Prof. C. R. Cockerell (1788-1863)
Athenæum Club, Pall Mall	1830	Decimus Burton
Marble Arch	1830 & 1851*	John Nash

* First erected as a gateway to Buckingham Palace, and afterwards removed to its present position at Cumberland Gate, Hyde Park.

Nineteenth-Century Architecture—(*continued*).

Work.	When completed.	Architect.
London Bridge	1831	John Rennie
Travellers' Club House, Pall Mall	1832	Sir Charles Barry
City of London Schools, Embankment	1835	Davis and Emmanuel
Buckingham Palace ..	1835	John Nash
College of Surgeons, Lincoln's Inn Fields	1836	Sir Charles Barry
National Gallery ..	1838	William Wilkins
Reform Club, Pall Mall..	1841	Sir Charles Barry
Pentonville Prison ..	1842	
Royal Exchange	1844	Sir William Tite
Treasury, Whitehall ..	1847	Sir Charles Barry
Bridgewater House ..	1848	Ditto
St. George's Cathedral, Southwark	1848	Welby Pugin
Freemasons' Tavern, Great Queen Street	—	F. P. Cockerell
Record Office, Chancery Lane	1851	Sir James Pennethorne
Geological Museum, Jermyn Street	1852	Ditto
British Museum	1852	Sir Robert Smirke
Somerset House, Western Façade	1853	Sir James Pennethorne
Crystal Palace	1854	Sir Joseph Paxton
Holloway Prison.. ..	1855	Bunning
Carlton Club, Pall Mall..	1855	Sydney Smirke
South Kensington Museum	1857	Captain Fowke
Houses of Parliament ..	1857	Sir Charles Barry and Welby Pugin
Covent Garden Theatre..	1858	E. M. Barry
Foreign Office	—	Sir Gilbert Scott (1810-1877)
Westminster Bridge .	1862	Thomas Page
St. Alban's, Holborn ..	1862	William Butterfield
Charing Cross Station ..	1864	E. M. Barry
St. Mary's, Stoke Newington	—	Sir Gilbert Scott
St. Mary Abbots, Kensington	—	Ditto
St. Pancras Station ..	1868	Ditto
Meat and Poultry Market, Smithfield	1868	Sir Horace Jones
Blackfriars Bridge ..	1869	William Cubitt
All Saints', Margaret Street	—	William Butterfield
London University, Burlington Gardens	1869	Sir James Pennethorne
St. Thomas's Hospital ..	1871	Charles Currey
Albert Hall	1871	General Scott (assisted)
Burlington House (courtyard and Piccadilly facade)	1872	Barry and Banks
Albert Memorial.. ..	1872	Sir Gilbert Scott
St. Mary Magdalene, Paddington	—	G. E. Street
Brompton Oratory ..	1875	H. Gribble
Her Majesty's Theatre ..	1877	Phipps
Law Courts	1881	G. E. Street
Leadenhall Market ..	1881	
Church House, Westminster	—	Sir Arthur Blomfield (1829-1899)
London School Board Offices	—	Bodley and Garner
Churches at Bessborough Gardens, Lower Kennington Lane, Kilburn, Red Lion Square, West Croydon, Lower Norwood, Maida Hill, and Chiswick	—	J. L. Pearson (1817-1897)
Alliance Assurance Office, Pall Mall; Houses at Queen's Gate; New Scotland Yard; New Zealand Chambers, Leadenhall Street; Lowther Lodge, Kensington	—	Norman Shaw
Natural History Museum, Kensington	1885	Alfred Waterhouse
Sion College, Embankment	1886	Sir Arthur Blomfield
Constitutional Club, Piccadilly	—	R. W. Edis
Holy Trinity Church, Chelsea	—	J. D. Sedding
Holy Redeemer Church, Clerkenwell	—	Ditto
Houses at Cadogan Square, Collingham Gardens, & Streatham Common	—	Ernest George and Peto
Institute of Chartered Accountants	—	John Belcher
Imperial Institute ..	1893	T. E. Collcutt
Palace Theatre, Shaftesbury Avenue	1893	Ditto
Tower Bridge	1894	Sir Horace Jones and Sir J. Wolfe Barry
National Portrait Gallery	1895	Ewan Christian
Northampton Institute..	—	Edward W. Mountford

All the large London hotels—such as the Grosvenor, Cecil, Metropole, Victoria, Grand, Great Central and Russell—and practically all the present London theatres—such as the Lyceum, Gaiety, Lyric, Daly's, Wyndham's, the Empire, and the Alhambra—have been erected since about the middle of the past century. In fact, the foregoing list gives almost all the most important buildings in the London of to-day, that is, in addition to the well-known buildings erected in past centuries, from the Tower onwards.

Law Cases.

Planing Machines: Workman's Unsuccessful Claim.—In the Scottish Court of Session, the Lord Justice-Clerk and jury recently heard evidence in an action by Robert Ronald, of Aberdeen, against Alexander Hall, house carpenter, also of Aberdeen. Plaintiff asked payment of £500, or otherwise £202 16s. as damages. He was in defendant's employment for nearly six years. On July 3rd last he was working at a surface-planing machine driven by a gas engine, when his right hand was rawed in and three fingers taken off. He averred that the accident was due to the fact that defendant had directed that the machine should be used as a moulding machine, a use for which it was not originally constructed. Plaintiff was a granite polisher by trade, and was not aware at the time of the accident of the proper construction of a moulding machine, nor of the risk he ran. Defendant denied fault, and pleaded contributory negligence on plaintiff's part. The evidence and speeches occupied the whole of the day till well on in the evening, but the jury were only about two minutes out when they returned with a unanimous verdict for the defendant.

Changing the Name of a Street.—Mr. W. J. Collins, of Fortis Green, answered an adjourned summons at Highgate Police Court last week for removing a street name-plate. Mr. Collins, it was stated, had laid out an estate at Muswell Hill, and called one street "Midhurst Avenue." The Hornsey District Council passed the plans with that name on, but received a complaint from a Mr. Arnold, of "Midhurst," close by, who objected to the name because he had a fine private avenue of trees leading up to his house from the entrance gates. The Council then gave the street the name of "Collingwood Avenue," the inclusion of "Collin" in the name being intended as a compliment to Mr. Collins. When the corner house was built the Council put up a name-plate, but it disappeared. Another was put up, and Mr. Collins ordered it to be blacked out. He was too modest, he informed the Council, to embody his name in the street name, and suggested instead the name "Arnold Avenue." The proceedings were under the Towns Improvements Act, under which the Council is the only authority competent to name a street. The defence was that the Council "adopted" the name in a sealed agreement with Mr. Collins with reference to the sewers, and it was not within the jurisdiction of the Council to change a name. The Bench (five magistrates) convicted the defendant, and fined him 1s. and 7s. 6d. costs.



GLIMPSE OF RAMSAY HOUSE FROM RAMSAY GARDENS. DRAWN BY W. BEVAN.

The New Victoria Central Hospital at Liscard has been opened. It was erected as a memorial of Her Majesty's Diamond Jubilee. The building cost £12,000, and the furnishing soot another £4,000.

Bricks and Mortar.

APHORISM FOR THE WEEK.

All artistic production involves a large element of lucky accident; of which the true artist alone knows how to avail himself.—COVENTRY PATMORE.

Our Plates. THE three houses in Austin Street, Hunstanton, St. Edmunds, are built of local brown stone covered with rough-cast in the gables, green slates being used on the roof. They were planned with a view to avoiding the dark and generally unsatisfactory "back additions" so usual in houses of this class. The work was carried out by Mr. John Nelson, of Hunstanton, from the design and under the superintendence of Mr. Herbert G. Ibberson, F.R.I.B.A., of 28 Martin's Lane, E.C., and Hunstanton. A drawing of these houses was exhibited in the Royal Academy of 1899. The coachman's cottage and stables at Hunstanton, St. Edmunds, also the work of Mr. Ibberson, contains living room, parlour, kitchen, and three bedrooms, and is built of local brown stone, with "half-timber" in the gables; it has a porch of ship oak from a wreck on the coast. Red tiles cover the roofs. The work was carried out by the late W. Southgate, of Hunstanton.—Particulars of the Pan-American Exhibition at Buffalo, New York, will be found on page 433 of this issue.

Tower of London: More Official Negligence. SINCE the demolition of the old Armoury House at the Tower there have been lying in the crypt underneath the chapel of the White Tower several sets of stained-glass windows. Not only are they valuable in themselves, but they are of deep interest to antiquarians and artists. "As far as we can judge," says the "City Press," "the windows were placed by Edward III. in that ancient chapel. When that edifice was removed, they were cut and remodelled in order that they might be placed in the Armoury House. Afterwards they found their way to the crypt. Some of the windows bear shields on which are different heraldic designs of ancient invention, and we advise those who are interested in heraldry to take an early opportunity of inspecting them. The niggardly policy of the War Office with regard to the Tower is well known, but that in no way absolves the authorities for the neglect shown in the present case. If nothing is done the windows will certainly remain where they are, for the Tower authorities will not move in the matter."

St. Clement Danes: the Origin of its Name. MR. AUSTIN BRERETON asks in his article on the "Strand Churches" why the dedication to St. Clement should arise from the fact that "Harold and other Danish Kings" are buried in that church. A correspondent of the "Morning Post" writes to point out that there are two possible explanations of this dedication. (1) That, like the famous church at Hastings, St. Clement Danes was dedicated during the Pontificate of Pope Clement II. (Suidger, Bishop of Bamberg, a Saxon, A.D. 1046-1047), and, in compliment to him, was named after his patron Pope, St. Clement I. (A.D. 93-101), known as Clemens Romanus, to whom the famous Basilica of San Clemente, near the Colosseum at Rome, is dedicated. (2) Because, as is represented in the frescoes of the ninth century on the walls of St. Clemente, Clement I. was martyred at Kertch in the Crimœa, a country which, in the very loose geographical terminology of western martyrologies, may have been included in the term "Dacia," a country which at one time certainly extended as far as the Dniester. The confusion in the chroniclers between "Daci" and "Dani" (Danes) is well known. A dedication to St. Clement Dacorum (of the Crimœa) would not seem misplaced to anyone who was acquainted with the Roman San Clemente, which, before its destruction in 1084 by the Norman Robert Guiscard, must have been one of the most famous churches in Rome, and remarkable especially for its frescoes with the history of its patron.

Seven Notable Bridges. *London Bridge* is constructed of granite, and is considered to be one of the finest specimens of bridge architecture. The present structure was commenced in 1824, and completed in seven years, at a cost of £1,458,311. *The Bridge of Sighs*, at Venice, over which condemned prisoners were transported from the Judgment Hall to the place of their execution, was built in the Armada year, 1588. *The Bridge of the Holy Trinity*, at Florence, consists of three beautiful elliptical arches of white marble, and stands unrivalled as a work of art. It is 322ft. long, and was completed in 1569. *The Niagara Suspension Bridge* was built in 1852–1855 at a cost of £80,000. It is 234ft. above high water, 820ft. long, and the strength is estimated at 1,200 tons. *The Rialto*, at Venice, is said to have been built from the designs of Michael Angelo. It consists of a single marble arch 98ft. long, and was completed about 1592. *Brooklyn Bridge* was commenced, under the direction of Mr. Roebling, the designer of the Niagara Suspension Bridge, in 1870, and completed in thirteen years. It is 5,989ft. long and 135ft. high. The cost of building was little less than £3,000,000. *The Lagong Bridge*, built over an arm of the China Sea, is five miles long, with 300 arches of stone, 70ft. high and 70ft. broad, each pillar supporting a marble lion 21ft. in length. The cost of the bridge is unknown.

An Old Chimney-piece. ONE of the most interesting discoveries, from an antiquarian point of view, which have been made at Hereford for about fifty years has been the unearthing of an ancient fireplace in St. Peter's Square, a few weeks ago. It appears that it is a fine old chimney-piece which bears evidence of being constructed about the fourteenth or fifteenth century. The width of the fireplace opening is 5½ft., the depth 2½ft., and the height 4½ft. It is executed in the local old red sandstone, the head being a fine block about 7½ft. long and 1½ft. deep. There is no shelf. On either side there are triple-clustered columns, with exquisitely moulded caps supporting overhanging chamfered "springer" stones. Bits of the, at one time elaborate, mould or cornice are in existence, and these appear to have returned round the projecting chimney breast until stopped by the wall on either side, which has long since disappeared. At the back of the fireplace was another having plain chamfered sides, with an opening of about the same width. It evidently formed part of the kitchen of the original house. It is a matter of congratulation that the whole was boxed in, or it would not have been in anything like the state of preservation it is. The only other similar fireplace in Hereford is to be seen in the north transept of the Cathedral, which was formerly used as a Consistory Court. At Chepstow, Kenilworth and Raglan there are also fireplaces of a like character. On the same spot where the chimney-piece was discovered are some very ancient arched cellars, but the existence of these has long been known.

Houses on "Made Ground" GOOD gravel has so largely come into request that many suburban lands with that valuable substratum are quarried to a considerable depth before being sold on building leases. But it is essential to restore a level surface, as even the most speculative builder would hesitate to run up "neat villa residences" in deep holes. The owner frequently gets over this difficulty by allowing urban refuse to be shot into the excavations; in many cases he even extracts a small sum for every load tilted on his ground. The surface being thus levelled, says the "Globe," a year or two is allowed for the soil to sink and become compact; occasionally grass is sown to give a natural appearance to the spot. All is now in readiness for the builder, who proceeds to lay the foundations for his "terraces," "avenues," and "gardens," which he subsequently advertises as "on gravel soil." So they are: but between their ground floors and the gravel lies a thick stratum of partially decomposed rubbish, teeming with malaria, and not for many years will the deposits cease to give off noxious gases. But the tenant coming from a different locality knows nothing of the "making" process to which the plot has been subjected. When, therefore, ill-health dogs his family, he puts it down to defective drainage or some other structural deficiency, and spends money freely on remedial measures without the least benefit. "All this misery might be prevented if it were legally prohibited to build human habitations on deposited refuse until a sufficiently long period for the soil to have acquired a wholesome character."

Stonehenge. ON the 1st of January some workmen going to work in the neighbourhood of Stonehenge discovered that two of the stones had fallen, one of them being broken in the fall. Many falls of stones at these famous ruins have been recorded during the past three centuries, and a comparison of the earliest drawing of the ruins still extant, dated 1575, with their present condition shows that many other stones have fallen from time to time, and several have been entirely carried away. Two of the most serious losses occurred in 1620 and 1797. In the former year the impost or upper stone of the central trilithon fell, and in the latter year a whole trilithon collapsed, the stones still lying to-day where they fell. We shall publish shortly an illustrated article on an old Welsh cromlech.

The Hôtel Lauzun, Paris. THE Hôtel Lauzun, which is one of the finest specimens of seventeenth-century architecture in Paris and was purchased by the city on the death of its late owner, Baron Pichon, is to be restored (not structurally) in order to give the exact aspect in every particular which it wore at the most brilliant epoch of its history, at the time when it was the home of the "Grande Mademoiselle," whose marriage is the subject of one of Madame de Sévigné's best known and most delightful letters. The stately apartments of the mansion are to receive choice specimens of the furniture of this brilliant period. The capital feature of the Hôtel Lauzun consists in the excellent wood carvings and decorative panels with which it is adorned.

Reform of the Pacca Edict. IN our issue for November 29th, 1899, we published an article by Professor Alfredo Melani on the Pacca Edict (a law demanding that a duty of 20 per cent. shall be paid on all objects of art exported from the Papal States.) The Italian Government has now decided to reform this antiquated and illogical edict. The fundamental principles of the Bill which Signor Gallo, Minister of Public Instruction, is about to bring forward, are as follows:—(1) The State has the right of pre-emption over all artistic and archæological objects in the Italian kingdom, whether above ground or buried. Their owners must, before proceeding to sell such objects, notify the Ministry of Public Instruction, which must decide either to buy such objects within three months or relinquish all right over them. (2) Objects exported after the State has foregone its right of pre-emption must pay an export duty varying from 5 to 33 per cent. of the value. From the minimum duty of 5 per cent., 2 per cent. is added for every £200 of the price, the cheaper objects paying least and the dearer objects most duty. (3) The proceeds of the duty are to be used as a fund for purchasing articles of archæological or artistic value which the State may decide to retain in Italy. An important part of the Bill relates to excavations which bring to light valuable objects. "The right of the State," Signor Gallo remarks, "extends in particular degree to treasures hidden or unknown, since no one can claim to possess them or to have paid a price for them. Excavations carried out on private property, if not absolutely forbidden by the State, must at least be superintended by experts who are in a position to take exact note of the site and condition in which the objects are found, and to decide on their artistic or historical value. But this superintendence on the part of experts in the employ of the State is expensive, and for this reason the State has a right to participate in the fruits of excavations."

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HOUSES. HUNSTANTON. H. G. IBBERSON, Architect.

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UNITED STATES GOVERNMENT BUILDING AT THE PAN-AMERICAN EXPO



ION, 1901, BUFFALO, N.Y., U.S.A. JAMES KNOX TAYLOR, Supervising Architect.

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COACHMAN'S HOUSE AND STABLES, HUNSTANTON. H. G. IBBERSON, Architect.

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THE TREATMENT OF LONDON SEWAGE.*

BY PROFESSOR FRANK CLOWES, D.SC.LOND.

THE consideration of any sanitary measure which affects London is of supreme importance, since it is related to the welfare of a population exceeding 5,000,000, or at least one-eighth of the total population of the United Kingdom. Since almost the whole of the London sewage is discharged into the Thames, the disposal of London sewage affects the most busy waterway in the world, a waterway which leads up to the premier city, which carries the commerce of all nations, and which remains open and unfrozen all the year. The shipping tonnage passing over this river, which has long been steadily increasing year by year, has now reached (1899) to over 23,000,000.

Causes of Nuisance and Danger to Health.

Under ordinary conditions the to and fro tidal action in the lower river prevents the sewage which is discharged into it from being wholly carried out to sea at once. Hence, when some years since the raw sewage of London was regularly poured into the river in the neighbourhood of the city, the road detritus and putrescible fæcal matter which were delivered in the sewage settled on the river-bed and foreshores. The road detritus tended to permanently reduce the depth of the river; while the putrescible matter, arriving faster than it could be removed by the river or could be destroyed by inoffensive bacterial action, accumulated as a deposit on the foreshores and floated in masses of thick scum on the river. It there underwent foul putrefactive changes, rendering the river most offensive to those who navigated it or lived and worked near its banks, and almost intolerable in summer weather, even to those who crossed its bridges. That this result was inevitable will be understood when it is remembered that the sewage consists of the whole of the water-supply and rainfall over the metropolitan area which have been charged with varied refuse matters of our streets, our houses, and our manufactories.

Removal of Nuisance.

The nuisance was removed by taking the sewage fifteen miles below London. Since this was found insufficient the sewage was subsequently subjected to chemical treatment and sedimentation before it was allowed to flow into the river. The treatment ultimately adopted and still in vogue consists in straining or "screening" off the larger solid matters and then mixing the sewage with solutions of lime and sulphate of iron; the chemical precipitate thus produced is then allowed to settle, together with the finer particles in the sewage, by sending the sewage slowly through parallel channels on its way to the river. The screenings or "filth" are disposed of by being dug into the ground; the settled matter, or "sludge," is sent in tank-steamers to be discharged out at sea beyond the river's mouth; while the fairly clear "effluent" passes constantly into the river from the northern outfall (Beckton or Barking) and the southern outfall (Crossness) in two streams, which jointly deliver over 200,000,000 gallons every twenty-four hours into the river, and which probably constitute the most important tributaries of the lower Thames near London. Since these processes of chemical treatment and sedimentation have been adopted the foreshores of the river have become clean, the outrageous foulness of the stream has ceased, and those who live on and near the Thames unanimously express their approval of the improvement effected.

Risks of Foulness.

It must be remembered, however, that the effluent of the sewage, after it has been freed from visible foul matter, still contains in invisible solution a large amount of putrescible substance, which may, under suitable conditions, lead to serious foulness in the stream. The effluent at present discharged into the river is practically only clarified sewage. As long as putrefactive changes are delayed by low temperature of the river water, and an ample flush of upper-river water comes down to dilute this effluent and to carry it rapidly out to sea, no sensible foulness occurs in the main stream. But in summer time, when high temperature hastens putrefactive change and diminishes the amount of oxygen dissolved in the river water, and when the flush of water from the upper river is diminished by drought and by the abstraction of larger volumes of the water by the water companies, the condition of portions of the lower river frequently closely approaches that necessary to cause offence. There can be no doubt that as the volume of sewage effluent increases, and the abstraction of upper-river water for water-supply also increases with the increasing population, these portions of the lower river must pass more frequently into a condition bordering upon or actually causing foulness. It is, therefore, prudent to be prepared to adopt without delay a method of treatment of the London sewage which shall meet the requirements of an increasing population, and shall enable the more ample effluent to be discharged into the river in a state of greater purity than is at present secured.

Steps taken for Future Improvement.

As far back as 1893, the Main Drainage Committee of the County Council, on the advice of their chemist, Mr. Dibdin, started a large scale experiment on the bacterial purification of sewage, the purification being applied to the effluent from chemical treatment and sedimentation. This experimental treatment has been continued by the committee, on my own advice, and has been considerably extended in its scope. The committee also consented to the association of the eminent bacteriologist, Dr. Houston, with me in these experiments during the three years of their progress, and I wish to acknowledge the great advantage derived from this association and from the intelligent and hearty co-operation of the resident superintendents and chemists, Messrs. Beal, Bigg, Stokoe and Pike. The results which have been obtained have been published by the London County Council in the form of a series of reports which I have laid before them from time to time. The general conclusion to which they point is that the settled sewage may be purified to a far greater degree than it is by the present treatment by encouraging the spontaneous purifying action of the bacteria which are present in the sewage itself. The effluent thus produced, without the intervention of chemicals, remains free from foul putrefaction and is able to support the life of fish; in these and in all other respects it is greatly superior to the effluent which is at present discharged into the river. The minute vegetable organisms, known as bacteria, exist to the average number of 300,000 per drop of sewage. They only require to be placed under suitable conditions in order to effect the rapid and inoffensive resolution of the putrescible matters of the sewage into harmless and inoffensive products.

Bacterial Treatment and its Adoption.

Professor Frankland referred in a recent address to the classic researches of the Rivers Pollution Commission of 1868, who were soon led to recognise that the important factor in determining the efficiency of sewage disposal by broad irrigation is the passage of the sewage through the pores of the soil, or, in other words, filtration. He says:—

"The most striking feature about the results of their experiments is the extraordinarily rapid transformation of ammonia into nitrates, which occurs during this passage through a few feet of soil. This nitrification process was at the time supposed to be simply a case of direct chemical oxidation by atmospheric oxygen; indeed, it was not until seven years later (1877) that the astounding discovery was made by Schlössing and Muentz that this change is entirely dependent upon the vital energies of micro-organisms, and it was not until 1890 that the particular bacteria responsible for this important reaction were isolated and characterised. With these discoveries the whole process of sewage purification by contact with soil was shown to be of a bacteriological character. In consequence of this it was only natural that attempts should be made to partially regulate or domesticate the bacteria capable of carrying on such important work.

"The domestication of micro-organisms is of course no novelty; the fermentation industries which have been carried on from very ancient times are all examples of the domestication of microscopic living organisms by man. The yeasts carrying on the work of the brewer and the distiller, the bacteria engaged in the manufacture of vinegar, as well as the medley of organisms concerned in the production of cheese, are all domesticated in essentially the same sense as the horse which draws the waggon or the plough, the pig that fattens in the sty, the herds of sheep and cattle in the fields, or the miscellaneous population of the duck-pond and the poultry-yard. The taming and domesticating of the bacteria capable of purifying refuse organic products in reality unconsciously commenced in the establishment of sewage farms and in the construction of intermittent filters. The progress of the past few years consisted in training these bacterial servants to a higher degree of efficiency, and in improving the conditions under which they labour by providing them with more suitable food, assigning to them particular raw materials which they have a special capacity to deal with, and above all providing their workshops with the ventilation which is necessary for the proper discharge of their functions.

Professor Frankland, who has recently acted as an expert chemical and bacteriological adviser to Manchester on the question of sewage disposal, has arrived at results so similar to those which have been reached by the London County Council's experimental work, that I wish to draw attention to them in the present paper. He considers that the bacteriological is the most useful and economical method of treatment for purifying sewage, but that the system must be applied with proper consideration of the conditions of the district, and must be under a general intelligent supervision in order to secure and maintain its success.

He draws attention also to the fact that—"All the great developments in the purification of sewage—chemical precipitation, irrigation, intermittent filtration, and bacterial treatment (including septic solution)—are essentially British, although we are deeply indebted to America for the extraordinary diligence with which some of its men of science have conducted a truly monumental series of experiments demonstrating the great possibilities of intermittent filtration."

He urges, therefore, the desirability of this country adopting its own improved methods; and he goes on to speak of the advantage which would result from having in this country—

"An organisation which would carry out experimental investigation into sanitary subjects on the scale and with the thoroughness adopted by the Massachusetts Board of Health."

The London County Council has in recent years to a large extent met this requirement, as is shown in the present paper.

Professor Frankland then drew attention to the very different attitude which even a progressive community is apt to assume towards an improved scheme of sewage purification which does not appear at first sight to be of material advantage to it, as compared with its attitude towards public works which provide for the supply of water, gas, electricity, tramways, and other necessities which are seen at once to benefit the community and possibly to bring money returns into its exchequer. Public opinion is, however, undoubtedly becoming enlightened on these matters, and is prepared to consider good health as being worth providing for and even paying for.

In conclusion the lecturer gave the general conclusions derived from the experimental bacterial treatment of raw sewage at the outfalls of the London sewage into the Thames, which were published in the issue of THE BUILDERS' JOURNAL for March 21st, 1900.

A New Conservative Club at Brixham has been erected, at a cost of £1,500, from plans by Mr. E. Richards, of Torquay. The contractors were Messrs. Hazelwood, of Brixham.

* A paper read before the Society of Arts on December 12th, 1900. Professor Clowes is Chemical Adviser to the London County Council.

Engineering Notes.

The Proposed Electric Railway Under Hampstead Heath, with stations on the Heath and North End, is to be opposed by Hampstead residents.

Messrs. E. H. Shorland and Brother, of Manchester, have just supplied some of their patent Manchester grates to the Board schools at Workington.

Messrs. Hayward Brothers and Eckstein, Ltd., engineers and ironfounders, of Union Works, Union Street, Borough, London, S.E., have opened a branch office and showrooms at 63 Mosley Street, Manchester, for the convenience of their Lancashire, Cheshire and Midland customers.

A New Baronet.—Among those in the New Year Honours who receive baronetcies is Mr. John Aird, M.P., the well-known contractor for public works. At present the firm with which he is connected is engaged in the construction of large irrigation works in the valley of the Nile. He has also the distinction of having been selected as the first mayor of the new borough of Paddington.

Underground Railways and Vibration.—The Board of Trade have appointed a committee, consisting of Lord Rayleigh (chairman), Sir John Wolfe-Barry, and Professor Ewing, to consider to what extent the working of the traffic on the Central London Railway produces vibration in the adjacent buildings, and what alterations in the conditions of such working or in structure can be devised to remedy the same.

The late Dr. W. Pole, F.R.S., who died recently at the age of eighty-six, combined two most opposite qualities—he was an eminent civil engineer and a musical theorist. One would hardly suppose one man capable of excelling in such very different branches of work; but many others have done the same. Lewis Carroll, for instance, was an abstruse mathematician and, at the same time, one of the most delightful writers of children's stories.

Guildford Town Bridge.—The old town bridge at Guildford, which was destroyed by the floods in February last year, is to be replaced by a steel structure. Since the bridge was wrecked the Corporation has been engaged in deciding who was responsible for its re-erection, and an arrangement has now been reached by which the Corporation of Guildford, the County Council of Surrey, and the Godalming Wey Navigation Commissioners will each contribute to the cost. The National Society for the Preservation of Ancient Buildings petitioned the Town Council to as far as possible preserve the character of the old bridge, and an influentially-signed petition was also presented to the Council in favour of a bridge of stone. As, however, a steel bridge can be erected in less time, and will also give more waterway and a better gradient, the Council decided in favour of steel.

Bill for Widening London Bridge.—Clause 8 of the London Bridge Widening Bill, to be introduced during the ensuing session of Parliament by the Corporation of the City, describes the proposed widening in the following terms: "1. A widening of London Bridge on each side thereof, such widening to commence in Adelaide Place at or near to the top of the stairs leading from Adelaide Place to the River Thames at the northern end of London Bridge, and to terminate at or near to the top of the stairs leading from the northern end of Borough High Street to the River Thames at the southern end of London Bridge. 2. A widening to an extent not exceeding 20in. or thereabouts on each side thereof of the bridge carrying King William Street over Upper and Lower Thames Streets." Powers are sought in connection with the widening to alter and divert the foot and carriage ways of the bridge, and to stop, temporarily or permanently, any part of the stairs leading from the Thames to London Bridge. Five years is the period taken for the completion of the work, and power is sought to borrow money for the widening on the credit of the Bridge House Estates to the amount of £100,000, and "such further sums as may be necessary."

Correspondence.

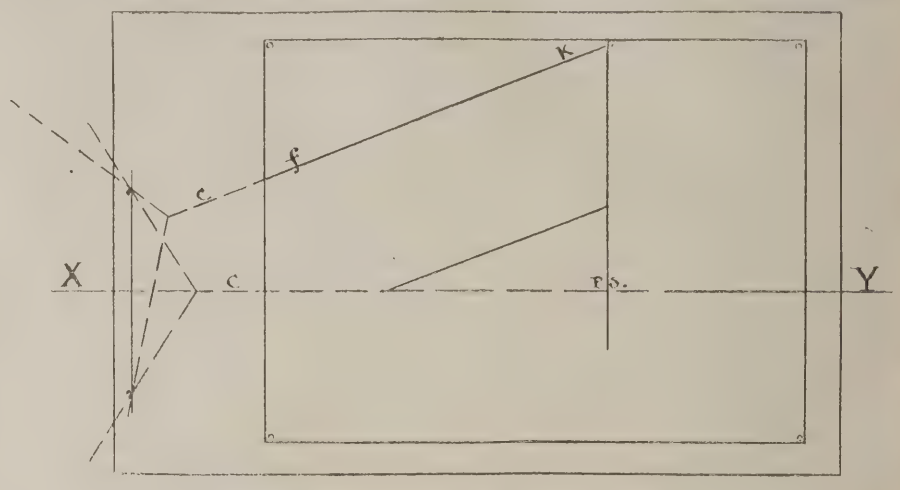
Use of Centrolinead for Perspectives.

To the Editor of THE BUILDERS' JOURNAL.

HERSHAM.

SIR,—May I be allowed to reply to Mr. Sampson (see page 405 of issue for December 26th last)? He seems to think none of your readers could set a centrolinead in less than a week. I do not think Mr. Adams' reply tends to simplify the question. The method shown by the accompanying illustration has the merit of being introduced by Mr. R. Phené Spiers, F.S.A., Master of the Architectural School of the Royal Academy. It has also the merit of being very simple. XY represents horizontal line, P S point of sight, C C working edges of centrolinead. What is not shown in the diagram will be understood by setting out the plan and determining the station point. All that is necessary in setting the centrolinead is to get used to the instrument, and to adjust it to coincide with XY and vanishing line F K, as shown.—Yours truly,

ROBERT RAMM.



USE OF CENTROLINEAD. BY ROBERT RAMM.

To the Editor of THE BUILDERS' JOURNAL.

LONGTON, STAFFS.

SIR,—With regard to the correspondence about setting the centrolinead for perspectives, I find the following *graphic* method very useful; it is very simple, requires but a few straight lines, and can be carried out in a few moments. Of course, as in all graphic diagrams, accuracy of drawing is essential. In practice the drawing is made on the sheet of paper on which is the plan of the building to be drawn and the station point (E). For diagram see accompanying illustration. From E draw vanishing parallel E A of indefinite length. On E (CV) take *any* suitable fractional part E B (say $\frac{1}{4}$). From B draw B C parallel to P P (plan of picture plane), cutting E A in C. (Thus, E C : E A :: E B : E, CV. Here E A represents the whole length of the vanishing parallel, i.e., from E to where it cuts P P.) On B C mark the point D, making B D equal to fractional part (same fraction as before) of the distance the studs are actually set from CV on the paper to receive the perspective drawing. (Note: this distance may be anything convenient.) At D erect perpendicular D G equal to fractional distance of studs above horizontal line on perspective drawing. Join C G. From G draw G F at right angles to C G, cutting C B in F. Then, when the blade of the instrument is placed along C B (produced if necessary) the top arm is to be set along the line F G. The angle for the lower arm is of course the same, the studs being at equal distances from horizontal line, i.e., equal to L G F C. The principle is that when the blade is placed on H L (horizontal line), which corresponds on the reduced scale with C B, the required angle G F C is formed by C B and a line G F drawn from G (corresponding to stud) at a tangent to a circle, of which C (corresponding to vanishing point of line) is the centre. The fractional part of E, CV is taken so as to reduce the scale in order to bring C "within reach," and is merely determined by the size of the paper at disposal. I have never seen the above method described in books, and do not know if it is in use by practical draughtsmen; so far as I am concerned it is original; it is certainly simple and quick, which, to an architect's assistant like myself, is no small recommendation.—Yours truly,

T. H. GRIFFITHS.

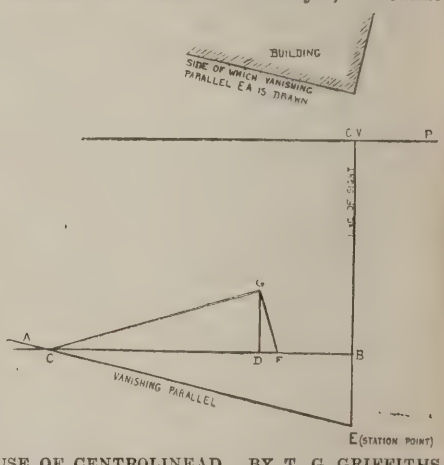
Road Making and Maintenance.

To the Editor of THE BUILDERS' JOURNAL.

CUPAR (FIFE).

SIR,—I am much gratified to see your review of my book on road-making in your issue for December 26th. Generally speaking, the criticism is very favourable and sensible. I should, however, like to point out that I have not seen Mr. Maxwell's book yet, so cannot discuss the points you raise. The "Historical Sketch" was written in the latter part of 1896. The chapter on the laying-out of roads (including the drawings) was principally taken from a paper on this subject written by me about twenty years ago, when engaged on railway construction. I hope these explanations will be satisfactory.—Yours truly,

THOMAS AITKEN.



USE OF CENTROLINEAD. BY T. G. GRIFFITHS.

Masters and Men.

Strike of Quarrymen.—Two thousand quarrymen employed by the Buxton Lime Firms, Limited, are out on strike because they now refuse to sign the customary New Year agreement binding them to work for the company for the ensuing twelvemonths. The men are members of the Gas Workers and General Labourers' Union, to which society the dispute was referred. The decision was that the men can work but must sign no contract. The Lime Firms Company, however, will only allow them to work upon their signing the agreement. This is the first strike in the limestone trade in North Derbyshire since 1873.

Enquiries Answered.

The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional, or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Stresses in Domes.

LONDON.—E. J. writes: "To ascertain the position of the line of pressure at the abutment of a stone dome of uniform thickness, am I right in treating a sector, acting at its centre of gravity, in the same way as the line of pressure is found in arches, and if the line of pressure thus found falls within the *inner* line of shell, is this still more stable than when it falls within the area of base of shell? Is there any practical work on the construction of stone domes?"

The thrust of a dome, built on the principle of the arch, can be arrived at graphically by the method used for an ordinary arch. A wedge-shaped slice is supposed to be cut out of the dome from base to crown, and balanced or counteracted by an equal slice cut out of the opposite side. Their mutual pressures at the apex act horizontally, and tend to produce tension. In working out the stress diagrams the loads are treated as acting on their centres of gravity, as in an ordinary arch; but as the weight in a dome diminishes towards the crown it is evident that the thrust at any given point is less than that exerted at the corresponding point in an ordinary arch of equal span and thickness. The condition of stability is that the line of pressures or curve of equilibrium shall be well within the thickness of the shell; some authorities say it should occupy the middle-third, while others extend this limit to the middle-half. As the line of pressure leaves this margin of safety, and approaches the edges of the arch ring—outside or inside—tension is produced, and increases until the curve passes beyond the material altogether, and the vault gives way. If a dome be approximately designed and the curve of pressures is found by trial to pass outside the extrados, the dome would be depressed; but if the curve passes below the soffit the dome would bulge or burst. Bearing in mind that the curve of equilibrium is an imaginary line representing the centre of pressure throughout the section of the dome and also that if this line is kept within the middle-third of the thickness but little or no tension is produced, then it is clear that the substance of the arch ring might be removed, excepting that portion immediately around the line, and the arch would remain stable, if the material were strong enough to resist crushing. This could not be said of an arch or vault when the line of pressure passes outside the shell, either above or below; therefore, a dome more nearly approaches stability when the curve of pressure is entirely within the shell. Generally, any inherent weakness in he section of a dome is easily counteracted by the application of either extra thickness or a tie; and, in practice, domes of uniform thickness are rarely seen, being reserved for analytical enquiry only. The same may be said of domes built of stone voussoirs; homogenity and strength can be so much more thoroughly and readily attained by the use of concrete. At the moment we can think of no technical work on the construction of domes built entirely of stone voussoirs—domes of any importance where elasticity would be a factor.

J. A. M.

Regulations with Regard to Saw-guards.

LIVERPOOL.—T. S. writes: "If a saw-guard is fixed on a bench over a circular saw driven by a gas-engine and the man who works the saw takes the guard off and works without it, and on the wall is the notice 'Fix Guard,' can the employer be fined?"

If the workman removed the saw-guard when he need not have done so, and was injured in consequence, the owner would not be liable, unless it could be shown that the accident was caused through some defect which the employer ought to have remedied.

G. H. B.

Liability of Local Authority for Accidents Caused by Projections on Road.

HIGH WYCOMBE. — SUBSCRIBER writes: "Since the reply to my query was published on page 374 of your issue for December 12th, with reference to the liability of local authorities for accidents caused by projections on roads, I find that there is the case of *Oliver* v. *Horsham Local Board*, which overrules the case quoted—*Kent* v. *Worthing Local Board*. In order that no misunderstanding may arise, your expert may wish to refer to this case, and possibly revise the answer."

In the case of *Oliver* v. *Horsham Local Board* the Queen's Bench Divisional Court decided in favour of the plaintiff, but the decision was reversed on appeal. [C.A. [1894] 1 Q.B. 332.] This case certainly overrules *Kent* v. *Worthing Local Board*, and it now appears that no damages could be recovered, though the parties in default may be subject to penalties.

G. H. B.

House Decoration.

WALSALL.—X.L. writes: "Which is the best book on painting and French polishing; also, what is the best green stain for picture mouldings and furniture?"

"House Decoration" and "Wood Finishing" are practical manuals, published by Cassell and Co. at 1s., which would be useful; "Practical House Decoration" (5s.) and "House Painting, Graining, Marbling and Sign Writing" (6s.) are published by Crosby Lockwood and Son; and there is a work, "Modern House Painting," by Rossiter and Wright, published at 21s.; "Polishes and Stains for Wood" is published at 1s. by Upcott Gill. A good green stain may be made by dissolving 4ozs. verdigris and ½oz. indigo in 3 pints of good vinegar. The indigo may be proportioned according to the shade required, and, in order to get a good effect, the stain should be applied hot, so as to get it into the pores of the wood. Aniline dyes make good stains, and almost any shade can be obtained by admixture of the various colours. Another green stain may be obtained by first treating the wood with a concoction of turmeric, followed by an application of Prussian blue.

H. E.

How to Make Models of Buildings.

LONDON, W.C.—R. J. B. writes: "I should be glad to know the best method of making a small model of a building fit for exhibition, and the materials to be used."

Models can be made in cardboard, wood or plaster, the simplest material being cardboard. The elevations should be drawn on the cardboard and then inked in, such portions as windows, doorways, &c., which are drawn on another thickness, being cut out. The whole is then carefully coloured and cut up, care being taken to bevel the corners, so as not to show a square joint. The pieces can then be stuck up with glue on a rough wood frame, or small pieces of wood or cardboard can be put crossways inside as struts and at angles for strengthening. The roof may be made of plain cardboard and paper ruled to imitate slates or tiles (as the case may be) and pasted on afterwards. Small pieces, such as chimneys, window sills, down-pipes, &c., should be cut out of solid wood, and can be painted in body colour. Green cloth and dyed sponge are good substitutes for grass and trees, whilst portions required to be gravelled should have a coat of strong gum and be dusted over with fine sand whilst wet. Wooden and plaster models are more difficult, as they not only require practice in the making but need a number of tools to finish them off well.

J. B. T.

Thickness of Walls required under By-laws.

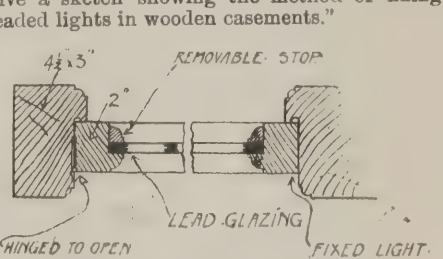
LONDON.—L. V. H. writes: "Referring to the question and answer on page 374 of your issue for December 12th, it is quite obvious that 'St. Albans' could not build his wall 9in. thick, because the storey is over 10ft. high; but if it were not so and the whole height of wall were less than 30ft. he ought to be allowed to build it 9in. thick. A local council lately rejected some plans of mine because a one-storey warehouse was shown with 9in. walls, less than 15ft. high and the storey less than 10ft. high. Do you consider they were right (they contended that as it was the bottom storey it must be 13½ in. thick)? The London Building Act, part II., paragraph 11, contains precisely the same wording as (*j*) of Model By-laws, and in London I have built such walls with the approval of the district surveyor."

Under the Model By-Laws, 20 (*a*) provides that where the warehouse wall (party or external) does not exceed 25ft. high, it shall be 13½in. thick at its base. Under (*j*) it is provided that in walls not exceeding 30ft. high the walls of the topmost storey may be 9in. thick, provided that the height of that storey does not exceed 10ft. In the case of the one-storey building mentioned, I see no reason why it should not have been regarded as a topmost storey, and enclosed with 9-in. walls with a 4½-in. set-off to 13½in. at the base. I am of opinion, therefore, that the local authority were wrong in requiring 13½-in. walls. I should place the same interpretation upon Part II. (1) and (11) of the First Schedule of the London Building Act, 1894.

G. H. B.

Fixing Leaded Lights in Wooden Casements.

HUDDERSFIELD.—STUDENT writes: "Kindly give a sketch showing the method of fixing leaded lights in wooden casements."



SECTION OF WOODEN CASEMENT.

The accompanying sketch will doubtless meet our correspondent's requirements.

R.W.C.

Preventing Draughts in Smoke-Room.

PRESTON.—NOUVEAU writes: "I send enclosed plan and section (not reproduced) of a smoke-room, and should be glad to know how to prevent the cold draughts which circulate near the windows. Persons sitting under the windows constantly complain of the downward currents of cold air, which I presume are due to the condensation of the warm air on the windows. Would double-glazing the windows prevent these draughts, supposing also the hot-water pipes were continued up to the underside of window board to warm the intervening air-space? Fresh air is only admitted into the room by the opening of the top fanlights, which, I think, is a bad arrangement. Would it not be better to provide one or two air-inlets in the external wall about 6ft. from the floor-level, and fix, say, Boyle's air-inlet brackets to them? The room is heated by an open fire-grate and two rows of heating pipes of 3in. diameter: this is probably insufficient to warm the cubic air-space, but I note the following remarks in Boyle's catalogue:—'Where open fires are used, they should have a separate air-supply led directly to them from the outside through a 3 or 4 in. pipe, to prevent them drawing the hot vitiated air from above down into the breathing zone, creating draughts and unduly affecting the ventilating arrangements.' I cannot see how this air-supply could be arranged in my case, as the open firegrate projects beyond the jamb of chimney; but do you consider this air-supply absolutely necessary?"

The provision of proper fresh-air inlets would go far to obviate the defects complained of. A pipe should be carried, as suggested in Boyle's catalogue, from external air, under floor, to a grating either in the hearth or in the fender curb, so as to supply air to the fireplace. Another similar pipe might well be carried to the back of the fireplace, discharging warmer air into the room about 10ft. above floor level—though this involves the removal of the grate and the construction of a separate flue. Other similar inlets could be provided into casings covering short lengths of the heating pipes, these casings also being carried up about 8ft. or 10ft. before discharging heated air into the

room. There is no necessity to fix the fanlight, which it may be very useful to be able to open in summer, but both it and the fixed sashes might be glazed with plate glass if preferred, as a cheaper alternative to introducing the inner frames—which, however, is generally satisfactory. G.A.T.M.

M.S.A. Examinations.

MANCHESTER.—P. C. writes: "Kindly inform me where to obtain particulars of the above examinations."

Apply to the Secretary of the Society of Architects, St. James's Hall, Piccadilly, W.

Permanent White for Exterior Work.

MANCHESTER.—E. W. writes: "Can you give me any assistance by advice in procuring a reliable permanent white exterior result upon brickwork? I have tried whitewash, which requires re-doing every year, and so becomes costly. I have also tried Portland cement finished with a final coat of Keen's, and I am told this will not stand the weather; in some cases I find it has, and some not after some four years. I do not want rough-cast as it is not white, and then in smoky districts I find the surface holds so much dirt that in a very short time it is almost black. If it is not possible to get white, what would be the nearest to it, leaving a smooth surface? I have many times asked various plasterers these same questions, but they appear to be either very uncertain or contradictory."

Obviously it is impossible to obtain a permanent white plastic surface for exterior work. Even stone, terra-cotta, brick, marble and other constructional materials sooner or later show the grimy effects of smoke and atmospheric influences. White-glazed bricks and tiles afford the most permanent white surface, but are not suitable for some positions and purposes. Keen's cement, being formed from a gypsum basis, will not resist damp or atmospheric influences; the refore it is unsuitable for exterior work. Painting with a suitable oil paint will indurate the surface and retain the colour longer than whitewash. Painting, unlike whitewash, has the disadvantage of being costly, and requires renewing periodically. A fairly good white or cream-coloured surface can be obtained by using Portland cement in combination with white aggregates, such as silver sand, white spar, white marble sand, and Bath stone dust. Portland cement and sharp sand should be used for the floating coat, taking care that the joints of the brickwork are freed from lime mortar, and the whole surface thoroughly cleaned and wetted. Cement adheres to and eventually becomes much harder when laid on a damp surface than if laid on a dry or porous one. The fining coat is composed of two parts of Portland cement and three parts of white aggregate. An extra white surface can be obtained by mixing the cement with a tenth part of well-sifted powdered whiting. The cement and whiting should be well mixed together in a dry state, and then the silver sand or other white aggregate added and thoroughly mixed before the mass is gauged. The fining coat should be finished with the trowel to get a close, smooth, and impervious surface, to allow the rain to run off freely, and to resist the effects of rain and snow. A smooth surface helps the rain and wind to wash and blow off surface dust. W. MILLAR.

Colouring Plans on Parchment.

BATH.—V. S. writes: "Which is the best way to colour plans on parchment deeds, &c., so that the colour looks even, and does not go through the skin? Should it be put on in one operation? Are there any special colours for this work?"

The parchment should be pounced and cleaned off in the usual manner, and the colours applied with as little water as possible, though there must be sufficient to enable a good wash to be laid on evenly. On deeds, as with every other kind of work, colour should be laid on cleanly and decisively: going over the work twice will most probably produce "woolliness" and give the wash an uneven spotty appearance. Any good water-colours can be used for colouring plans on parchment.

Professional Practice.

London.—The new Camden Theatre, opened recently, is situated exactly opposite to the Cobden Statue, with a frontage of 72ft. to High Street and 160ft. to Crowndale Road. From pavement to roof the height is 60ft., whilst above this is a copper-covered dome, reaching to an additional height of 36ft. A flambeau on the very top of this is lit up at night. The frontage to High Street, and 52ft. of that to Crowndale Road, is of stonework, the remainder being of red brick with cement dressings. Mr. W. G. R. Sprague is the architect. From the vestibule (36ft. long by 15ft. wide) is a flight of white marble steps leading to a crush-room. This is decorated with marble fittings, and extends to a length of 40ft., with a width of 19ft. Immediately above this are the saloon and bar, decorated with silk panels and painted work. The corridors connecting the different parts of the house are wide and roomy, so that the theatre could be emptied in a few minutes should occasion arise. The interior has a scheme of cream and gold colouring, together with the ruby plush upholstering. The pit is large, and a good view of the stage can be obtained from all parts. The house is on the two-tier cantilever principle, dress-circle and balcony being on the first tier and amphitheatre and gallery on the second. There are fifteen rows of seats in the gallery, six in the dress-circle, and seven in the balcony. A feature has been made of the smoking lounge on the circle level. From the pit level to the sun-burner in the centre of the roof the height is 48ft. The ceiling round this sun-burner is painted with allegorical figures. All the decorations and upholstery have been supplied by Messrs. Waring, of Oxford Street. The stage extends to a depth of 56ft., and is 80ft. in width. The proscenium opening is 35ft. by 28ft., whilst from floor to grid is 55ft. The dressing-rooms are fitted with every convenience, and are well ventilated and lighted. Gas and electric light are used. The holding capacity of the theatre is more than 3,000. The builder is Mr. Walter Wallis, who also built the Coronet, the Kennington, the Royal Duchess, and other well-known theatres.

Sudbury—A new infant school erected by the trustees of the North Street Church Schools, Sudbury, has been opened. A sum of over £1,000 has been expended on this erection. The Diocesan Surveyor, Mr. W. M. Fawcett, M.A., of Cambridge, prepared the plans for the new buildings, the contractors being Messrs. George Grimwood and Sons, Sudbury. The new schools are calculated to accommodate 270 scholars. The main infant schoolroom is about 50ft. by 20ft. by 13ft., while there is a large double class-room 20ft. by 40ft., divided by a sliding partition. In addition, there are two large class-rooms and a lobby. The whole of the walls have a dado, 4ft. high, with a chocolate-coloured border, of salt-glazed bricks. The floors are of tongued wood blocks laid in bitumen.

Tudhoe, Spennymoor.—A new home, the work of which has been in progress for two years, has been erected at a cost of £10,000. Tudhoe Home—the old home—was instituted over fifty years ago, with the object of housing, feeding, clothing, and imparting instruction to homeless and destitute little girls. The inmates having increased considerably, it was found absolutely necessary to erect a new home. The contractors were Messrs. Johnson and Hanby, of Stockton-on-Tees; and the architects Messrs. Dunn, Hansom and Fenwick, of Newcastle-on-Tyne. The new building, which has a frontage of 208ft. occupies a site immediately adjoining St. Charles's Church. The exterior is built of red pressed bricks, neatly cut, and weather jointed. The arches over the windows are of moulded Grosmore bricks. A low wall, surmounted with coping and massive iron-wrought pallisading, adorns the front or north-east portion of the building. There are two entrances, whilst a third one admits of access to and from the church. The broad and lofty corridor, facing the main entrances, runs the entire length of the building, and its walls, are inlaid with green tinted Opalite tiling. At the extreme end of the corridor are the lavatories, &c. Here white Opalite has been utilised. On the same floor is the class-room, 56ft. by 20ft. The staircase, winding from the ground floor to the summit of the building, is built wholly of polished pitch pine. The steps are of moulded cement, supported by symmetrical girders, the work being ornamented with a green shaded Opalite. On the second and third landings are the dormitories and lavatories, replete with the latest improvements, and in close proximity are large baths. On the western landing a range of dormitories, &c., have been fixed and arranged in precisely the same order. Ample arrangements have been made for cooking. Accommodation is found for 160 children.

Builders' Notes.

Messrs. Beynon Brothers, builders and contractors, of Tenby, have recently opened a new showroom in connection with their Warren Street premises, where a selection of fire-grates, and painters' and builders' requisites generally, can be inspected.

Councillor William Maben, of Manchester, died last week. Mr. Maben, who was born at Coatbridge, near Glasgow, and completed his 51st year in June last, went to Manchester 30 years ago. He was by trade a builder and contractor, but he relinquished that business some years ago, and latterly acted as a consulting engineer and specialist in the building trade.

Mr. Alexander Anderson, member of the firm of Messrs. G. Fordyce and Co., builders, Aberdeen, died last week at the age of 57. In 1864 he went to Aberdeen, and joined partnership with the late Mr. Fordyce and Mr. William Watt, the latter being now the sole surviving partner. He leaves eight of a family, his two eldest sons—Mr. John and Mr. George Anderson—being architects in London.

Building at Woking.—Messrs. Alexander H Turner and Company, auctioneers, inform us that they have postponed the sale of the freehold building estate at Horsell, Woking announced to take place at the Mart on the 16th inst. under this heading on p. 427 of our last week's issue. The sale will take place at an early date, however, and the area of the estate is 73½ acres, and not 72 as stated.

Local Authorities and Builders.—At Kirkham, recently, a building contractor named Thomas Royles was summoned for having acted as a councillor after having been disqualified by taking part in contracts entered into by the Kirkham Urban Council. The case for the prosecution was that the defendant fulfilled contracts in the name of one of his workmen. The case was eventually withdrawn on payment of the costs, but Royles was to resign his seat on the Council.

Messrs. E. and H. Lumley, land agents and auctioneers, of St. James's House, 22 St. James's Street, London, S.W., have registered as a private limited liability company, under the title of Lumleys, Limited, for their personal convenience in the management and administration of their greatly increased business. The constitution of the firm remains unchanged. Mr. Henry Lumley will be governing director, and will give the same personal attention to the business as heretofore.

British Fire Prevention Committee.—Pending the opening of its new testing station, the British Fire Prevention Committee will issue reports on tests undertaken in the past year with Mural and Decorations Company's floor, the "Cunnah-Wright" partition, the Williams' fire-blind, with two iron doors and two pairs of wood doors. Summaries regarding tests undertaken at the North Bank testing station are also in preparation. Regarding the committee's new testing station at Westbourne Park, a sub-committee of the executive will have charge of the arrangements, Mr. Ellis Marsland presiding.

THE BUILDING TRADES IN 1900.

ALTHOUGH generally the trade and finance of this country have increased during last year, yet in the building trade the high prices of materials and labour have had a depressing effect. Speculative building to a great extent has almost stopped, and until the price of materials is brought down it will remain very quiet. The housing problem has come to the front, and is likely to become more acute if this diminution of speculative building continues.

The past year will show a falling-off in the output of slates, both in Carnarvonshire and Merionethshire. Trade in the former district was brisk throughout the year, but in the latter there was a slight falling-off in the spring, owing to foreign competition. The quarry owners, however, by adjusting prices, recovered the trade.

In the iron, steel and kindred trades the past year has been a prosperous one for manufacturers of finished iron and steel, who have been busy with home and repeat orders. During the last few months, however, fresh business has been difficult to obtain, and a general weakening of prices has commenced. Indeed, Messrs. Bolling and Lowe, of Laurence Pountney Hill, E.C., in their annual trade review, think manufacturers are likely, for a time at any rate, to make further concessions. Last year's output of coal is expected to exceed that of 1899, and to approximate 230,000,000 tons, in spite of enhanced prices. Of this quantity about 60,000,000 tons have been exported, and the remainder, 170,000,000 tons, consumed at home by industrial concerns, railways, gas works, &c. In consequence of the advanced cost of fuel, makers of finished materials have naturally raised their prices, and the foreign consumer has doubtless paid for the increased value of about 100,000,000 tons of coal—say £25,000,000. Every additional advance of one penny per ton on the price of coal means on the total output about £1,000,000 extra profit. Wages in the South Wales collieries are now higher than they have ever been. The "boom" has passed, but these cycles of prosperity are not so beneficial as is imagined, owing to the enormous speculation, not by consumers, but by a certain trading class with little or nothing to lose, and everything to gain, and by outsiders who simply want to "spec." All parts of the world can be reached by steamer from Europe within six weeks, with the exception of the Northern Pacific Ports, and large stocks are only kept as a speculation. The tendency now seems the other way, *i.e.*, to keep as small supplies as possible, as, in the opinion of the trading community, the capital locked up and loss of interest are not sufficiently compensated by the value of merchandise held in stock, which has to be disposed of at varying values in the unknown future.

The continued increase in all branches dealing with electric energy is a matter for congratulation. Its advantages as an illuminant, and as the tractive force for tramways and railways, are increasingly appreciated, and our manufacturers are finding electrically driven machinery more effective, speedier and cheaper than was the case with steam. Colliery companies have made considerable advance in its adoption, for mining the coal and lighting the workings.

As usual, the railway rates cause much dissatisfaction, carriage on all material being excessive when compared with what our foreign competitors pay. A new question has arisen which should be carefully considered, whether the English railway companies act in their true interest in buying their rails and rolling stock abroad, provided such can be obtained upon reasonable terms at home. By purchasing from the foreigner they are depriving numbers of British workmen of employment, not only in the handling of the raw material, but of the manufactured articles also. It is not the few pounds so saved by a company which will materially improve its financial position, but in doing its utmost to assist the British manufacturer in dealing with the rate question, and in finding employment for the workmen who form the backbone of the railways' customers. The mileage in the United Kingdom is now about 23,000, having cost about 1,100 million sterling. Considerable progress in the construction of light railways has been made, and is the beginning of a much-needed development.

ENGLAND.

Birmingham.—The building trade in this district has suffered the same as in others from depression owing to the high price of materials. In the engineering and iron and steel trades the high-water mark, both as regards demand and prices, had practically been reached when the year opened. Quotations moved up a little after then, but not much. At the beginning of 1900 marked bars were advanced 10s. per ton, bringing them up to £11, as compared with £8 at the corresponding period of the previous year. Unmarked bars were also risen 10s. to £10 10s., as against £6 10s. at the opening of 1899. Other descriptions of iron appreciated in equal ratio, the stimulating cause being the increase in the price of coal, and wages Throughout the year these items have marched steadily forward, until they have reached a pitch at which speculation has been strangled, and remunerative business is next to impossible. Producers of steel sheets and pig iron all participated in the good times of last year, and the early part of the present, galvanised corrugated sheets, delivered in Liverpool, realising in March as much as £15, black sheets, doubles, £11 to £11 5s., and Bessemer billets, £7 5s. to £7 10s. The war provided a great deal of work for this district, and many establishments were carried along at a rattling pace in consequence. The rush of orders had spent itself by the end of June, but for the next two months there was not much scarcity of employment. Ironworkers' wages, under the sliding scale, were increasing hand over hand, and coal was also rising in value, and these two factors are mainly responsible for the present condition of affairs. A serious blow was aimed at the trade by the railway companies in September, when they increased their siding charges, and reduced the free demurrage period.

Blackpool.—The Borough Surveyor's annual report on the work done by the Building Plans Committee of the Blackpool Corporation states that during the twelve months ending Oct. 31st last, 429 houses were erected and certified for human habitation (a decrease of 54 over the previous year), being at the rate of 1·17 houses per day for the whole year, or 1·37 per week day. During the past decade, the annual number of houses built in Blackpool has been as follows:—1891, 330; 1892, 259; 1893, 320; 1894, 447; 1895, 531; 1896, 744; 1897, 984; 1898, 1,066; 1899, 483; and last year, 429. Over 4½ miles of 6in and 4in. drains have been laid to new buildings during the last twelve months. At the present time, 240 dwelling-houses are in various stages of erection, besides churches, schools, stables, coach-houses, workshops, alterations, &c.

Bradford.—The great activity which marked the local stone and building trades in the early part of the year 1900 seems to have declined gradually down to comparative quietness, Whether the extension of the city boundaries and the additional tramway facilities will bring about a partial revival remains to be seen. Some of the principal contracts let during the year and now in progress are those in connection with the Cartwright Memorial Hall, the new Fire Brigade Station, the new Conditioning House, the extension of the Electricity Works, the large tramcar shed at Thornbury, the Green Lane Board Schools, the extension of the Bradford Provident Industrial Society's premises in Sunbridge Road, and alterations at the Old Brewery premises in Brewery Street. Of projected new public buildings may be named the new Corporation baths in Morley Street and Drummond Road, district police offices and fire stations, and the extension of the Rawson Place Market, while the extension of the Town Hall is receiving increased consideration. The Lancashire and Yorkshire Railway Company have let the contract for a large warehouse in Bridge Street, to cost about £60,000. House building has gone on at a rapid rate in many parts of the city, especially in the districts of Horton Grange Road, Lidget Green, Bradford Moor, and Eccleshill. There is a lull now, however, in this class of building. The local stone trade, though brisk during the first half of 1900, has fallen off considerably during the latter half, but the London trade has been fairly good during the year, and continues so. The following are about the prices which have ruled during the past twelve months, the figures varying somewhat according to quality:—Self-faced flags, 2in. thick, 2s. 4d. to 2s. 6d. per superficial yard; 2½in., 2s. 10d. to 3s. 2d.; and 3in., 3s. 6d. to 3s. 10d. Tooled flags, 2in. thick, 3s. 6d. to 3s. 9d. per superficial yard; 2½in., 4s 6d. to 4s. 9d.; and 3in., 4s. 8d. to 4s. 10d. Ashlar, 1s. 8d. to 2s. 2d. per cubic foot. Outside wallstones, 44s. to 54s. per rood; inside ditto, 22s. to 24s.; and pitch faced, 44s. to 50s. Common bricks, 25s. to 30s. per thousand at works. There has been a steady demand during the year for timber, and prices have been well maintained.

Bridlington.—In 1899, 293 plans were sanctioned by the Council for the erection of dwelling-houses. In 1900, 276 house-plans were passed. Of these 80 per cent. have been or will be erected in the Quay Ward and Hilderthorpe Ward. During the past year 184 houses have been certified by the surveyor as fit for human habitation, so that there has been only a little less briskness in the building trade in 1900 than in 1899.

Bristol.—The continued high prices of materials and the increase in the rate of wages in all branches of the building trade have combined to very considerably lessen the volume of business done in this district in the last few months, and the trade has by no means realised expectations. Many contracts in and around the city are rapidly approaching completion, and very few are in contemplation in the immediate future, so that the prospects are not very hopeful. Speculative building has for the same reasons been practically stopped, and until there is an appreciable decrease in prices it is hardly likely to revive. The supply of labour is abundant in all branches, and the difficulty experienced earlier in the year in obtaining materials is not now felt.

Coventry.—Taken altogether the local builders were fairly busy in the last twelve months. There were not so many plans approved as in either of the previous four years, but the number of buildings completed was in excess of any year in the history of the city except 1898. Last year the number of plans approved were 636, of which 488 were for houses, and, curiously enough, of the buildings completed—643—488 were houses. The record for house erection is held by 1898 with 501, and 1900 is a good second. The following is a summary of building operations collected by the city engineer:—

Plans Approved.

	Year. 1899.	1900.
Houses	528	488
Factories and Workshops	26	11
Alterations and Additions	163	106
Miscellaneous	89	24
Public Buildings	0	1
Churches	0	1
Chapels	0	1
Schools	2	1
Streets	5	3
Totals	813	636

Buildings Completed.

	Year. 1899.	1900.
Houses	466	488
Factories and Workshops	13	19
Alterations and Additions	101	95
Miscellaneous	21	26
Public Buildings	0	1
Churches	0	1
Chapels	1	0
Schools	1	2
Streets	9	11
Totals	612	643

During the year 304 plans were laid before the General Works Committee, 52 of them being disapproved. At present matters are somewhat flat owing to the unsatisfactory condition of the cycle industry, and it is possible that the supply of houses, just now, is in excess of the demand. Overcrowding, of which so many evils were predicted three years ago, has, except in a few isolated cases, disappeared, but the great increase in habitations does not appear to have done much towards emptying

areas which the annual reports of the medical officers of health, in the last twenty years, consistently described as insanitary. Builders have fought shy of putting up cheap dwellings. In the direction of Foleshill available spaces are being rapidly occupied, and it cannot be long before the north of the city is as thickly covered as the eastern quarter of Hill Fields. Foleshill is making great commercial progress, and in places already exhibits as busy an aspect as many parts of Coventry. The builders there have been and are erecting fairly rapidly, and the coming year promises a continuance of activity. Just outside the boundary, on the south side of the city, Lord Leigh is disposing on lease of 170 acres of land. The ground is situated in and near the Canley Valley—a most attractive site—and there is a likelihood of early building.

Gateshead.—The growth of this town has been more rapid during the past twelve months than in any similar period of the history of the borough.

Halifax.—The building trade has been quiet as compared with previous years. A number of men are at present unemployed, those at work being mainly engaged in the erection of houses and cottages.

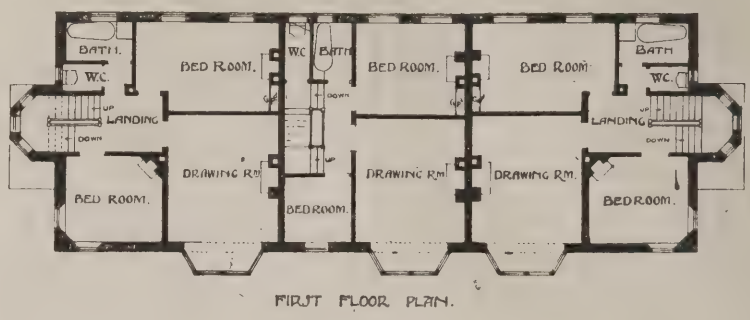
Hessle.—This township rapidly advanced during the year. Builders have been busy everywhere. Westward many villa residences have been erected, whilst on the new estate, comprising the corner of the Ferriby Road and the Wear, a new post office and grocery and provision stores have been built, and a branch by the York Union Banking Company, Limited. The Hessle Institute Company's new premises on the same estate are almost completed. The east of the village has not been neglected. Messrs. Simons and Sawyer have erected several houses of the working-class type. The industries, of which the chief are the chalk quarries, shipbuilding and brickmaking, continue to find employment for a large amount of labour.

Huddersfield.—The building trade has been in a fairly satisfactory position, but few large works are in prospect for this year. Up to November plans had been approved by the Corporation of 273 dwelling-houses (against 259 in the year preceding), 60 business premises, and 193 miscellaneous buildings. The chief work for this year is the erection of the lunatic asylum at Storthes Hall, near Kirkburton and the extension by the Co-operative Society of their premises over the site of the present Victoria Temperance Hall in Burton Road.

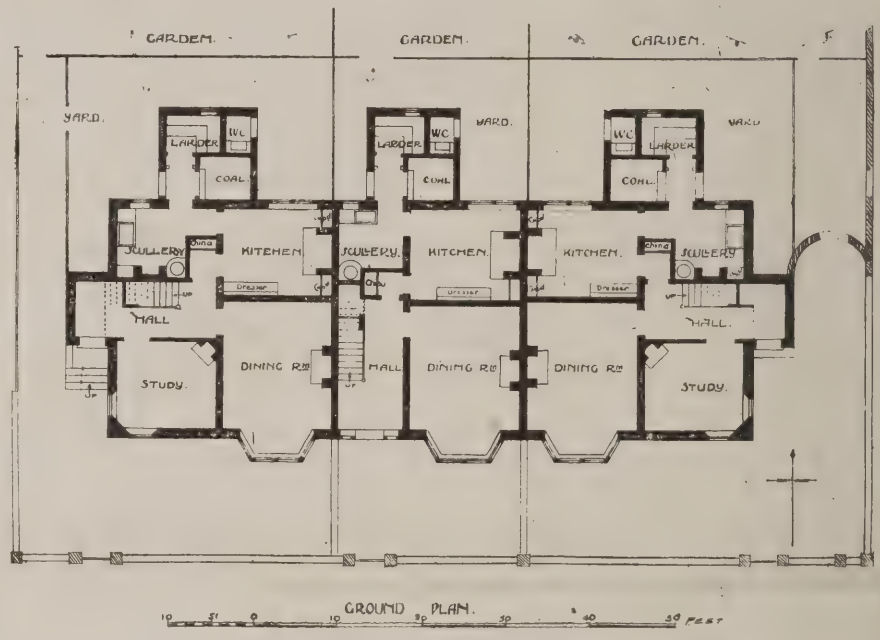
Hull.—Building in this city has been exceptionally brisk during the past year. A great deal of house property has been erected, particularly in the outskirts of the city, owing to the service of trams which has been in operation for the past eighteen months. A large area has been been cleared of slum property, and blocks of artisans' dwellings are being put up by the Corporation. The year has been free from serious labour disputes. The outlook is good.

Leeds.—The year has been more satisfactory than 1899. For the first time for some years it has been free from trade disputes. It is true the Tyneside dispute has brought a disturbing element at the close of the year. There the bricklayers struck work in May last for an advance of wages from 10d. to 11d. per hour, and though the Northern Centre of the Masters' Federation, to which the Yorkshire masters are affiliated, have taken the matter up, there would seem to be no strong disposition locally to push matters to an extreme by locking out the Leeds bricklayers in sympathy. Trade, therefore, has been very brisk during the year. In the last month or so there has been a hesitancy to let new contracts, the architects preferring to await a fall in prices. This fall, so far as certain classes of material are concerned, has already begun, but timber retains its abnormal price, and it is said that no substantial reduction will be made until the reopening of the Baltic ports. Since March 25th, 1900, which marks the beginning of the official year, 2,342 new houses have been erected and completed in Leeds. The approximate number of

TERRACE HOUSES
HUNSTANTON, NORFOLK.



FIRST FLOOR PLAN.



GROUND PLAN.

H. G. IBBERSON, ARCHITECT (For perspectives see Centre Plate).

miscellaneous buildings erected and certified during the same period is 2,021. The improvement of Briggate continues, and with the completion of the fine line of new buildings at the top of the hill and of the new arcade, probably the finest in the north, the character of the street will be further changed.

Leicester.—During the past year the building trade in this town has been active. During the year ending September last plans were passed for 1,451 houses, and the total number of plans passed for new houses, factories, alterations, &c., has been 2,910.

London.—The year's business at the London Property Mart has been very unsatisfactory. The principal feature of the year has probably been the increased sales of medium class property, for which there has been a good and steady demand. Landed estates and large West-end properties have been altogether out of favour. Freehold building land promises to have a record season. Several large estates, more particularly on the East Coast, have been prepared for disposal "in a marquee on the estate," while London suburban building land, especially in the northern districts, is so much in demand that few, if any, "eligible building plots," have been left unsold from last season, and many new estates have been surveyed for the purpose of being laid out for disposal in plots. The want of vigour which has generally characterised the London Auction Mart is probably due to a certain timidity on the part of vendors—which, in turn, is perhaps due to the war—and to the consequent falling off in the supply of properties for sale. Generally, however, it may be said that for such properties as have been offered there has been a fair demand, and prices have been well maintained. For 1899 the total of the sales at the Mart was £6,290,314, whilst for 1900 it was only £4,934,769, a decrease of £1,355,545. In addition to the sales at the Mart, however, many prominent transactions have been carried out by private treaty, and a number of important sales have been held in the provinces.

Manchester.—The building trade has been brisk throughout the year. Many builders had large contracts in hand at the beginning of the year, and during the twelve months the prices of materials in all branches of the trade rose so rapidly that contractors in many instances sustained serious losses. Otherwise builders have scarcely any other reason to complain. Wages have maintained a high standard, and the workmen have enjoyed uninterrupted prosperity. The erection of the new station for the Lancashire and Yorkshire Railway Company at Bolton has cost £300,000. The prospects for the coming year are said to be satisfactory.

Newcastle.—Locally, the employers and workmen engaged in the building trades have enjoyed prosperity during the past year. However, 1900 will be remembered as a disastrous time by many builders in Newcastle and Gateshead. Owing to the bricklayers' strike contractors have been unable to complete their undertakings. But, judging by the number of dwelling-houses erected during the year that has closed, few of those builders in a smaller way of business seem to have been much affected by the stoppage. In the west end considerable progress has been made in opening out the Fenham Estate; in the neighbourhood of Benwell a large number of new streets have been erected; and at Jesmond, Gosforth, Byker, and Heaton great additions to the available house accommodation have been made.

Scarborough.—The trade has been prosperous. The Corporation, alive to the importance of preserving Scarborough as a progressive health and pleasure resort, in addition to the main undertaking, the Marine Drive and

Promenade, which, though slowly, is surely approaching completion, have several important public works in hand; these include the transformation of St. Nicholas' House into a Town Hall, the erection of a fire station and an infectious diseases hospital, and several much-needed works of street improvement.

Sheffield.—The abnormal increase in building operations recorded last year has been strongly maintained during the last 12 months. There has been a slight decrease in the number of houses erected during the year, but the falling-off is more than accounted for by the special circumstances which existed in 1899. The approximate number of houses certified for occupation during the past year was 2,797, as against 2,616 the year before—*i.e.* an increase of houses certified of 181. During the year 1,365 plans for all classes of buildings have been deposited, as against 1,474 in 1899, a decrease of 109. In regard to street and sewage works 32 plans have been approved. These plans have involved or will entail the making of 5,051yds. of streets with sewers. There have also been sent in 18 plans for sewers alone, and these will necessitate the making of 564 yards of sewers. The total extent of streets with sewers and sewers alone approved during the year thus amounts to 5,615yds., or over three miles. Coming to minor buildings, we find that 92 plans for such erections as cowsheds and stables have been approved during the year, as against 99 last year. Plans for warehouses, workshops, &c., have numbered 654, as against 477 in 1899. The summary of statistics shows that the number of plans deposited for houses has fallen off by 1,200, and plans for other buildings have increased by something like 180. Nine hundred and seventy of the plans which have been deposited have been approved. The outlook for the future is not promising. The feature of the year's operations has been the decrease in the building of house property and the increase in the erections of workshops. The cause of the promised slump in the local building trade is principally the high price of materials. Towards the end of last year prices went up, and it is not expected that there will be an abatement of prices for some time to come. Bricks are especially dear, a fact that is directly due to the high price of coal. Prices of iron work are also high, and exhibit a very firm tendency, and there is no prospect of a decrease in the rates for timber. Another thing which militates against large profits is the action of the Corporation in regard to the erection of buildings. A number of new clauses are to be found in the by-laws this year, which will entirely do away with any chance of cheap building, though some builders may take advantage of the fact that some of these clauses do not come into operation until October 31st of next year. During the year an important combination of the men's building organisations has taken place in South Yorkshire and the immediate district, and this may have some effect on wages. The strike of builders throughout the country has not affected Sheffield very much.

York.—The erection of new buildings has also been very brisk. Most of the houses have been erected on the new estates in Bishopthorpe Road, South Bank, Huntington Road, Leeman Road, Burton Lane, and Acomb Road. 236 plans have been submitted during the year, of which 170 have been passed, comprising 656 houses, 114 warehouses, outbuildings, &c., 59 alterations and additions to premises, 12 new streets and back roads, and 11 public buildings.

SCOTLAND.

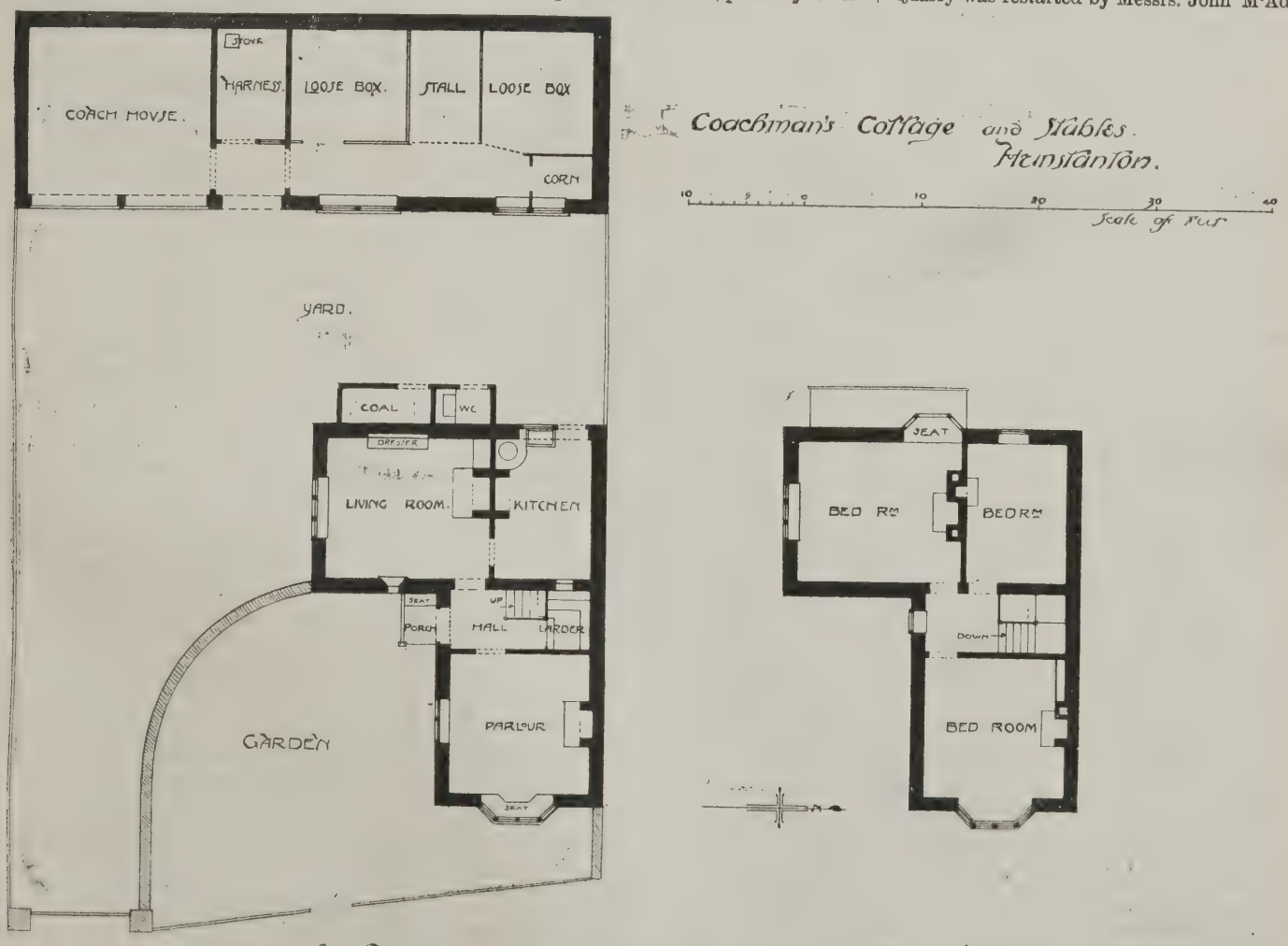
Aberdeen and Aberdeenshire.—The year has closed in marked dulness so far as the building trade is concerned. 1899 also closed in a period of depression, but with this important difference that the preceding months of the year were unusually flourishing from an architectural point of view. This year there has been no such early run of prosperity to back up a bad ending. Money has not been over plentiful, and the speculative builder, probably realising the risks of over-stocking the residential requirements of the city, has been holding his hand a bit. The new houses and shops added to the city during the year numbered 334, as against 450 in 1899. The statistics as to the plans passed by the Town Council in 1899 were as follows :—

New houses and shops	395
Alterations and additions	86
Warehouses, stores, &c.	55
Estimated value	£410,000

The following are the statistics for 1900 :—

New houses and shops	251
Alterations and additions	91
Warehouses, stores, &c.	68
Estimated value	£293,949

The depression which characterised the closing months of 1899 has thus never lifted during the year now closing. While alterations of, and additions to existing property were more numerous than in 1899, the total number of plans of new houses and shops sanctioned in 1900 shows a decrease of 144, while the total estimated value works out at £116,051 less than last year. Quarrying in Aberdeenshire continued to develop in extent and importance. The past year has been one of the most prosperous in the history of the industry in this part of the country, and from present appearances the prospect is bright in the extreme. One feature in connection with the production of Aberdeenshire granite which will probably be very notable in future will be its use as polished fronts for buildings. Already a considerable market for these fronts has been opened up in southern towns, and several granite merchants in the city have been busy with these in the course of the year. A large proportion of the granite quarried was used up in the manufacture of setts, for which there was a great demand throughout the year. The sett-making department has had a most prosperous year. During the year new quarries were opened up at Badentoy, and settmakers are employed there, while new quarries have been opened up or extensions made in various districts. A new quarry was opened at Kemnay, while Cove Quarry was restarted by Messrs. John M'Adam



H. G. IBBERSON, ARCHITECT (For perspective see Centre Plate).

and Sons, who have also purchased the estate of Cummings Park, and are about to start a new quarry there. Mr. James Leith intends in a short time to commence sinking a new quarry at Cairncry, while Messrs. A. and F. Manuelle are at present engaged pumping the water out of a disused quarry at Dancing Cairns, where a very fine quality of stone is obtained. As far as wages are concerned, drillers and quarrymen, for whom there was great demand, were paid at about the same rate as last year. During the year the Quarrymen's Union was dissolved. At the beginning of the year the settmakers received a rise in prices on various sizes of setts.

Brechin.—In the building and kindred trades business has been on the whole very quiet, for while one or two fairly big jobs have been going on employers have been depending more on work in the surrounding country to keep their men going. The restoration of the Cathedral has been pushed on during the year, and has given employment to a large number of men. The nave and aisles are now finished as far as the joiner, slater and mason work are concerned. The interior, of course, has not yet been touched, while the choir and north aisle are being pushed on. On the whole the operatives promise to be fairly busy for some time to come. Work in the quarries during the year has been somewhat intermittent, and a good many of the employees have either found employment elsewhere or taken up new occupations.

Dundee.—As in 1898 and 1899, the past year has been one of the busiest ever experienced in the building trade in Dundee, but it is to be feared that the same will not be the case during 1901. The demand for the year was mostly in the direction of villas, a large number of which were erected in the northern and eastern ends of the town. For tenement property, however, there was a great falling-off, and it is stated that a crisis has now been arrived at in this connection. For some time back it has been evident the city was being over-built, but the high-water mark has now been reached, hundreds of houses standing empty. Very few contracts for new property are, in consequence, being entered into. Under the Corporation, contracts of extensive character have been carried out under all departments. At present, the buildings being completed for the town are the new Fire Brigade Station, the hospital at King's Cross, and the reconstruction of the gasworks. Several public improvements in the matter of the widening of streets have also been carried out. During the year a long strike by the operative masons took place against a proposed reduction of their wages, but they had eventually to agree to a reduction of ½d. per hour. Not long ago the master builders gave notice of 1d. reduction in the men's wages to take effect in February next.

Inverness.—For a good number of years there has been a boom in the building trade in Inverness. Now, however, the inevitable "slump" has come, and for the last year or two there has been a feeling amongst moneyed people in the town that it is sufficiently built. The result now is that comparatively little building has been done during the past year, and that only that was necessary. Fortunately, there has been some stir in the country, and the workmen have been able to get employment elsewhere. Many of them have been working at the huge extensions to Skibo Castle, which are being carried out by Messrs. Ross and Macbeth, architects, Inverness. There have been a few big jobs going on in Inverness, although generally speaking trade was quiet.

Leith.—During the year 84 applications for warrant to build were reported on at the Dean of Guild Court, compared with 91 the previous year. Several of the largest of the buildings which were for speculative purposes, including blocks of tenement houses, have, however, never been prosecuted further. On the whole, the year has been a quiet one compared with 1899, which was marked by exceptional activity. In the latter part of the year especially, the erection of new buildings apparently received a check, and the masons' strike, occurring as it did when a lull in the trade had taken place, has most likely deterred many beginning operations until the spring of this year. The erection of villas in the Trinity district has continued, but on a much more moderate scale; and in South Leith several large blocks of dwelling-houses have been constructed. Work in the Dean of Guild Court during the last three or four months has diminished very much; and the absence of plans for any large buildings before the Court shows that there is a prospect of quietness in the building trade during the winter especially.

Perth and Perthshire.—There is no distinguishing feature in last year's building operations. The end of 1899 saw a number of important buildings in course of erection. Of these some are still in progress. The principal buildings of last year include a large cooperage and store in Gray Street, the new Central District School in Meal Vennel, and laundry and gymnasium accommodation for the Caledonian Road School. Two large blocks of Workmen's dwellings at Old High Street have been completed, and are now occupied, and large additions are in course of erection. This scheme is the realisation of a long-spoken of and much-needed improvement—the widening of Old High Street. Seven large blocks of tenements have been in course of erection, chiefly in the northern district. During the year 14 double villas have passed the Court, a large proportion of these being in the Craigie district. Many alterations and additions have been made to property in the town, and a large addition is to be made to Messrs. Pullar's dyeworks. The year has not been as good as recent years, although fairly active.

Peterhead.—The local building trade shows signs of great activity. Several new buildings have been completed in the course of the year. The building trades altogether have had a busy time, and the prospects are good for next year.

St. Andrews.—The building trades in the city have been busy throughout the year, and the prospects for the current year are fairly good. New ground has been opened up at the west end of the town within the area of the recently extended burgh boundary, and a number of smaller-sized villas are being erected.

IRELAND.

Trade having generally improved has of course affected the building trade slightly for the better. The Board of Works maintains its high record as an effective and far-reaching minister to the multifarious necessities of the country. The total sum advanced during the year on various loan services (£436,237) was distributed as follows:—Improvement of farms by landlords and tenants, £64,421, of which £33,529 was advanced to the former, and £30,892 to the latter class; acquisition of glebes and erection of national school teachers' residences, £22,784; improvement of labourers' dwellings, £56,387; lunatic asylum buildings, £73,215; housing of the working classes in towns, £54,800; public health loans for water supply, roads, lighting, &c., £121,504; miscellaneous, £43,126. The outlay in connection with the Parliamentary votes for the erection and maintenance of public buildings was nearly £200,000.

Belfast.—Here the building trade has not been as prosperous as in the previous year. The cause of the present state of dulness is the fact that there has been a strike in the carpentering branch, lasting for eight months, and it is a matter for regret that a settlement has not yet been arrived at. There has been no great change in prices, with the exception of iron work. Steel and iron girders, used so largely in building operations, owing to the advanced price of coal, have also increased during the year very much; but there is, however, a downward tendency in the price of iron. There are not many new buildings in the centre of the city. The Bank Buildings have almost been completed. The City Hall can now partly be seen by passers-by, as the massive walls are becoming visible. The Cathedral building in Donegall Street is also progressing favourably. There is also a large suite of buildings being erected in Wellington Place for shops and offices. Numerous additions to factories, warehouses, &c., have been carried out. Quite a number of churches have been built. These include the church on the Malone Road for the Fisherwick Place congregation, the Methodist Church, Ballymacarrett, and St. Silas's Church, Oldpark Road. The Mater Infirmoram Hospital has now been completed, and a good start has been made at the new Royal Victoria Hospital. With the prospect of a settlement in the carpentering branch in the immediate future, trade will considerably improve.

Omagh.—Few towns in the North can lay claim to having made equal progress with Omagh in the way of building within the past few years. A general transformation seems to have taken place. Old thatched cabins have disappeared, and their sites in many instances have been usurped by modern and far more pretentious dwellings, while showy shop fronts and signboards all bear witness to an era of progress. The most notable feature, however, in the way of extension is the erection in such large numbers of what we shall term the better class of artisans' dwellings. The completion of the new bridge across the Strule will undoubtedly give a further impetus to building on the Cappagh side of the stream.

Current Periodicals.

Pall Mall Magazine.—By publishing the article on Rodin in the January number the proprietors hope to promote the success of the scheme now on foot to buy one of the great French sculptor's bronzes for presentation to South Kensington Museum. Professor Legros, Mr. Sydney Colvin, Mr. Sargent, R.A., and Mr. Swan, R.A., are among the subscribers. Rodin's work and the criticism it has evoked are remarkable, and the heroic way in which the sculptor has fought and conquered the bitter hostility of contemporary opinion is most inspiring. In 1864 Rodin sent his head of "The Man with the Broken Nose" to the Salon, where it was refused "because of its originality." He waited thirteen years before again submitting his work—"L' Âge d'Airain." It was accepted; and thus after first being accused of too great originality and, later, of too faithful realism, Rodin was received by his censors. In 1898 the statue of Balzac was exhibited at the Salon, ordered by the Société des Gens de Lettres, and refused by them because they "failed to recognise Balzac in the statue"! This statue is totally different to what we are accustomed and exhibits an astonishing crudeness in handling; but as you gaze on it you perceive that it is indeed a masterpiece, perfectly representative of Rodin's methods. "I am seeking always," he says, "the distinguishing trait that makes this man or woman an individual different from the rest of his kind. When I discover this *trait marquant* I dwell upon it, I insist on it—I caricature it, if you like—until my bust has likeness; then I know that I *know* my model." This is his whole creed, and it should be kept in mind when gazing on his wonderful sculptures. For fifteen years Rodin has been engaged on his *chef d'œuvre*—the famous "Porte de l'Enfer" ordered by the Museum of Decorative Art in Paris. The portal is six mètres high and the panels and borders are filled with countless figures in bas and high relief. The doors are to be cast in bronze and are all but in the hands of the casters.

Cassell's Magazine for January includes an article on the generation of electricity at Niagara. The Power House, about a mile from the Falls, contains ten dynamos, representing an aggregate of 50,000 horse-power. Current is delivered at a pressure of 11,000 volts and taken twenty miles away to Buffalo, there to drive cars, light houses and work factories.

The Antiquary.—In the church of Lostwithiel, Cornwall, there is a most curious old font. It is most likely thirteenth-century work, though Dr. Lanyon, in a paper on the "cabalistic bas-reliefs" of this font, places the date as early as the days of King Arthur. "This is far too early a date . . . . the ornamentation, the dress of the knight with his prick-spur, and the fact that the bowl is octagonal in shape, all indicate a date not earlier than the year 1200"—so says Mr. Alfred C. Fryer in the

January issue of this magazine, which also supplies some particulars about Gogarth Abbey, Llandudno.

The Genealogical Magazine for January reproduces two illustrations of Thornbury Castle, in the valley of the Severn.

The British Clayworker.—In an article in the December issue attention is drawn to the fact that in spite of the undoubted progress that has been made in the manufacture of architectural terra-cotta, particularly during the last ten years, many of the old-time defects may still be found—though less pronounced in character—existing in low-grade wares of to-day. "A perfect body, either for glazed or unglazed terra-cotta, when burnt, should be close, hard and compact, regular and somewhat fine in grain, with low powers of absorption; not liable to crack, and not particularly prone to distortion." The western end of the London Basin is the district dealt with in the December issue in the series of articles on "The Brick-earths of Great Britain." The following joke is worth reprinting:—"And what sort of bricks have you in your country?" said the lecturer to a student from South Africa the other day. "Oh, they are well enough," replied the student; "they break if you let them fall on to the ground, or hit them too hard, but when they are covered with stucco at the front and wallpaper at the back they do well enough."

The Land Magazine for December contains two articles dealing with the housing question. The writer of the first, on "Healthy Homes," says that farmers complain that workmen are difficult to find, and will not come at all unless they can have a good cottage and garden. We often hear this. Why should they? They are quite right. The writer's conviction is that if you treat the labourer properly, give him a good cottage and a good garden, and give his children the same educational advantages they would have in town, you will go a long way towards keeping him in the country. From the second article, on "Housing and Overcrowding in France," we learn that it is one-third cheaper—the taxes being less—to live outside Paris. The Municipal Council places every obstacle in the way for preventing citizens immigrating to the environs, by keeping out local lines of railways and extending no favour to tramways. There are 70,000 houses in the city.

The Home Counties Magazine for January is a most interesting number for architects. There is first of all an illustrated article on the Whitgift Hospital at Croydon, which was begun in 1596 and completed three years later. In spite of the many changes which it has undergone, and deprived as it is of its once ample surroundings, there still remains the main building of the hospital in its entirety, and it is of every importance that this should be preserved. The small school-house and the schoolmaster's house, which formerly stood adjacent to the main building, are now gone. Mr. Bickley supplies an interesting article on Compton Church, Surrey, a building which affords antiquarians splendid subjects for debate, for it has a double chancel, one above the other; a remarkably early wooden screen; a most curious turret staircase with retiring room at the base; and two hagioscopes. Another article of interest deals with the scheme adopted by the two Hertfordshire archæological societies (the St. Albans and the East Herts) for the preservation of those ancient buildings in St. Albans which possess archæological or historical interest. They have compiled a list of about twenty of these buildings, and hope to add lists relating to doorheads, carvings, and other details. Mr. F. G. Kitton, the honorary secretary of the Hertfordshire Art Society, will be glad to forward printed register forms to anyone willing to supply information on the subject. Among the "Quarterly Notes" in the issue under review is one relating to the proposal of an Essex clergyman to ring the bells of his church by electricity, and to apply the proceeds of his ingenuity to the "restoration" of the building. We can fancy, says our contemporary, what would be the reverend inventor's idea of restoration!

Architectural Association Notes.—Referring to the Holborn-Strand designs, Mr. William A. Pite remarks in the December number that "there was much to admire both in design and draughtsmanship, but that is not architecture, while more than one competitor pronounced keen disappointment at 'the miserable show'; but, apart from this, as detached fragments of architectural motif, much that was admirable was shown in a brilliant and enlightening manner. Anyway, the professional journals seem to be having a good time over it, and duplication is approaching to suffocation." That was not kind of Mr. Pite! In the January number Mr. J. M. Brydon contributes a review of nineteenth-century architecture in England, and Mr. J. Maclaren Ross' prize essay on the life, work and influence of Sir William Chambers is also printed.

The Architects' Magazine is the Journal of the Society of Architects in its new garb. It is more chatty than its predecessor, though it loses somewhat in dignity. A number of illustrations of architectural models made by Mr. John B. Thorp are given. Mr. Thorp is very successful as a model-maker, and his two models of the Brook Hospital and the North-Eastern Hospital exhibited at the Paris Exhibition are very ingenious pieces of work. Architectural models might be much more frequently employed than they are.



HOUSE AT MUNICH FOR HERR FRANZ STUCK, ARCHITECT.

The Artist.—The best reproductions in the Christmas number are those of the works of Mr. Edwin A. Abbey, R.A., who holds such a high place as a painter and is undoubtedly the finest living pen-draughtsman. Some of Mr. James J. Guthrie's mysterious designs are also shown in this number.

The Quarry.—A leader in the December issue, dealing with the deplorable Penrhyn quarries dispute, concludes as follows: "The only thing to be feared in the present crisis is that America may be able to take advantage of the position, and gain such a hold upon the slate trade of this country as to permanently affect the prosperity of the industry." This is exactly what America is beginning to do in the iron trade. Two articles in this issue deal respectively with the geology of County Donegal, and an automatic hydraulic plant for the manufacture of artificial cement stones.

Journal of Decorative Art.—The issue for January is an interesting one. The articles include one on "Early Italian Fresco Painters," another on the decoration of that weird building the German pavilion at the Paris Exhibition, and another on the influence of the gourd on ornamental forms. In a retrospect of 1900 the writer says: "The prospects for the New Century are bright in the extreme. It is an impossible thought that we could ever by any mischance revert to the sloughs of the 'forties' and 'fifties' of this century. The need is for some man of strong genius and individuality to weld into one harmonious whole the floating mass of beautiful ideas which threaten to overwhelm us by their multiplicity and fecundity."

Master Builders' Associations' Journal.—In the January issue a good deal is said in favour of the affiliation of the national associations of various trades connected with the building industry with the National Association of Master Builders of Great Britain and Ireland—a matter which will come before the annual meeting of the Federation at the end of this month. Regarding the recently-issued report of the Chief Labour Correspondent of the Board of Trade on the strikes and lock-outs of 1899, our contemporary remarks:—"The information conveyed shows how tight the grip of the trade union is upon the masters' business, and indicates, too, if employers are not alive to the situation that that grip will be tightened, in many instances to throttling point."

The Stones Trades Journal completes the first six months of its existence with a number (that for December) full of useful information. Articles are given on a Yorkshire stone *mine*, the use of tiles in business premises (a most desirable adaptation), "Scandinavian granites," artificial flag machinery, the active and inactive ingredients of cement, and electricity as power for cranes and travellers. At the conclusion of the article on cement the writer gives a few words of caution about what have been termed inactive ingredients. An excess of sulphuric oxide may indicate adulteration with gypsum. Carbonic acid shows that some of the lime is still in the form of carbonate, and that the cement is probably underburnt. Magnesia in excess must also be looked upon with suspicion. Insoluble silica must be classed among the inactive ingredients, and an analysis of cement ought therefore to state how much of the silica is soluble and how much is insoluble.

The R.I.B.A. Journal, dated December 8th, gives full details of a new system of practical perspective for artists and architects, by the Cavaliere Settimio Giampietri (of Rome). We shall publish a critique of this system shortly. Mr. Paul Waterhouse contributes a well-balanced criticism of that many-sided man, Coventry Patmore, who has lately found so excellent a biographer in Mr. Basil Champneys, and Mr. Arthur Cates continues his series of articles on architectural education, on this occasion dealing with the Department of Architecture at the Massachusetts Institute of Technology, Boston, U.S.A. In his review Mr. Waterhouse says: "It is in accordance with this law (i.e., that sculptured ornament should exist only upon such members as are obviously free of special stress) that the best styles avoid the enrichment of the shafts of columns, and while encouraging sculpture on a frieze are sparing in its use on an architrave. The blossoming-out of capitals is no infringement of the rule. The foliage at the summit of a Corinthian or Gothic shaft stands for a kind of testimony

that the pier, having done its duty from the base upwards in sufficiency of strength, is free at its head to show a symbol of rest—the resultant of a margin of energy." This is not completely logical.

The Brickbuilder (Boston, Mass.).—It is stated in the November issue that the various brick companies of New England are about to unite for the better management and control of the trade, and it therefore seems opportune to establish a uniform standard of size for the common brick. The American brick is supposed to measure 4in. by 8in.; its thickness varying from 2¾in. to 2½in.; consequently, it is difficult to obtain bricks by which two headers and a joint can be made to equal one stretcher. A uniform size is therefore a great desideratum. The number under review contains the first of a series of articles on Byzantine brickbuilding. Among the plates are plans and perspective of the Burbank Hospital at Fitchburg, Mass. (Kendall, Taylor and Stevens, architects).

The Architectural Review (Boston, Mass.).—Writing on "The Authorship of Architecture" in the November issue of this magazine, Mr. Russell Sturgis insists that architecture is not and cannot be the individual work of anyone. "In fact, the glory, the special delight and charm of architectural art, the one thing which raises it to a rank equal to that of mural painting or of stately sculpture, is this combination of many talents, of many personalites, of many minds in the production of one vast work of associated art." He becomes perturbed about the true sources of design in Wren's numerous and important works, asks how much Michael Angelo had to do with the design of the Farnese Palace, and makes the very deplorable, though perfectly accurate, statement that the active architect of to-day, once in his office, is compelled by the pressure on him on every side to put his studies and the memorandum which served for them into the hands of a highly-paid, trustworthy subordinate. But there is still a career, says Mr. Sturgis, for the artistic architect who shall prefer the certainty of a moderate fortune and happy labour to the possibilities of great semi-commercial success. Among the illustrations are two of the competitive designs for the United States Custom House at Baltimore, M.D., both Classic designs of considerable merit.

Carpentry and Building (New York).—Illustrations of eight of the Pan-American Exposition buildings are given in the issue for January.

Architecture (New York) is a supporter of the movement for architectural registration, and prints in its December issue the sections of the New York State Architects' Registration Law. The same subject is referred to in the article on architectural assistants. In America there is the same complaint of the profession being filled with assistants devoid of the qualities that are necessary for an architect. And the same complaint is made of parents and guardians hastily placing their charges in architects' offices with only a vague idea of what they are doing. Then we have the panacea. "The statutory registration of the profession is the only practicable means by which the overcrowded assistant can be protected and his position insured." Our contemporary very wisely emphasises the fact that without a sense of vocation for art, and without a naturally studious and persevering mind, the profession of architecture is a poor one to depend on; and we are now speaking of those who are thrown into it, without either of these qualifications.

The American Architect—Of the illustrations to the issue for December 1st two are worthy of mention—the house of Herr Franz Stuck at Munich, and a large country house at Cold Springs Harbour, Long Island, N.Y. (Carrère and Hastings, architects); the former is a stone building severely Classic in treatment, but very pleasing in the mass. We give an illustration of it on the previous page. The best building illustrated in the issue for December 15th is an English one, namely, the Italian Hospital in London, as reconstructed from Mr. Cutler's designs. In the issue for December 22nd is printed the president's address at the Convention of the American Institute of Architects. There is much of interest in it, and we hope to publish a summary, dealing with the main points raised, very shortly. Of the plates in the issue under notice is one of an apartment house in Central Park West, New York, by J. E. Ware and Sons, and H. S. S. Harde. This building is six storeys high, of brick and stone, with curved bays on each side running from basement to roof, the centre portion being slightly recessed. The effect is good.

Stone (New York) supports a scheme for a National Association of Quarrymen in America. There was such an association about ten years ago, but it is now extinct, hence this new proposal. We wish that this magazine printed more original articles and less from the columns of other journals.

The Canadian Architect and Builder.—An experiment in regard to colour as applied to architecture is being made with the buildings now in course of erection for the Pan-American Exposition at Buffalo, New York (see page 433 and centre plate). These buildings, like those at Chicago and Paris, will be constructed of steel covered with staff, and it has been decided to colour the exteriors under the direction of Mr. C. Y. Turner, of New York. The predominating colours will be ivory tints for the walls, with decorations in delicate shades of blue and green; all domes, minarets, &c., to be gilded, and the buildings roofed with metal stamped to represent Spanish tiles and painted a dull rich red. It is presumed that the colour will be applied, as at Chicago, by means of a spraying apparatus. The result will be interesting to note.

The Irish Builder is now reduced in price from threepence to one penny per copy. This begins with the issue for January 1st.

La Revue de l'Art Ancien et Moderne.—Paris Exhibition art exhibits fill the greater part of the issue for December. The remainder of the space is devoted to the work of Alexandre Lunois, an artist of no special consequence.

Berliner Architekturwelt.—This magazine is remarkable for the outrageous illustrations which it publishes; but the buildings shown in the December issue are comparatively moderate in conception—that is, they are not covered with crawling, wriggly, spidery details, the emblems of freedom degenerated into utter licence. The chief merit of the modern buildings of Germany is their originality, or rather novelty. For instance, in the Tietz stores in Berlin we see figures about 20ft. high on each side of the entrance, and also near the top of the central block, while the whole front to Leipzigerstrasse consists of sheets of plate glass fixed between girders. On the Krausenstrasse façade there is an entrance about 30ft. high from the ground to the crown of the arch. Halfway there is, apparently, a huge girder, about 4ft. deep, the space above and below being filled with plate glass. This is not architecture. German towns are being filled to-day with the unrestrained work of cranks and harebrained novelty-mongers. The January issue contains an illustrated article on the Golgotha Church in Berlin and some characteristic examples of modern German street architecture. The drawing of "Old Berlin" is so inferior that it is not worth printing as a plate.

New Patents.

These patents are open to opposition until February 12th.

1899.—Making Grooves in Wood, &c.—24,062. R. BOUGHTON, 87 Rosendale Road, West Dulwich, and J. E. SMITH, 91 Rosendale Road, West Dulwich, London, S.E. The object of this invention is to form grooves and channels (generally of a semi-circular or segmental form) in wood and other materials with as little waste as possible. For this purpose saws or planes are employed corresponding to the section desired. They are provided with a knob by which the cutting edge can be pressed round, enabling the material to be removed in one piece—instead of being shaved out, as is ordinarily done.

Material for Sewage Filter Beds.—25,239. S. BALDWIN, Bethesda Street Iron Works, Burnley. This invention consists of a self-contained machine having one pair of coarse-grooved breaking rollers, one pair of finer-grooved crushing rollers revolving at a faster surface speed, and a cylindrical screen. The apparatus is particularly adapted for dealing with the refuse ashes and clinkers from furnaces, rendering them suitable for use in sewage filter beds.

1900.—Bacterial Treatment of Sewage.—550, R. F. W. SMITH, 89 Bartholomew Close, and the Pioneer Investment Trust, Ltd., 11 St. Mary Axe, Leadenhall Street, London. After the sewage has been bacterially treated ozonised air (that is, air impregnated with ozone) is forced into the effluent, causing sterilisation and destroying any disease germs that may possibly be in the effluent.

Pile Drivers.—2,534. H. H. COCHRANE and A. H. COCHRANE, both of 39 Victoria Street, Westminster, S.W. In steam pile-drivers on the Lacour system the piston rod is solid and projects through the lower end of the cylinder resting on the top of the pile and the cylinder acts as the monkey, working up and down on the piston rod, being supplied with steam by a flexible pipe. This pipe rapidly wears out and it is the object of the present invention to remedy this defect. The piston rod therefore projects through both ends of the cylinder, the lower part being solid and resting on the pile (as in the Lacour system) and the upper part being hollow and receiving steam at its upper end.

Combined Square and Plumbing Instrument.—15,901. F. FONTANELLA, San Remo, Italy. This invention consists of a hollow set-square in which is pivoted a weighted needle that moves over a dial on the face of the square. A surface is only plumb when the needle points to zero.

Plaster Slabs.—19,608. C. W. T. EUSTANCE and J. D. COLLEY, Sandleheath, Fordingbridge, Hants. This invention relates to the manufacture of finished plaster in sheet form for internal work, requiring no setting coat, and also as a handy and cheap material for use outside as a substitute for brick, wood, or iron in temporary structures. The material consists of a mixture of plaster of Paris, 22 parts; water (containing a 5 per cent. solution of common salt), 44 parts; hair, 4 parts; oak sawdust, 15 parts; and shavings or horn parings, 15 parts. If for external use, the sheets are dipped in or thoroughly coated with creosote or tar.

Iron Staircases.—20,055. S. LION and W. STERN, jun., both of the firm of W. STERN, jun., AND CO., Feuerbach, Germany. The frames supporting the treads are so connected with one another by means of bolts that the stairs may be arranged to any desired curve without altering the form of the supporting parts.

The following specifications were published on Saturday last, and are open to opposition until February 19th. A summary of the more important of them will be given next week. The names in italics within parentheses are those of communicators of inventions.

1899.—22,549, GOSTLING, FRASER AND BOOTH, manufacture of cement. 22,775, HODKINSON AND HODKINSON, presses for forming and closing the sockets of shovels and spades. 24,758, NIENSTAEDT, screw taps. 24,759, NIENSTAEDT, die stocks. 24,812, REESE, manufacture of blocks and slabs from granite, slate, and other refuse. 25,124, BOULT (*Mahler and Friebe*), smoke-consuming fireplaces, stoves and furnaces. 25,202, KIMMAN, pneumatic drills. 25,281, LANE, electrical traction on the closed conduit system. 25,407, PHIBBS, holders for electric incandescent lamps. 25,734, TIMOFEEFF, artificial stone and cement. 25,739, FROYCK, pressing or moulding glass.

1900.—936, MOULD, frame stands for lavatory basins. 1,754, INGLESON, guards for circular saws. 2,451, PORTWAY AND GRAHAM, lifting jacks. 2,897, CHAPMAN, electric railways on a surface-contact system. 6,497, SMITH, lavatory basins. 8,839, FISCHER, dovetail-threaded taps, nuts and joints. 9,754, SABINE, appa-

ratus for conveying sanitary pipes and other similar articles from place to place. 12,498, ISTVAN, SZALAY AND JOZSEF KOROM, scaffolding. 12,715, LINKLETER, revolving cowls. 13,177, THOMSSEN AND THOMSSEN, tube for lining deep bore-holes. 14,751, BRUNSCHWYLER AND PÄRLI, acetylene apparatus. 18,406, GRANT AND GRANT, junior, guards for circular saws. 18,502, WALSER AND CARTIER, acetylene-gas apparatus. 19,225, LANDEKER AND ALBERT, process for the production of seamless branch pieces for piping. 19,515, LEBIODA, process for rendering wood fireproof and rot-proof. 19,728, HÜPPI, lifting jacks. 19,774, CROPPI AND EDANT, apparatus for flushing water-closets. 20,275, WERTHEN, mixing appliance for incandescent gas burners. 20,341, CARPENTER, means for lighting gas burners. 20,657, SMITH, moulding presses.

Surveying and Sanitary Notes.

The Construction of Subways.—The question of the construction of subways for all kinds of mains, drains, cables, and ducts has been much discussed, and the advisability of constructing such urged. In all new leading thoroughfares in the City, and generally in the metropolis, subways form part of the plans for the construction of the streets; an eminent engineer who has given some attention to the subject has estimated that the expenditure involved in carrying the scheme into effect would amount to £20,000,000. But there can be no doubt that something will eventually have to be done on a similar scale in order to avoid the great nuisance now occasioned by the constant tearing up of the streets: and the sooner the better.

The Cost of London Improvements.—The Tramways and Street Widenings Bill of the London County Council, which would authorise the Council to construct new tramways, to reconstruct and alter tramways, to work tramways by electric traction, and to make new streets and street improvements, estimates the amount which the Council will require to expend on capital account for the purposes of the measure as follows:—For new streets and street improvements and works connected therewith, £1,188,000; for the construction of new tramways and reconstruction of existing tramways and other tramway works by this Bill to be authorised, and for purchase of land for a generating station, £957,000, or £2,145,000 in all. The length of the tramways proposed to be laid down is upwards of 28 miles. In the case of quite a number of properties the Council propose to take a portion only for the improvement or widening of the roadways—forecourts, gardens, or private pavements, for example—and certain of the councils of the metropolitan boroughs are to be called upon to contribute towards the expense of some of the improvements. The estimate of gross expenditure under the General Powers Bill of the Council is £177,450, the proposals embodied in the measure including a widening of Central Street, St. Luke's, and of Brixton Road, near Kennington Park; the acquisition of land for sites for fire brigade purposes; further lands for the purposes of the Rotherhithe and Ratcliff Tunnel; and purchase of lands for an extension of Brockwell Park.

Incorporated Institute of British Decorators In connection with this Institute the headquarters of which are at the Old Painter's Hall, Little Trinity Lane, London, a Northern District has recently been formed. The district comprises the counties of Northumberland, Cumberland, Westmoreland, Durham, Yorkshire, Lancashire, and Cheshire, and commenced its work with the New Year. The principal objects of the Institute are to elevate the decorator's craft and to improve the status and qualifications of its members. This will be done by disseminating information among the members, arranging lectures, and holding examinations to test the fitness of candidates for admission to membership of the Institute.

Keystones.

Mr. G. F. Watts, R.A., has joined the Labour Association for promoting co-partnership among the workers.

Craighlaw House, Kirkcowan, has been renovated and improved by Mr. Charles S. S. Johnston, architect, Edinburgh.

St. Peter's Church, Port Isaac, has had a new stained-glass window erected in the chancel. The window is a single lancet light.

Wemyss Bay United Free Church.—Three stained-glass windows have been introduced into the chancel. The windows have been executed by Messrs. Clayton and Bell, of London.

The National Photographic Record Association.—Mr. George Scamell (hon. secretary) has presented 103 photographs of the historical houses of London, and Mr. T. Bolas has made a present of photographs of old Newgate, to this association.

Old French Church at Waterford.—A fund is being raised for repairing the ruins of the old French Church at Waterford, the burial place of the family of Lord Roberts, who highly approves of this method of showing appreciation of his services to the Empire.

A Handy Calendar for 1901 is issued by that well-known firm of ventilating engineers, Messrs. Robert Boyle and Son, Limited, of Holborn Viaduct. It is printed in gold on a piece of imitation ivory, the opposite side having scales. The calendar is enclosed in a neat paper case and is of a very handy size—about 3¼in. by 1¾in.

New Bradford City Architect.—A sub-committee meeting was recently held to consider applications for the post of City Architect. There were originally 70 candidates, of whom six had been requested to appear before the committee. Eventually the appointment was given to Mr. F. E. P. Edwards, A.R.I.B.A., one of the chief assistants engaged in the City Architect's department at Liverpool.

Workmen's Dwellings in Newcastle.—The Town Improvement Committee of Newcastle Corporation recently considered the question of providing accommodation for poor families who have been displaced by the city improvements at Ouseburn Bank. It was decided to approve the plans, which were before the Committee recently, for a new block of buildings in Albion Row. The block will contain accommodation for a large number of families in sets of two and three rooms.

A Lady Decorator.—With an efficient staff of workpeople under her control, some of whom have worked for her for many years, Mrs. Cox (Mabel Larkins), of 82 High Street, Hampstead, N.W., is prepared to undertake all kinds of interior decoration and furnishing; she will also be glad to submit designs and schemes of decoration for church work. Mrs. Cox has lately furnished and decorated Mr. Hamo Thornycroft's house at Hampstead, a fact which had the effect of creating a general demand for her services.

Glasgow Royal Infirmary Competition.—In connection with the recent limited competition for plans for the reconstruction of the Glasgow Royal Infirmary, Mr. Hippolyte J. Blanc, architect, Edinburgh, one of the competitors, has received a letter from the City Chamberlain informing him that when the envelopes of the unsuccessful competitors were opened, his set of drawings bore the letter "B," which received three votes as being first in order of merit. The following are the authors of the respective designs, with the approximate costs as estimated by Mr. Robert Whitson, the committee's measurer:—

A—Sydney Mitchell and Wilson, Edinburgh	£303,000
B—Hippolyte J. Blanc, Edinburgh	269,000
C—Malcolm Stark and Rountree, London	252,000
D—John James Burnet, Glasgow	219,000
E—James Miller, Glasgow	241,000
F—H. E. Clifford, Glasgow	238,000
G—H. Percy Adams, London	321,000
H—A. Hessel Tillman, London	245,000
I—Campbell Douglas and Morrison, Glasgow	225,000
J—T. L. Watson and H. Mitchell, Glasgow	235,000

A Statue to the late Senor Canovas has been unveiled in the Senate Square, in Madrid.

The Bells and Belfry of the Church of Exhall Parish have just been restored. Many other improvements in the church have lately been made.

The Peterborough Cathedral Restoration Committee have issued a notice regretting that the funds are exhausted, and that they are compelled to stop the works until further subscriptions are forthcoming.

Highgate Archway.—The last portion of the old Highgate Archway has now been removed. The memorial stone recording the fact that the first stone of the arch was laid on October 31st, 1812, has also been removed. Great difficulty was experienced in the demolition, owing to the manner in which the work was carried out. Portions of the old arch were so solidly put together that it was like hewing rock.

The New Admiralty.—It has been decided at last to complete the quadrangle of buildings at the back of the old Admiralty, and Messrs. Leeming and Leeming, the architects, who have the carrying-out of the first and second blocks, are now busily engaged upon the drawings for the third, and in the course of the next two or three weeks the work of excavating for the foundations will be commenced.

A New Drill Hall at Talgarth for the F Company, 1st V.B. South Wales Borderers, has been opened. It was erected at a cost of £365. The designer was Mr. James Gunter, Glasbury, the contractors being Messrs. J. P. Games, Fred Morgan, and Levi Pugh. The building is 52ft. long and 36ft. broad, and is built with best red brick front, sides of corrugated iron, and lined with felt, and match-boarded throughout.

The New War Office Building.—The First Commissioner of Works has entrusted to Mr. Clyde Young the carrying-out of the plans for the new War Office buildings which his father, Mr. William Young, had in hand at the time of his death. Mr. Clyde Young understood every point of his father's intention, and the architectural design will be realised by him under the close superintendence of Sir John Taylor, consulting surveyor to the Office of Works.

The Gobelins Manufactory has just completed a series of magnificent tapestries, woven in silk and wool, on which it has been engaged for twelve years. The Elysée Palace, the National Library, the Versailles Museum, and the Archives, Paris, are to benefit by these works of art, which include reproductions of famous pictures by Le Brun and Boucher and an original composition, representing a tournament, by M. Jean Paul Laurens.

The Church of Sacré Cœur, at Montmartre.—The rare Sienna marbles which are to be used in the construction of the high altar of the Montmartre Basilica or Church of the Sacré Cœur have arrived in Paris. The marbles have been specially chosen by M. Rauline, the architect of the church. The construction of the altar is expected to take five months. The money spent on the basilica up to the present time exceeds £1,400,000.

Mr. George Smith, who was at one time a well-known exhibitor at the Royal Academy, died last week in his 72nd year. When a very young man, having shown much promise as a student in the Academy schools, he attracted the notice of the late C. M. Cope, R.A., and was engaged by him as an assistant in executing some of the frescoes for the House of Lords; but he soon passed from "historical" to "domestic" art, and quickly became known for his pictures, mostly of cabinet size, more or less in the manner of Wilkie and Webster.

The Architectural Association held a meeting last Friday evening, Mr. W. H. Seth-Smith, president, in the chair. Messrs. H. W. Clapson, C. L. Gill, H. J. Rippon and K. D. S. Robinson having been elected members, a vote of condolence was passed to the family of the late Mr. H. C. Boyes, F.R.I.B.A., as past-president of the Association. Messrs. R. Weir Schultz and Beresford Pite lectured upon the subject of "Hints for the Preparation of Studentship Drawings," reports of which are, owing to the great pressure on our space, held over till next week's issue.

New Companies.

Bethesda Granite Quarries, Limited.

This company was registered on December 12th, 1900, with a capital of £2 000 in £1 shares to acquire the business of granite merchants, quarry owners, miners, smelters, mineral and metal merchants, engineers, contractors, &c.

London and County Contracts, Limited.

This company was registered on December 17th, 1900, with a capital of £5,000 in £1 shares to carry on the business of estate owners, builders, contractors for railways, tramways, and public works, &c. The first directors (to number not less than two nor more than four) are to be appointed by the subscribers.

Marble and Lithographic Stone Development Syndicate, Limited.

This company was registered on December 17th, 1900, with a capital of £20,000 in £1 shares to adopt an agreement with F. G. Bate and others to acquire certain inventions, to manufacture and deal in artificial marble, lithographic stones, and materials used in connection therewith, and to obtain chemically pure lime and carbonic acid gas.

D. W. Richards, Limited.

This company was registered on December 17th, 1900, with a capital of £5,000 in £1 shares to acquire the business carried on by D. W. Richards, at Marlborough Road, Newport (Mon.), and to carry on the business of builders, contractors, decorators, stone, sand, lime, brick, timber and hardware merchants, &c. The first directors (to number not less than two nor more than eight) are to be appointed by the subscribers.

John Stow, Limited.

This company was registered on December 12th, 1900, with a capital of £6,000 in £1 shares to carry on the business of joiners, carpenters, shopfitters, shop-front builders, masons, builders, timber, stone, sand, brick and hardware merchants, contractors, &c. The first directors (to number three) are J. Stow, F. J. Liversidge, and W. H. Bottomley. Registered office: Teakwood Works, 3 Free Street, Bradford.

Bedlington Brick Company, Limited.

This company was registered on December 13th, 1900, with a capital of £5,000 in £1 shares to acquire a leasehold brickfield at Bedlington, Northumberland, and to carry on the business of brick, tile, and pipe manufacturers, &c. The first directors (to number not less than three nor more than five) are J. Brassell, T. Shevels and A. Bramley. Registered office: Bedlington Brickworks, Bedlington Station, Northumberland.

B. Ward and Company, Limited.

This company was registered on December 12th, 1900, with a capital of £35,000 in £1 shares (17,500 preference) to acquire the business carried on at Westminster as B. Ward & Co. and to carry on the business of concrete experts, wood block and mosaic flooring manufacturers and contractors, &c. The first directors (to number not less than two nor more than five) are A. J. B. Ward and S. H. Blackstone (both permanent).

Bischof White Lead Corporation (1900), Ltd.

This company was registered on December 12th, 1900, with a capital of £350,000 in £1 shares to acquire the business of Bischof's White Lead Syndicate, Limited, including its patents for the United Kingdom, Austria, Austria-Hungary, Belgium, France, Germany, Spain, and the United States of America, and to manufacture and deal in lead, white lead, paint, varnish, oils, pigments, &c. The first directors (to number not less than four nor more than 10) are R Mond, E. L. Pease, J. F. Pease and J. F. L. Brunner.

Carsluith Granite Company, Limited.

This company has been registered in Scotland with a capital of £10,000 in £1 shares to acquire the lease of a quarry and lands near Creetown, Kirkcudbrightshire.

Anglo-Norwegian Quarry Company, Limited.

This company has been registered in Scotland with a capital of £10,000 in £1 shares to prospect and work lands, quarries, mines, &c. Registered office: 45 Renfield Street, Glasgow.

C. E. Harris and Co., Limited.

This company was registered on December 20th, 1900, with a capital of £500 in £1 shares to carry on the business of builders, contractors, merchants, farmers, property owners, financiers, &c. Registered office: Rose Villa, Sandhurst, Berkshire.

Bowes Ganister and Freestone Company, Limited.

This company was registered on December 13th, 1900, with a capital of £1,700 in £50 shares to quarry and deal in ganister, freestone, &c., and to lease or otherwise acquire the ganister or freestone within and under certain land on Bowes Moor, Yorkshire.

Lucas Brothers, Limited.

This company was registered on December 13th, 1900, with a capital of £13,500 in £1 shares to acquire the business carried on at Dunston, near Gateshead, as Lucas Brothers, and to carry on the business of firebrick, fireclay goods, and cement manufacturers, coal, coke, and manure merchants, dealers in lime and building materials, iron merchants, &c. A. Lucas is the first director.

Bingham Patent Paving Company, Limited.

This company was registered on December 17th, 1900, with a capital of £50,000 in £1 shares, to adopt an agreement with J. E. Bingham, and to carry on the business of paviors, granite, stone, timber, and wood merchants, contractors, patent owners, &c. The first directors (to number not less than three nor more than seven) are C. Wardlow (chairman), J. Grant, R. Thompson, H. W. Dibnah and E. T. Scammell.

George F. Arney, Limited.

This company was registered on December 14th, 1900, with a capital of £5,000 in £1 shares, to acquire and carry on the business of timber and wood merchants, &c., carried on by G. F. Arney at 57-59 St. George's Road, Southwark, S.E. The first directors (to number not less than two nor more than three) are G. F. Arney, T. W. W. Torckler and J. H. Rowntree. Registered office: 59 St. George's Road, Southwark, S.E.

Bradley Brothers, Limited.

This company was registered on December 13th, 1900, with a capital of £15,000 in £1 shares (5,000 preference), to take over the business of whinstone, ironstone, and limestone merchants, quarry and mine owners, paviers, &c., carried on at Great Ayton and elsewhere in the county of York, and at Stockton-on-Tees, Durham, as Bradley Brothers. The first directors (to number not less than two nor more than five) are J. Hedley, F. W. Chadwick, G. Bradley, T. Bradley and M. H. Bradley.

Webster's Brickworks Railway Company, Lim.

This company was registered on December 10th, 1900, with a capital of £10,000 in £5 shares to acquire a railway recently constructed or in course of construction, leading from a point near Coventry, on the Coventry and Nuneaton branch of the London and North-Western Railway, to a point in or near Stoney Stanton Road, Coventry. The first directors (to number not less than three nor more than seven) are F. Warwick, H. Webster, G. H. Thynne and W. H. Harris. C. S. Irby, Webster's Brickworks, Limited, and Aubrey, Seaman and Co., Limited, have certain rights of nominating directors.

Quarry Notes.

Newfoundland Slate.—John W. Edwards and A. T. Hughes, slate manufacturers of Granville, N.Y., have returned from a trip to Newfoundland, and they express themselves as much pleased with the slate prospects. A syndicate, in which Granville parties are interested, is now at work there.

Slate at Killaloe.—There is a range of low hills beginning at Ballyglass and continued on through Corbally, the Arrah Mountains, to Killaloe, all of the same geological formation. Excavations have been made at various points along this line, and in every instance excellent slate was unearthed. Want of capital, or enterprise, or improvidence on the part of managers led to the closing of all except one, the present highly successful Killaloe Slate Quarries. Although called Killaloe they are six miles from it, and a similar distance from Nenagh, both railway towns. There is another quarry open, but unworked, which belongs to an English company, which pays a rent of £40 for its unused rights. This is called Gap Quarry, is about half a mile from the Killaloe Slate Company's quarry, and is said to be just as good as the latter. The slates are carted by local farmers to short distances, but excellent facilities of transit are given by the Grand Canal Company, which has a quay or wharf at Garry Kennedy, about two Irish miles distant. The boats ply between Dublin and Limerick. At the Killaloe company's works there are about a hundred hands employed, and there is ample work for as many more if they could be had. The slates are excellent in quality, command a good price, and cannot be supplied, at least sometimes, for a considerable time after being ordered. Indeed, scarcity of workmen is the principal difficulty that the company has to meet.

COMING EVENTS.

Wednesday, January 9.

GEOLOGICAL SOCIETY OF LONDON.—Meeting at 8 p.m.

INSTITUTE OF SANITARY ENGINEERS.—New Year's Presidential Address.

NORTHERN ARCHITECTURAL ASSOCIATION. — Mr. Allan Greenwell, F.G.S., A.M.I.C.E., M.S.I., on "Bitumen: Its Application in Architecture and Engineering," 7.30 p.m.

SANITARY INSTITUTE.—Finance Committee meeting at 4.30 p.m. Council meeting at 5 p.m.

Thursday, January 10.

SHEFFIELD SOCIETY OF ARCHITECTS AND SURVEYORS Mr. H. J. Potter, A.R.I.B.A., on "The Housing of the Working Classes."

SURVEYORS' INSTITUTION.—Meeting of Sessional Papers Committee at 4 p.m.

SOCIETY OF ANTIQUARIES OF LONDON.—Meeting at 8.30 p.m., Ballot for the Election of Fellows.

INSTITUTION OF ELECTRICAL ENGINEERS.—Meeting at 8 p.m.

Friday, January 11.

GLASGOW AND WEST OF SCOTLAND TECHNICAL COLLEGE ARCHITECTURAL CRAFTSMEN'S SOCIETY.—Professor Gourlay, A.R.I.B.A., B.Sc., on "A Tour in Germany, Switzerland, and Italy," 8 p.m.

BIRMINGHAM ARCHITECTURAL ASSOCIATION.—Meeting at 6.45 p.m.

INSTITUTE OF CIVIL ENGINEERS (Students' Meeting). Mr. Wilfrid Airy, B.A., M.I.C.E., on "Geodesy," 8 p.m.

Saturday, January 12.

DUNDEE INSTITUTE OF ARCHITECTURE.—Mr. R. S. Douglas on "Architectural Decoration: (1) As Clothing, (2) As Structural," 7 p.m.

Monday, January 14.

INSTITUTION OF MECHANICAL ENGINEERS.—Prof. J. A. Ewing, F.R.S., M.I.M.E., on "The Structure of Metals," 8 p.m.

BRISTOL SOCIETY OF ARCHITECTS. — Mr. Frank Cowlin on "Building Contracts from a Contractor's Standpoint," 8 p.m.

SOCIETY OF ARTS (Cantor Lecture).—Mr. J. Liberty Todd on "Elementary Art Education."—I., 8 p.m.

SURVEYORS' INSTITUTION.—Discussion on the paper read at last meeting: "The Future of the London Water Supply," by R. E. Middleton. 8 p.m.

PHILOSOPHICAL SOCIETY OF GLASGOW: ARCHITECTURAL SECTION. Mr. Stephen Adam on "Bernard Palissy, Potter and Politician," 8 p.m.

Tuesday, January 15.

ROYAL INSTITUTION.—Professor J. A. Ewing on "Practical Mechanics." 3 p.m.

RUSKIN SOCIETY OF BIRMINGHAM.—The Rev. John H. Skrine, M.A., on "Illusion," 8 p.m.

Wednesday, January 16.

NORTHERN ARCHITECTURAL ASSOCIATION.—Students' evening.

BRITISH ARCHÆOLOGICAL ASSOCIATION.—Meeting at 8 p.m.

SOCIETY OF ARTS.—Mr. H. Snowden Ward on "Photography of Natural Colour by the McDonough-Joly Process," 8 p.m.

COMPLETE LIST OF CONTRACTS OPEN.

DATE OF DELIVERY.		WORK TO BE EXECUTED.	FOR WHOM	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
		BUILDING.		
Jan.	11	Dalton-in-Furness—Building Wall	District School Board	Clerk, 68 Market Street, Dalton-in-Furness.
"	12	Maldon, Essex—Coach House and Stables	C. W. Bunting	P. M. Beaumont, Architect, Maldon.
"	12	Maldon, Essex—Alterations to House	C. W. Bunting	P. M. Beaumont, Architect, Maldon.
"	12	Minehead, Somerset—Market	Urban District Council	W. J. Tamlyn, Architect, Minehead.
"	12	Hovingham, near Malton, Yorks—Police Station		County Surveyor, Northallerton.
"	12	London, W.C.—Swimming Baths, &c.	Holborn Borough Council	H. C. Jones, 197 High Holborn, W.C.
"	13	Stretford—Combined Bowl House and Shelter	Urban District Council	H. Royle, Surveyor, Council Offices, Old Trafford.
"	14	London, W.—Schools, Offices, House, &c.	Hanwell School Board	W. Pywell, 40 Great James Street, Bedford Row, W.C.
"	14	Uppermill, near Oldham—Cement, Bricks, Flags, &c.	Saddleworth Urban District Council	T. S. McCallum, 52 Corporation Street, Manchester.
"	14	Woolacombe—Detached Villa Residence		E. Henshall, Estate Office, Woolacombe.
"	14	Birkenhead—Boundary Walls, &c	Corporation	C. Brownridge, Borough Engineer, Town Hall, Birkenhead.
"	14	Leeds—Underground Transformer Chambers	Lighting Committee	H. Dickinson, 1 Whitehall Road, Leeds.
"	14	Sutton, Surrey—Buildings and Ironwork	Gas Company	G. M. Robins, Engineer, Company's Offices, Sutton.
"	14	Lerwick, Shetland—Cottage Hospital		W. A. B. Laing, 13 George Street, Edinburgh.
"	14	Halifax—Committee Rooms, House, &c.	Highways Committee	J. Lord, Borough Engineer, Town Hall, Halifax.
"	14	Derby—Chimney Shaft	Corporation	A. Eaton, 6 St. James's Street, Derby.
"	15	Barrow-in-Furness—Erection of Hotel, Cottages, &c.		Harrison, Hall and Moore, 36 Albert Road, Morecambe.
"	15	Alderley Edge, Cheshire—Police Station		H. Beswick, County Architect, Newgate Street, Chester.
"	15	Halifax—Houses		R. Berry, Architect and Surveyor, Commercial Street, Halifax.
"	15	Keswick, Cumberland—Police Station, Court House and Residence	County Property Committee	G. D. Oliver, County Architect, Carlisle.
"	15	Leeds—Condenser Cellar, Roof, Engine Beds, &c.	Corporation	Milnes and France, Architects, Bradford.
"	15	Wolverhampton—School Buildings		F. T. Beck, Wulfrun Chambers, Darlington Street, Wolverhampton.
"	15	London, S.W.—Postmen's Office	H.M. Commissioners of Works, &c.	J. Wager, H.M. Office of Works, Storey's Gate, S.W.
"	16	Humberstone, near Grimsby—Blacksmith's Shop		Mr. Drewery, Blacksmith, Humberstone.
"	17	Leeds—Foundations for Band Stand	Corporation	City Engineer, Municipal Buildings, Leeds.
"	17	Southampton—Alterations, &c., to Ordnance Survey Offices	H.M. Commissioners of Works, &c.	Secretary, H.M. Office of Works, &c., Storey's Gate, S.W.
"	17	Andover—Alterations, &c., to Workhouse	Guardians	J. Wormaid, Surveyor, Andover.
"	17	Preston, Lancs.—Extension of Police Station	Corporation	Borough Surveyor, Town Hall, Preston.
"	19	Walker, Northumberland—Refuse Destructor	Urban District Council	Handcock and Dykes, 1 Victoria Street, Westminster, S.W.
"	21	London, N.—Brick Storm-Water Culvert	Hornsey Urban District Council	E. J. Lovegrove, Offices, Southwood Lane, Highgate, N.
"	21	London, N.—Branch Public Library	Hornsey Urban District Council	Surveyor, Council Offices, Southwood Lane, Highgate, N.
"	21	Bury, Lancs—Retorts, Firebricks and Fireclay	Gas Committtee	H. Simmonds, Engineer, Gasworks, Bury.
"	21	Upminster—Cemetery Chapel, &c.	Romford Rural District Council	E. M. Whitaker, 1 Gresham Buildings, Basinghall Street, E.C.
"	23	Louisville, Monaghan—Boarding School Wing	St. Louis Convent	Hague and M'Namara, 50 Dawson Street, Dublin.
"	23	Surbiton—Mortuary	Urban District Council	S. Mather, Surveyor, Council Offices, Ewell Road, Surbiton.
"	25	Branksome, Dorset—Repairing, &c., Police Station	Standing Joint Committee	County Surveyor, County Council Offices, Sherborne.
"	25	Dungeness, Kent—Coastguard Buildings	Admiralty	Coastguard Watch Room, No. 2 Battery, Dungeness.
"	25	Coventry—Post Office	H.M. Commissioners of Works, &c.	Postmaster, Coventry.
"	25	Bexhill, Sussex—Sessions Court	East Sussex County Council	F. J. Wood, County Surveyor, County Hall, Lewes.
"	25	Gortlettera, Mohill, Co. Leitrim—Alteration to Church	Very Rev. J. Maguire, P.P.	Hague and M'Namara, 50 Dawson Street, Dublin.
"	25	St. Mawes, near Falmouth—Coastguard Buildings	Admiralty	Director of Works Department, 21 Northumberland Avenue, W.C.
		ENGINEERING.		
Jan.	11	Bath—Reservoir	Rural District Council	H. Sheppard, 3 North Parade, Bath.
"	12	Swinton, Lancs.—Precipitation Tanks	Urban District Council	H. Entwistle Council Offices, Swinton.
"	15	York—Filter Beds	Waterworks Company	H. W. Humphreys, Company's Offices, Lendal Buildings, York.
"	15	Wolverhampton—4½ Miles of Tramway Track	Tramways Committee	J. W. Bradley, Borough Engineer, Town Hall, Wolverhampton.
"	15	London, N.—Machinery and Fittings at Laundry	Metropolitan Asylums Board	T. D. Mann, Clerk, Board's Offices, Embankment E.C.
"	16	London, E.—Electric Cranes	Poplar Borough Council	Electrical Engineer, Works, Glaucus Street, Bromley-by-Bow, E.
"	16	Burnley—Purifiers	Gas Committee	J. P. Leather, Gas Engineer, Gasworks, Burnley.
"	16	Ryde, Isle of Wight—Engines, &c.	Corporation	J. T. Harvey, Engineer, Waterworks, Ashley Brading, I.W.
"	16	Salford—Tramway	River Irwell Conservancy Committee	Borough Engineer, Town Hall, Salford.
"	17	Herne Bay, Kent—Laundry Machinery	Metropolitan Asylums Board	T. D. Mann, Clerk, Board's Offices, Embankment, E.C.
"	18	Glasgow—Telephone Apparatus	Corporation	J. Young, 88 Renfield Street, Glasgow.
"	19	Rotherham—Electricity Meters	Corporation	H. Copnall, Town Clerk, Council Hall, Rotherham.
"	21	Sheffield—Engine	Tramways Committee	A. L. C. Fell, General Manager, Town Hall, Sheffield.
		IRON AND STEEL.		
Jan.	11	Manchester—Nails, Steel, Bolts, &c.	Ship Canal Co.	Stores Department, Manchester Docks, Salford.
"	14	Birkenhead—Wrought-iron Fencing	Corporation	C. Brownridge, Borough Engineer, Town Hall, Birkenhead.
"	14	Uppermill, near Oldham—Girder, Manhole Covers, &c.	Saddleworth Urban District Council	T. S. McCallum, 52 Corporation Street, Manchester.
"	16	Leeds—Fencing		City Engineer's Office, Municipal Buildings, Leeds.
		ROADS AND CARTAGE.		
Jan.	11	Nottingham—Granite and Slag	County Council	E. P. Hooley, Shire Hall, Nottingham.
"	14	Birkenhead—Paths	Corporation	C. Brownridge, Borough Engineer, Town Hall, Birkenhead.
"	14	Kendal—Road Works	Corporation	R. H. Claucas, Borough Surveyor, Town Hall, Kendal.
"	14	Uppermill, near Oldham—Flags	Saddleworth Urban District Council	T. S. McCallum, 52 Corporation Street, Manchester.
"	14	Teddington—Works	Urban District Council	M. Hansworth, Surveyor, Council Offices, Elmfield House, Teddington.
"	14	Rugby—Stone	Urban District Council	D. G. Macdonald, Surveyor, Rugby.
"	15	London, S.E.—Road Works	Lewisham Borough Council	Surveyor, Town Hall, Catford, S.E.
"	16	Lancaster—Setts, Flags, Kerbs	Corporation	Borough Surveyor, Market Square, Lancaster.
"	17	London, W.—Carting, &c.	St. Marylebone Borough Council	J. P. Waddington, Surveyor, Town Hall, St. Marylebone, W.
"	17	Bethnal Green—Granite, &c.	Borough Council	F. W. Barratt, Surveyor, Town Hall, Church Road, Bethnal Green.
"	17	London, W.—Watering Roads	St. Marylebone Borough Council	J. P. Waddington, Surveyor, Town Hall, St. Marylebone, W.
"	18	Preston, Lancs.—Paving, &c.	Corporation	Borough Surveyor, Town Hall, Preston.
"	22	Motherwell, Scotland—Road Metal	Commissioners	Burgh Surveyor, Town Hall, Motherwell.
"	23	Surbiton—Making-up Roads, &c.	Urban District Council	S. Mather, Surveyor, Council's Offices, Ewell Road, Surbiton.
		SANITARY.		
Jan.	12	Lowestoft—Scavenging	Malford Rural District Council	A. Smith, District Surveyor, Norfolk House, Oulton Broad.
"	12	Manchester—Sewer Diversion	Paving, Sewering, &c. Committee	City Surveyor, Town Hall, Manchester.
"	14	Shalford, near Guildford—Scavenging	Hambleton Rural District Council	F. Smallpiece, 139 High Street, Guildford.
"	15	London, S.E.—Sewerage Works	Lewisham Borough Council	Surveyor, Town Hall, Catford, S.E.
"	15	Bingley, Yorks—Scavenging	Urban District Council	A. Platts, Clerk, Town Hall, Bingley.
"	17	Easingwold, Yorks—Sewerage Works	Rural District Council	Fairbank and Son, 13 Lendal, York.
"	17	Lutterworth—Pipe Sewers	Rural District Council	W. H. Simpson, Engineer, Corridor Chambers, Market Place, Leicester.
"	17	Woolwich—Two Slop Carts and Sweeping Machine	Borough Council	Borough Surveyor, Maxey Road, Plumstead.
"	21	London, N.—Sewers, &c.	Hornsey Urban District Council	E. J. Lovegrove, Engineer, Offices, Southwood Lane, Highgate, N.
"	28	Dartford—Stoneware and Iron Sewers	Rural District Council	G. H. Tait, Engineer to Council, Lowfield Street, Dartford.
"	28	Dartford—Pipe Sewers and Pumping Station	Rural District Council	G. H. Tait, Engineer to Council, Lowfield Street, Dartford.
"	28	Henfield, Sussex—Drainage	Steyning West Rural District Council	E. Cripps, Council Offices, Hams Road, New Shoreham.
"	29	Dartford—Pipe Sewers, &c.	Rural District Council	W. Harston, Surveyor, Sessions House, Dartford.
		TIMBER.		
Jan.	15	Dublin—Oak Parquetry, &c.	County Council	County Surveyor, County Council Offices, Four Courts, Dublin.
"	24	London, S.E.—Timber	Lambeth Borough Council	H. Edwards, Borough Engineer, Town Hall, Kennington Green, S.E.

COMPETITIONS OPEN.

DATE OF DELIVERY.		DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	BY WHOM ADVERTISED
Jan.	18	Hindley—Public Offices	£50, £25, £10	A. Holden, Surveyor, Hindley.
"	28	Tanfield, Tantobie, 3- and 4-roomed Workmen's Cottages	£10, £5	R. Heslop, Surveyor to Urban District Council, Dean View, Burnopfield
Feb.	13	Bristol—Alterations, &c., to Petty Sessional Court	£100, £50	P. Addie, City Valuer, Market Chambers, Bristol.
"	14	Ballarat, Australia—Statue		J. W. Nedwell, Hon. Sec., Soldiers' Statue Fund, Ballarat, Australia.
March	25	Basford—Sewerage Scheme		C. J. Spencer, Clerk, Public Offices, Basford

CURRENT PRICES.

		£ s. d.	£ s. d.
FORAGE.			
Hay, best	per load	4 0 0	4 7 6
Sainfoin mixture	do.	3 10 0	4 10 0
Clover, best	do.	4 5 0	5 0 0
Beans	per qr.	1 8 9	1 9 0
Straw	per load	1 8 0	1 18 0
OILS AND PAINTS.			
Castor Oil, French	per cwt.	1 12 6	—
Colza Oil, English	do.	1 10 9	—
Copperas	per ton	2 0 0	—
Lard Oil	per cwt.	1 19 0	1 19 6
Lead, white, ground, carbonate	do.	1 4 10	—
Do. red	do.	1 0 4½	—
Linseed Oil, barrels	do.	1 10 3	—
Petroleum, American	per gal.	0 0 6½	0 0 6¾
Do. Russian	do.	0 0 6	0 0 6½
Pitch	per barrel	0 7 6	0 8 0
Shellac, orange	per cwt.	2 19 0	—
Soda, crystals	per ton	3 2 6	3 5 0
Tallow, Home Melt	per cwt.	1 5 6	—
Tar, Stockholm	per barrel	1 8 6	—
Turpentine	per cwt.	1 9 3	1 9 6
METALS.			
Copper, sheet, strong	per ton	86 0 0	—
Iron, Staffs., bar	do.	7 10 0	9 10 0
Do Galvanised Corrugated sheet	do.	12 0 0	12 10 0
Lead, pig, Spanish	do.	16 6 3	16 8 9
Do. do. English common brands	do.	16 15 0	—
Do. sheet, English, 3lb. per sq. ft. and upwards	do.	21 0 0	22 0 0
Do. pipe	do.	23 0 0	—
Nails, cut clasp, 3in. to 6in.	do.	12 0 0	13 0 0
Do. floor brads	do.	11 15 0	12 15 0
Steel, Staffs., Girders and Angles	do.	8 0 0	8 5 0
Do. Mild Bars	do.	8 5 0	8 15 0
Tin, Foreign	do.	117 17 6	118 7 6
Do. English ingots	do.	124 5 0	—
Zinc, sheets, Silesian	do.	22 10 0	—
Do. do. Vieille Montaigne	do.	23 2 6	—
Do. Spelter	do.	18 17 6	19 0 0
TIMBER.			
SOFT WOODS.			
Fir, Dantzic and Memel	per load	3 0 0	4 0 0
Pine, Quebec Yellow	do.	4 7 6	6 0 0
Do. Pitch	do.	2 18 0	3 6 0
Laths, log, Dantzic	per fath.	4 10 0	5 10 0
Do. Petersburg	per bundle	0 0 9	0 0 10½
Deals, Archangel 2nd & 1st	per P. Std.	12 15 0	17 0 0
Do. do. 4th & 3rd	do.	—	10 11 5
Do. do. unsorted	do.	—	—
Do. Riga	do.	6 15 0	8 10 0
Do. Petersburg 1st Yellow	do.	14 15 0	15 5 0
Do. do. 2nd „	do.	8 15 0	14 15 0
Do. do. Unsorted „	do.	5 5 0	13 0 0
Do. do. White	do.	9 10 0	11 5 0
Do. Swedish	do.	8 10 0	13 10 0
Do. White Sea	do.	10 0 0	16 15 0
Do. Quebec Pine, 1st	do.	19 5 0	—
Do. do. 2nd	per P. Std.	18 15 0	—
Do. do. 3rd &c.	do.	9 0 0	9 15 0
Do. Canadian Spruce, 1st	do.	10 10 0	11 15 0
Do. do. 3rd & 2nd	do.	8 15 0	9 0 0
Do. New Brunswick	do.	7 5 0	8 0 0
Battens, all kinds	do.	7 5 0	9 0 0
Flooring Boards, 1in. prepared, 1st	per square	0 11 0	—
Do. 2nd	do.	0 9 0	0 11 3
Do. 3rd &c.	do.	0 9 0	0 9 3
HARD WOODS			
Ash, Quebec	per load	3 17 6	4 10 0
Birch, Quebec	do.	3 12 6	3 17 6
Box, Turkey	per ton	7 0 0	15 0 0
Cedar, 1in., Cuba	per ft. sup.	0 0 3	0 0 3½
Do. Honduras	do.	0 0 3 3/16	—
Do. Tobasco	do.	0 0 3½	—
Elm, Quebec	per load	0 12 6	5 10 0
Mahogany, Average Price for Cargo, Honduras	per ft. sup.	0 0 4 5/16	—
Do. African	do.	0 0 3 11/16	—
Do. St. Domingo	do.	0 0 6 5/16	—
Do. Tobasco	do.	0 0 3½	—
Do. Cuba	do.	0 0 3¾	—
Oak, Dantzic and Memel	per load	3 15 0	5 7 6
Do. Quebec	do.	4 12 6	5 0 0
Teak, Rangoon, planks	do.	8 5 0	13 10 0
Wainscot, Riga (Baulk)	do.	3 15 0	5 15 0
Do. Odessa Crown	do.	3 15 0	5 15 0
Walnut, American	per cub. ft.	0 3 1	—

TENDERS.

Information from accredited sources should be sent to "The Editor." Results of tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the Work.

BROMLEY, Kent.—For erection of house, Garden Road, for Mr. H. Weeks. Mr. James Pamphilon, architect, 21 Finsbury Pavement, E.C. Quantities by architect:—

Larke & Sons	£2,164	T. D. Graty	£1,895
F. P. Duthoit	1,900	Crossley & Son	1,845

LEICESTER.—Extension of warehouse in Newarke Street, for Messrs. T. H. Downing & Co. Messrs. Tait & Herbert, architects and surveyors, Friar Lane, Leicester:—

Contract No. 1.

Richardson & Son	£3,167	J. O. Jewsbury	£2,905
H. T. & W. Chambers	2,949	Johnson & Son	2,855
H. Bland	2,910	Herbert & Sons*	2,880

Contract No. 2.

Cort, Paul & Cormick	£584 0 0	Russell & Sons	£583 19 4
		Gimson & Co.*	572 12 6

Contract No. 3.

J. Getliffe	£197 4	Rowlett	£162 0
Norman & Underwood	169 10	Wm. Treer*	155 0

Contract No. 4.

Major	£141 16 8	Mawbey & Son	£120 0 0
A. Shaw	130 19 9	Geo. H. Barker*	102 0 0
W. A. Bauton	123 17 10		

* Accepted.

[All of Leicester.]

LONDON.—For erecting Nos. 178 and 180 St. John's Street, E.C. Mr. W. A. Aickman, architect, 34 Gresham Street, E.C. Quantities by Mr. L. Jacob:—

Rudd & Son	£5,388	Ashby & Horner	£4,700
Dore Bros.	5,255	Thos. Rider & Son	4,598
E. Lawrance & Sons	4,988	J. W. Falkner & Sons*	4,349
Staines & Son	4,857		

* Accepted.

LONDON.—For alterations at the Hope and Anchor public-house, Camden Town, N.W. Mr. Herbert Riches, architect, 3 Crooked Lane, King William Street, E.C. Quantities supplied:—

Courtney & Fairbairn	£1,200	T. Osborn & Sons	£1,060
W. Antill & Co.	1,185	Sheffield Bros.*	1,054

* Accepted.

NEWTON ABBOT.—For the erection of boardroom and offices; additions, &c., to present room, for the Guardians. Mr. Samuel Segar, architect, Union Street, Newton Abbot. Quantities by architect:—

W. Brenton	£7,560 0 0	W. A. Goss	£4,825 0 0
Mitchell & Son	6,464 11 0	L. Bearne, Newton Abbot*	4,672 19 6
W. Gibson	5,620 0 0		
Parker Bros.	5,260 0 0		
F. A. A. Stacey	5,169 0 0		

* Accepted.

CONTRACTS OPEN.

HORNSEY URBAN DISTRICT COUNCIL.
TO BUILDERS AND CONTRACTORS.

The Hornsey Urban District Council are prepared to receive TENDERS for the ERECTION of BUILDINGS for a Branch Public Library at Highgate.

Plans and specifications may be seen, and copies of the quantities, forms of Tender, and all information obtained on application to Mr. E. J. LOVEGROVE, Surveyor to the Council, at the Offices mentioned below, on any morning between the hours of TEN and TWELVE o'clock, on a sum of Two Pounds being deposited with the Clerk to the Council, which sum will be retained by the Council and deemed to be forfeited if a bonâ-fide Tender is not made by the depositor.

If a Tender is made which is not accepted, the sum deposited will be returned, and if a Tender is accepted, such sum will be retained by the Council until the contract has been executed by the depositor, and will be forfeited in the event of his or his sureties failing or neglecting to execute such contract or the bond accompanying the same within seven days after he or they respectively shall have been requested to execute the same.

No Tender will be considered except on the prescribed form.

Sealed and endorsed Tenders are to be delivered or sent by post so as to be deposited in the Tender box in my department not later than FOUR o'clock, p.m., on MONDAY, the 21st day of JANUARY proximo. The quantities duly completed must accompany the Tenders.

The Council reserve to themselves the right to decline all, or any, or any portion of the Tenders so sent in.

By order,
F. D. ASKEY,
Clerk to the District Council.

Offices: Southwood Lane,
Highgate, N.
December 1900.

EAST SUSSEX COUNTY COUNCIL.
TO BUILDERS.

TENDERS are invited for the ERECTION of a SESSIONS COURT, with Magistrates', Solicitors', and Witnesses' Waiting Rooms and Offices; and POLICE BUILDINGS, consisting of Residences for a Superintendent, Sergeant, and three Constables; Charge Room, Four Cells, and Stabling, at Bexhill, in the County of East Sussex, for the East Sussex County Council.

Plans, specifications, and conditions of contract may be seen at the County Surveyor's Office, County Hall, Lewes, on and after THURSDAY, 10th JANUARY next, between the hours of TEN a.m. and FOUR p.m.; SATURDAYS, TEN a.m. and ONE p.m.

Quantities may be obtained after THURSDAY, 10th JANUARY next, on application to Mr. F. J. WOOD, County Surveyor, County Hall, Lewes, and on payment of a deposit of a £5 Bank of England note, which deposit will be returned on receipt of a bonâ-fide Tender.

Tenders, endorsed "Tender for Sessions Court and Police Buildings, Bexhill," to be addressed to F. MERRIFIELD, Esq., Clerk of the County Council, County Hall, Lewes, and delivered not later than FRIDAY, 25th JANUARY, 1901.

The County Council does not bind itself to accept the lowest or any Tender, and will not pay any expenses incurred in connection with the preparation thereof.

FRED. J. WOOD, Assoc.M.Inst.C.E.,
County Surveyor.

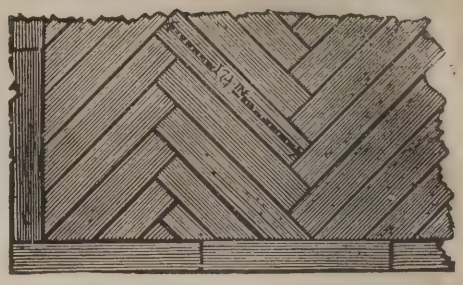
County Hall, Lewes,
December 1900.



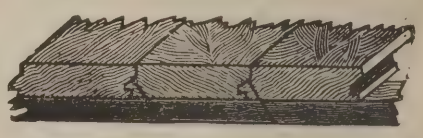
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THE BUILDERS' JOURNAL & ARCHITECTURAL RECORD

JANUARY 16, 1901. No. CCCX.

BIRMINGHAM HOUSE, ARUNDEL STREET, STRAND, W.C.

An Architectural Causerie.

The Picturesqueness of Thatch. In roaming the highways and byways of the country we occasionally come upon some interesting revivals of old building styles and customs. Would that such finds were less rare in these days of the imported London fashions that are rendering many provincial towns smaller and worse copies of the metropolis, and even setting up in the villages and hamlets things alien to the spirit and custom of the countryside. There are those—all honour to them—among architects who perceive the peculiar fitness of local style, and see that that style, wherever it may be found, is an outcome of old local conditions, and illustrates very clearly the story of shire, town, village, or hamlet. It was the peculiar merit of that consummate artist, the lamented Sedding, that he not only saw the beauty of such styles and treatments, but had the artistic and mental agility and versatility that enabled him to enter into the spirit of the thing in the restoration work or original designs that fell to him to do. The granite churches and mansions of Cornwall, the parclose screens and the beautiful carved pulpits that render Devon so notable, were safe in his hands, and we may be sure that thatch appealed to him. Thatch is the oldest of roofing materials, but the tourist who in these latter days wanders in the West, where it most did flourish, will find that even there it is being gradually replaced, and largely, be it said with regret, by slates, tiles, or by that most abominable of materials, corrugated iron. Now it has ever been the experience of cottagers living under thatched roofs that they are warm in winter and cool in summer; and with these very practical advantages thatch also carries the recommendation, from the artist's point of view, that it is extremely picturesque. It is decidedly not cheap in the making, but it is lasting, and is not so inflammable as has been supposed, although of course not without ready possibilities of ignition in very dry seasons. It is an exaggerated idea of its liability to being burnt that has led to thatch becoming rarer year by year; for it is becoming more and more the practice of landowners to insist, when renewing leases to farmers, upon their replacing old thatch with other roofing materials upon any new roofing being required. Thus the farmers have no choice in the matter; nor have the cottagers, who are almost always in favour of the warm and comfortable winter roofing of straw or reed that their fathers and grandfathers knew so well. It is thus that the thatcher's trade is fast becoming an extinct industry, and one may enquire for a professional thatcher in many a West of England village and not find one, and when found he will always prove to be an old man. No young man learns thatching as a trade nowadays, even though there are yet ricks to be covered. It is in the midst of these changes that the writer, quite by chance, discovered the new post-office at Witchampton, near Wimborne, in Dorset, illustrated on this page. Entirely a recent building, it owes its existence in this form, and with the old-fashioned roof-covering, to the taste of Lord Alington, directly outside of whose place at More Crichel it stands. The thing is notable enough to induce others to go and do likewise, but it would not be surprising to learn that what Lord Alington's taste leads him to induce the Post Office to erect outside his own park gates he forbids in his dealings with his tenants. Still, the example is a good one.

C. G. H.

Studentship Drawings. THE question of draughtsmanship in its relation to architecture, which has quite recently been the subject of some discussion in our columns, was extensively dealt with by Mr. R. Weir Schultz and Professor Beresford Pite at the meeting of the Architectural Association held on January 4th, when hints were given on the preparation of studentship drawings. The question is an old one. Mr. Schultz contends that for the last thirty years or so "mere draughtsmanship" has been held up to architectural students as a fetish, this being largely due, first, to the fact that the architectural drawings at the Royal Academy have been judged by a committee consisting largely of painters; secondly, because the younger generation copied Mr. Norman Shaw's draughtsmanship without also acquiring the mastery of composition and construction which it displayed; and, thirdly, because architectural competitions generally have fostered the production of showy drawings. Though one agrees with Mr. Schultz that draughtsmanship, as such, should occupy a secondary place in the preparation of studentship drawings (which must be considered from an educational and not a pictorial standpoint), the true solution of the problem lies perhaps between the two extremes of disdain for and worship of draughtsmanship. The standard set up for the student should be one which, while primarily requiring that his drawings should show that grasp of design and knowledge of construction which are essential qualities of good architecture, would not regard the draughtsmanship as so much superfluity. After all, the ability to draw is not everyone's, and it needs to be recognised just as much as the ability to paint or to carve: it is often those who are miserable draughtsmen who raise the hue and cry against technique. Mr. Schultz and Professor Pite come into collision on certain points. For instance, Mr. Schultz contends that the student should prepare his drawings as if they were going to be carried out, should give particular attention to all the practical details, and should not set out a perspective from an impossible point of view. According to Professor Pite all this is working to a visionary end, for the designs will never be carried out; and this being so the student should be as original and as imaginative as he can, "taking an imaginary standpoint rather than an actual one." Surely this is not very good advice, and from a Government professor too! If the student develops on these lines he will find when he arrives at actualities that architecture is not picture-making, and the proficiency he has attained in designing monumental buildings, ducal palaces and splendid houses helps him but little with the £800 villa which he has been commissioned to build. Mastery of proportion and planning, knowledge of construction—these first most certainly; but, in addition, as much draughtsmanship and technique as you are capable of—the more the better. So that, as has already been stated, it is the happy medium between the two extremes which affords the solution of this most vexed problem; and the drawings of William Burges and Mr. Norman Shaw may be taken as examples of such work.

Glasgow Royal Infirmary Competition. CONSIDERABLE dissatisfaction is being expressed in regard to the action of the Executive Committee of the subscribers to the Queen's Diamond Jubilee Fund for the reconstruction of the Royal Infirmary at Glasgow. The competition for this work has recently been decided and the result has already been announced in our columns. Dr. Rowand Anderson was the assessor. He placed first the plans marked "F," which were those of Mr. H. E. Clifford, of Glasgow, estimated to cost £238,000 to carry out; but, for some unaccountable reason, the committee have decided by a majority of one (11 votes to 10) to accept the plans (marked "E") of Mr. James Miller, of Glasgow, by whom the reconstruction will be undertaken, at an approximated cost of £241,000. We are now not concerned with the relative merits of these two designs but with the main principles involved by the committee's action. The story about the old man and his donkey has a very practical modern application—with competitions this is especially true, for it is indeed impossible to please everyone. But here there is good reason for complaint. What is the use of appointing an assessor, paying him a large fee to adjudge the several designs submitted, if you ignore his decision and follow your own choice? As the design selected by the assessor is estimated to cost £3,000 less to carry out than that chosen by the committee one is confronted with two possible solutions—either the committee thought themselves better judges of architecture than their professional assessor or there has been some favouritism exercised. What else can be the reason for their action? Could it be that an enlightened opinion uses the assessor simply as a kind of decoy for architects of repute and then makes its own selection from the designs submitted? Even this might be said of some competitions: but it is a gross insult to the assessor and shows a depraved spirit among the promoters. Here we have an ordinary committee over-riding such a competent assessor as Dr. Anderson! Whatever may be the opinion held in regard to architectural competitions in general, it must be conceded that such competitions should, at least, be run on honest lines. But unfortunately it is not always so: if it only were, not half the evil effects would result.



THE POST OFFICE, WITCHAMPTON.

INVERKEITHING.

BY J. JEFFREY WADDELL.

THE "Kingdom of Fife" is peculiarly rich in places of architectural and archæological interest, and among the most noteworthy is the ancient Royal burgh of Inverkeithing. Situated on the shores of the Firth of Forth, this town was formerly one of the principal seaports of Scotland and one of her chief burghs. To-day its greatness has departed; it is now a sleepy old-world town, with an almost unused harbour. But there still remains much to attest its former prosperity that has survived the ravages of time.

In the centre of the town stands the old Market Cross, one of the finest and most ancient of the kind in Scotland, its date being probably 1398. The Cross consists of an octagonal shaft which, rising from a broad base, bears aloft four shields with the Royal and Douglas arms, surmounted by a sundial and unicorn. The base is modern and is protected by an iron railing. Opposite the old Market Cross stands the Town House, with its quaint belfry and outside stair.



DRAWN BY J. JEFFREY WADDELL.

The old village church of St. Peter is worthy of note for its spire and font. The latter, a fine example of Middle-Pointed date, was discovered at the beginning of the past century buried in the lower part of the town. The bowl of the font is hexagonal. Each side bears a shield supported by an angel, and the angles are battlemented and are enriched with corbel heads. The whole rests upon a clustered shaft with foliated cap and moulded base. The tower consists of three stages and terminates in a modern wooden spire. The bell is a good one and is dated 1641. The church itself was burned in 1825, and it is at present being restored by Mr. P. Macgregor Chalmers, of Glasgow.

Besides these public buildings, there are several private dwellings of considerable interest. Queen Margaret's Palace is a plain rough-cast building with crow-stepped gables, which, by the irony of fate, was recently used as a lodging for the navvies employed on the Forth Bridge.

Opposite the church stands the old town house of the Hendersons of Fordel, a fine example of Scottish domestic architecture.

THE PREPARATION OF STUDENTSHIP DRAWINGS.

BY R. WEIR SCHULTZ AND BERESFORD PITE.

AT a meeting of the Architectural Association held on Friday, January 4th, Mr. R. Weir Schultz and Professor Beresford Pite lectured on the subject: "Hints for the Preparation of Studentship Drawings." Mr. Schultz said:—Most of our studentships of the present time are rightly or wrongly awarded on a system by which, under certain conditions, drawings are submitted in competition for the various awards. It is a matter of grave question whether this is the best method of choosing the student who is most worthy to participate in the benefits to be derived from the opportunities for study opening up by the bestowal of the prize. I fancy, however, that it would be going outside the limits of our subject were we to discuss this point; we must, therefore, accept it for the moment as a fact, and try to consider how far the conditions can be acted up to with most benefit to the student and with the prospect of obtaining the best results. During the past thirty years or so architectural students have been encouraged to worship at the shrine of the fetish of mere draughtsmanship, and they have got into the way of dividing themselves into two camps—(1) that of the draughtsman *par excellence*, and (2) that of the so-called practical man. The former have been accustomed to go about with their heads rather high in the air, and a general tone of superiority in their bearing, and to be obtrusively patronising to the latter, who have been looked upon as mere "hewers of wood and drawers of water." It was considered a much greater merit to be able to make

A Pretty Perspective

than to be capable of working out an honest, straightforward piece of construction; and this is hardly to be wondered at, when we find that the bulk of the "plums" were usually awarded, consciously or otherwise, to the most taking set of drawings, looked upon as drawings. Many things were responsible for this, and amongst them I think we may place the following:—1. In the case of the Royal Academy, the fact that the architectural prizes were judged by a committee or council in which painters largely bulked, the majority of whom had little or no knowledge of architecture. We can all remember instances where thorough and careful studies were obviously passed over in favour of others which had been made purposely attractive to the body of selection, often at the expense of ignoring or depressing the essential points of the subject set for study when judged from an architectural standpoint; and, indeed, students got to expect this, and, consequently, drawings were prepared purposely with a certain superficial attraction. I well remember a hue and cry which was raised by students a few years ago when by strange chance a really strong and original, if somewhat unprepossessing design, showing real genius in composition and construction, was given the first place over others better drawn perhaps and worked out on more correct archæological lines, but which did not show anything like the same sturdy grasp and powerful, strong handling of the subject. 2. I think I may also say that Mr. Norman Shaw's beautiful drawings had a potent influence on the younger generation, who seemed to lose sight of his power of composition and daring of construction in the charm of his draughtsmanship. 3. The attraction of the walls of the architectural room at the Academy also carried weight. Men knew that a pretty drawing was more likely to be placed than a clear straightforward architectural diagram. 4. The growth of architectural competition generally likewise created a certain demand for showy drawings, and men knew that they could command a higher price for their services if they cultivated the knack of mere draughtsmanship, and so were apt to ignore the more essential qualities which go to make a good architect.

I assume that we are expected to give you some hints that will be useful to you. There are at least two ways in which such hints can be of service to you; but they may lead in diametrically opposite directions. The first is, hints that will enable you to go in for a studentship with a chance of winning it; the second, hints that may help you to prepare your work in such a manner that you will reap the greatest benefit to yourself from the study of the subject which has been set before you. On the first I cannot venture to help you, and will leave this to my friend Mr. Pite, who, in his day, was fortunate in obtaining some of the most sought-after prizes, and who is now, I believe, a member of one of those mysterious bodies or councils who carry your fate in their hands. On the second, I can, perhaps, give you some advice which may be of use, if only in the way of starting what I hope will be an instructive discussion afterwards. I assume that studentships are looked upon as purely educational, that is to say, affording the young architect an opportunity which would not otherwise be open to him for perfecting himself in the study of his art.

Conditions Which Hamper.

To enable him to obtain one of these studentships certain conditions are laid down, some of which, I am sorry to say, have a considerable savour of red tape about them, and tend to hamper the student rather than to encourage him. I refer more particularly to the condition regarding size and number of sheets, scale of drawings, &c, which are in many cases needlessly arbitrary. Broadly speaking, the type of subject is of two kinds. The student may have to prepare a design for a building or a portion of a building, or he may have to submit a series of drawings, showing evidences of study of old buildings, or their accessories.

The first we may look upon as an essay in design and composition, and it will surely bear on its face the impress of the training through which its author has passed, or show evidences of the course of thought which has influenced him, but whether it will show a grasp of the sense of proportion, a constructive capacity, or an idea of fitness for a suggested purpose is very doubtful. The second will indicate that the author has visited and drawn examples of old work, or perhaps made careful and exact measured drawings to scale of an

old building—church, palace, or mansion; but how far he has peered behind the surface and tried to analyse the motives which influenced the old men, or to grasp the difficulties they had to contend with and see how they overcame them, is quite a matter of small moment as things are at present—probably the idea never occurred to him.

An Essay in Design and Composition.

In the first case, we have a set of taking drawings, a plan more or less apparently workable, the elevations designed in some phase of a past architecture, and all nicely inked in with a good deal of go, carving and figure work perhaps suggestively indicated, but no cohesion, no definite note of character. You look at the perspective view; the building might be suitable for half-a-dozen purposes, it lacks expression.

In the second case you have a series of very pretty drawings with plenty of flick and dash—sketches of church towers, say, or old mansion houses, a piece of panelling or a ceiling to scale, or a church screen or font, and there may be also some sheets of coloured decoration more or less approximately suggesting the present state of the original, with all the blemishes shown to the life; but how seldom anything more! How rare to see the subjects really studied, the materials analysed, the detail and construction investigated!

Draughtsmanship Secondary.

Now in the preparation of studentship drawings it seems to me that draughtsmanship as such should occupy a secondary place. It is not the first essential by any means. The quality of the paper used, the tone of the ink, the breadth of the line, the way in which carving should be indicated, how mouldings should be tinted in: none of these things is of prime importance; undue attention to them will not make you a better architect. What you want to be able to do is to show as clearly as you can that you have made a thorough study of your subject. If it is a design for a new building, get your plan simple and straightforward; if an awkward site is purposely given, fit in your building skilfully and directly. Do not sacrifice everything to a hobby or a piece of empty cleverness. Get a sense of proportion and of dignity, or homeliness as the case may be, or both combined, into your composition. Ignore striving after effect as such. Make it apparent that you have considered the most suitable materials to be employed and the most judicious use of them. Do not neglect your construction. Do not overlard your design with ornament everywhere; if you want sumptuousness, you can get it by concentration more effectively than by diffusion. If it is a building for a town site, do not neglect such practical points as lighting. Do not put heavy cornices or other projections in positions where they will obstruct light and air, or where they will not be visible. Do not place your sculpture where it could only be seen at an angle of 60 degs. or not seen at all. Avoid unnecessary projections that would in reality only catch and hold dust and dirt, to be blown into the windows whenever occasion offers. Do not propose a scheme of colouring that will probably be obliterated after the first six months. Be reticent, appropriate, dignified. Give your attention to these and other such points, and

Do not be Afraid.

There will be plenty of scope left for a building with character, expression, and individuality; and see that your drawings express the building and its nature, just as the building itself should express its uses. Let them be clear, straightforward, and simple. If a perspective is required, let it not be set out from an impossible point of view. Apply the same rules generally to whatever the subject may be. Leave the books alone. There are far too many books to refer to nowadays. Sit down and let your mind have free play, and think the subject out from the beginning. By doing so you are training yourself for the real work of the future, and for tackling the real buildings you all hope to erect. There will be much harder and more complex problems to face then, but you will be able to deal with them far better by overcoming the ones of the present, and whether you win your studentship or not, you should come out of the ordeal feeling stronger and more capable by having manfully faced the real issue, by having trod the narrow path and not the broad road. If, on the other hand, you are asked to submit

Studies of Old Work,

go and examine the old buildings thoroughly; try to put yourself in the place of the old men who built them; realise, if you can, the conditions under which they laboured; look how they made the most of the materials to their hand, and see how they overcame their difficulties, and how sometimes they did not, and had to remedy things afterwards; take warning from their weaknesses; admire their general skill and foresight; and learn what is good to be learnt from their experience; but do not think you are going to imitate them, because you cannot if you try. Conditions are entirely different, and what was straightforward and right in the thirteenth century would be more often than not an affectation now; but come away, if you can, imbued with a desire to emulate them by trying in your day and generation to tackle your conditions as they did theirs, and show by the results of your study that you have grasped this. You may not win your prize, but you will have learned more than if you had done nothing but brought back pretty water-colour drawings and notes of useful cribbable detail.

The Dead Styles.

Do not forget that you are young, and being young, you have enthusiasm, which should carry you far and overcome many difficulties. Do not bury it in the slough of past styles—of Italian Renaissance, of Francis I., of Thirteenth Century, of Roman or Byzantine or Periclean Greek. Do not let yourselves be mere draughtsmen, but be men, and acquit yourselves like men, modern men, men of the new century which has just dawned. Yours will be the task to grapple with its complexities and its new problems. Try to make the complexities less complex and the problems more simple. Prepare to tackle them with a stout heart and with determination, foresight, and common sense. Do not mistake the shadow for the substance. Do not be slaves to a past which



THE TOWN HOUSE, INVERKEITHING. DRAWN BY J. JEFFREY WADDELL.

you probably do not understand. Do not study old buildings exclusively, but look at the works of great modern architects, men like Butterfield or Mr. Philip Webb, who have learnt the useful lessons that the past can teach better than most men, but who can never be classed with the copyists, and whose work can never be labelled with the tag of a dead style. They have worked in the period nearest to you, and have understood and tackled its difficulties. Where they have succeeded there is room for at least a hope that you will not fail.

Professor Pite's Address.

Professor Beresford Pite said Mr. Schultz had put before them the evils of competitions and of draughtsmanship, and had told them practically how not to win a competition. It was certain that if a student were convinced of those evils he would not compete. From Mr. Schultz's point of view, also, a competing student was always working for an impossible end, giving his attention to a real building which would never be built, and working out construction which would never be constructed. If a student held that view he should never dream of going in for a studentship competition. He himself must begin from a humbler standpoint; for, with all its evils, he would very much like still to go in for a competition. He would in the first place give them a few hints about materials. He thought Street's advice was good: to use only the best. Bad paper had an astonishingly bad influence upon a drawing. He would say don't buy cheap paper. A good hard paper should be got. There were many kinds of Whatman's which could be used, and a very good paper was that on which Ordnance Survey maps were printed, known as "Unbleached Arnold," which would stand a good deal of scraping. The O.W. papers were good, especially an extra strong one with a very smooth surface, and there were some good ones known as Joynson's, which would also bear scraping. Unless they would stand scraping the drawing would suffer. The best pencils should be used, such as the 6d. kind, for in pencil drawing fine line was necessary and a good point should always be kept on the pencil. In ruling lines a junction should always be effected where they met, by drawing the lines boldly across and the compass point put upon the junction. The H, HH, or HHH pencils should never be used, for, as architects, they should draw beautifully, and the use of a hard point was about the worst habit possible for the fingers and tended to harden the methods. An HB would probably be found soft enough for small scale, but for details a softer pencil should be used. Mouldings should be drawn with a free and running line, and the best instrument was a brush, which afforded plenty of freedom. Indiarubber was very important. Any artist or architect who was so accomplished that he had not to use the indiarubber must be a very bad designer. He judged a man's artistic conscience by his indiarubber. Rubbing-out was the test of perseverance, the test of revision. The late Prof. Reginald Stewart Poole once said truly that the governing principle of Greek design was elimination; they eliminated and eliminated down to that point of refinement where the work would stand no further elimination. In other words they rubbed out. As to pens, he preferred a soft-pointed pen. The abominable crow-quill mapping pens should be avoided, being as vicious as hard pencils, and calculated to spoil a drawing; at the same time for fine work a fine pen was needed and those known as "Edinburgh Fine Points" were to be recommended. Decent quill pens were difficult to get, but students should not be put off with bad ones for drawing details and bold and free sketching. It was good practice to draw with a pointed stick, for by that means breadth and firmness of line were got. With regard to bottle-ink and stick ink, the former was a doubtful blessing; it was perfectly black, it was true, but under india-rubber, or even hard bread-crumbing, it lost its sharpness and brilliancy. With bottle-ink, too, one had always to draw with the same dead black, and stick ink seemed to bite less into the paper. An ink was needed which could be erased, and he thought stick ink erased more easily than bottle ink. For erasing ink the hardest and best eraser should be used; 6d. at least should be paid for a piece, say of Faber's make. Attempts to wash or scratch out ink lines generally failed. Then as to mounting drawings, mistakes were fatal. They should not experiment with the drawings but have them mounted by a picture-framer. Cheap strainers should not be used; they should be stout, for, if they were not, the strainers are likely to buckle up owing to the drying of the paste. They should have an eye to marginal lines; often drawings were spoilt by a horrible blue or a too dark brown. For a black-and-white drawing there was nothing safer than a white margin. He did not think they were allowed enough freedom in the size of strainers, but that was chiefly on account of want of room. As to the writing on the drawings architectural printing revealed character as much as handwriting—perhaps more accurately. A pompous fellow, full of eccentricities, would be almost sure to show it in his architectural printing. Writing on drawings should be well and plainly done, though they should not imitate printers' types.

Drawings in Black and White.

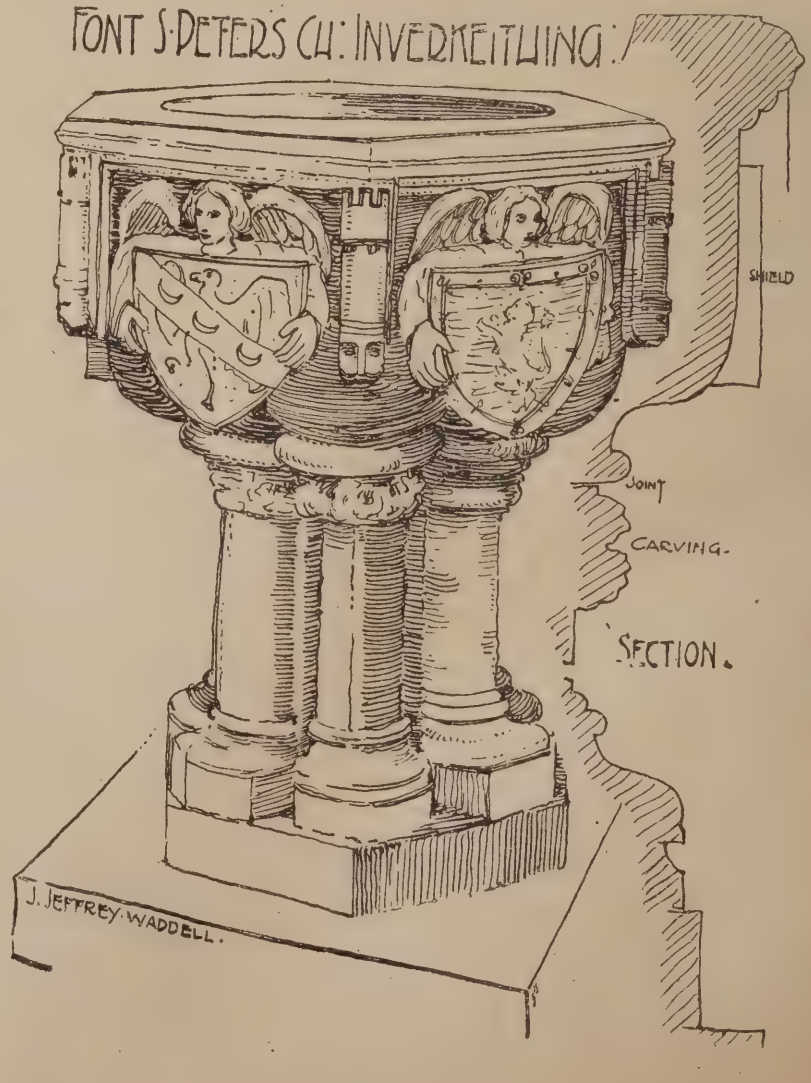
If the Association was in the habit of passing resolutions, he thought that one addressed to promoters of studentship competitions to the effect that drawings need not necessarily be finished in black and white would be a healthy one. This black covered a multitude of sins: it was inimical to effects, and led to carelessness in drawings. Windows, for instance, were made black instead of inlets for light. He did not know why the use of black had grown to be a necessity in such competitions, but he supposed the promoters were afraid of being bamboozled by colour. There was really a fine scope for the careful use of colour in the getting-up of an architect's set of drawings, and the whole paper technique of their art ought to be artistic and satisfactory. In default of colour he would sooner have a whole set of drawings in outline, which would lead to the cultivation of boldness and quality of line. There was nothing more deceptive than to make a set of drawings and then black them in, for the black destroyed a fine line altogether. Window black was especially mischievous; vertical lining was better. He avoided free etching or sketching on a geometrical drawing, and he thought the shadow tinting which was sometimes seen in deficient elevations was a mistake, as it took the attention off the elevation and its proportions.

Sketches.

In students' designs sketchiness was not permissible or possible, for, as in painting and other forms of drawing, the line of demarcation between sketching and finished work was very definite indeed. The Royal Academy did not exhibit sketches, insisting that every picture should have a finished background, and just the same distinction applied in architectural drawings. A sketch had a charm and freshness which, though attractive, was manifestly different from the finished study. Complete perfection of the accomplished geometrical drawing should be aimed at, but the two elements of students' drawings should not be mixed up. Tiles, &c., should not be raggedly sketched in on to a carefully outlined drawing. He did not see why they should not scientifically put in the projection of shadows, and any student able to do that successfully would have a good pull over those who had not acquired the art.

Unreality of Elevations.

Now, in spite of the sinfulness of it he must say there was a charm and a pleasure in accurate draughtsmanship—in sitting down and trying to excel in it; in trying to draw the dentils and brackets of a cornice, for instance, in such a way as to watch the growing effect; and gradually bringing in detail and letting the building gradually grow up. Attention should be given to the effect of lines, in inking in lines in elevations, but, unfortunately, this was seldom done. In treating ornament, they should give attention to the concentration and grouping



of those lines which made the drawing effective. They could not be too much concerned with the actual lines which told in an actual building, but they should always bear in mind the very important truth that a building never looked as it was seen in elevation on paper. When they were dealing with elevations they were dealing with diagram. There was a definite, logical difference between the elevation—namely, between what the building was and what the building appeared to be; there was no real relation between the two apparent to the eye. A great deal of interest could be given to a drawing if the indication of surface and material were studied carefully. They would realise that drawing horizontal lines 3in. apart all over the building made it look like brickwork; drawing them a foot apart, like stone; and omitting them altogether, like stucco. He had seen beautiful drawings in ink with the brick-course lines put in in pencil and the stone joints in their order, not to confuse the construction lines. But these methods should be used only so far as they gave a conventional effect akin with the materials of the surface.

Plans could be made impressive by the simple aid of dots, and a crooked plan could be made to look quite important by the art of dotting. Pavements and ceilings, fully shown, often made a drawing very interesting, and students must take advantage of these points, especially as they were not asked to show drains and gullies. The interior of a building should be shown in section; it was an opportunity for display which was all studentship drawings were for, and students should make the most of their opportunities. He would advise students to take full advantage of the size of strainer, and make the size of the strainer the ultimate size of the building.

In the detailed drawings, which were usually wanted, a rare opportunity was afforded. The promoters of the competition knew pretty well the sort of thing they wanted in the elevations, but their minds were blanks as to the detail, and they directed that some part of the elevation must be drawn to a larger scale. That was the student's opportunity for display. He should show his freehand and indulge his humour in sculpture, and generally show what sort of a man he was. They should draw boldly, and should make up their mind that their detail should not be overcome by a neighbouring perspective, or by the plan in black above or below. In detail there was an opportunity for using with plenty of freedom the pointed stick. Mr. Schultz had advised them to take the perspective from a possible point of view. He (the speaker) said, do the opposite, and for this reason: the building would never be built, and students should be absolutely unfettered. They should be as original in the matter as they could, and if there were any choice, be imaginative—taking an imaginary standpoint rather than an actual one. They should say to themselves: "This is to be a picture, not a perspective; this is the end of my design; this is all I have been working for; I have come to the point when I can enjoy myself in laying out the richness of my imagination, spreading it large upon the strainer." The building would never get nearer actuality than that; therefore they should make the most of their opportunity. Of course, the perspective would fail badly if it had no relation to the design, and they must work the thing out so as to give it its value.

With regard to

Coloured Perspectives,

they had got into disrepute owing to the weakness of competition assessors. He suggested that whenever they had the opportunity they should master the art of colouring architectural perspective drawings. As to pen-and-ink work the greatest duffer with the brush or the most nervous architectural artist was safe in an outline diagram, which was possible to those who were nothing more than geometrical draughtsmen, and could be made quite interesting and beautiful. Of course if they liked to go further and shade it in in pen-and-ink they would be going outside the bounds of diagram drawing, and would need someone to guide them. He would suggest for the study of pen-and-ink work the study of etching or the works of etchers. The tendency in all pen-and-ink work was to get black spots and darkness without composition or line effect. Then as to

Measured Drawings,

that was different work altogether. If the drawings were to $\frac{1}{8}$th scale, the plan should be done first, and then the line of heights to the scale of the plan. Beginning at the top and working downwards the mouldings should be made full size and not touched afterwards. A few leading dimensions should be taken on the spot, and the building drawn to scale and the mouldings filled in at home from the full-sized drawings. The plot-



DRAWN BY J. JEFFREY WADDELL.

scale sketches ought not to be touched again, for the redrawing of them robbed them of all their life, and studentships which were given for measured drawings not done on the spot were worthless. In measured work everything that Mr. Schultz had said about construction was essential. The student was not designing, but recording accomplished fact, and unless he studied that thoroughly he would not do himself any good. They had to learn to think backwards—to begin with the finished building and go back to the elements out of which it was produced; consequently, they should measure the joints and show nothing which had not been measured. They should not, for instance, take the drawing home and proceed to tack on the stonework. If they wanted to show the rubble, they should measure it. That seemed a hard task, but they might measure, say, 3ft. of it very carefully. This was an invaluable study and equally necessary for both beginners and advanced students, who ought to sketch and measure with thoroughness to the end of their studying days.

As to pencil sketches, they could be done for their own sake—or for the ladies'—and students should enjoy such work in doing so. Such sketches had their work to do, as had other pretty things in this world; but such work should not be confounded with the steady, businesslike drawings which were useful to an architect. Mr. Schultz had given good advice as to

Colour Decoration.

It was very difficult to judge colour decoration from sketches or drawings, and he was inclined to think that drawings of colour decoration were of doubtful value. The colour deceived one, and it was difficult to translate on paper the actual colour of the building itself. One was liable to be greatly deceived, though of course it was necessary to take note of arrangements in the design. For the purpose of studying colour they should go to flowers, the old masters, and ceramics. One rarely got good colour out of old buildings, for the mediæval builders avoided harmony and indulged in positive contrast: whatever harmony in colour there was in old architectural works was the result of time—a refining fog which made old buildings beautiful. Still, it must not be forgotten that the original colour was often crude, or extreme. With regard to design, happy indeed were students. They were happier than their employers, happier than practising architects. They had no clients to worry them,

every opportunity to design, no fads but their own, and these they always enjoyed. Oh! the joy of being able to design just for the sake of designing—to do it because it was nice, and not for the sake of a living. That was the delight and pleasure of a student's life. His advice to them in matters of design was to begin early. The Institute, for instance, published their conditions of competition in March, and the designs had to go in by Christmas. Students could do no great work if they did nothing in the matter until the summer was over. They should begin at once to work up examples. But as they collected examples they must design. When the student had found his material he should work upon it. The student must feed his imagination and cultivate it, and fill his mind with information; he should take up a period or style, and work at it until he got to the bottom for the sake of understanding it. It was open to them to design in the style chosen—not as the ignorant architect did, but as the Academy student was taught to do. The student should cultivate his mind by the study of Bramante, Inigo Jones, or Sir William Chambers, for instance—how they drew and thought, and what detail they loved. In doing that the student would begin to draw, think, and love as did those masters, and a new world would be opened to the student—namely, the world of antiquity. It was not open to the modern architect, but it was open to the student.

Unreal Building.

The student should avoid the commonplace and the conventional, and be academic, grand, and graceful He should remember that it was an unreal building that he was engaged on, and yet he must make it real with architectural life. Whatever the student did, he should not trouble himself in the least about the assessors. All successful students were not successful architects, though, of course, there were some who were. The word "student" had a relation to its end which was study. They must bear in mind that they were not studying to gain the prize or the medal; they were artists studying art for the sake of art, and as such were willing, under these conditions, to compete with others. They were servants of the art, and would continue to be so whether they got the prize or not. Competing for the prize was an opportunity for opening up and revealing the resources of an art which wonderfully exhibited the nature and aspirations of man. The greatness of architecture would possibly never appear so vast as when they took up design, as students for design's sake—for the sake of proving its delights and pleasures. If, when they saw something beautiful, they stored the impression in their minds, some day it would influence them in their design, for the idea would mature in their brain. That was a process that was necessary to any lofty view of architectural art—to progress, really, in architectural art. His advice to them was to get the imagination to operate on the last step in architecture; to try and do something better than had been done before.

THE DISCUSSION.

Mr. H. L. Florence in proposing a vote of thanks said nothing had been said about tracing paper. He always found tracing paper as useful as india-rubber, and it had the extra advantage of preserving first and subsequent ideas. With reference to the use of the brush, it would be a great advantage to the student to take a plain piece of paper and shade it with the brush from black at the top to white at the bottom. It was difficult to do; but when they learnt how, it was of much use later on in getting a disposition of light and colour.

Mr. W. J. N. Millard, who seconded the vote, said architectural drawing was merely the production of diagrams. Unfortunately a great deal of architectural drawing or draughtsmanship ought only to be called penmanship, for it was playing about with a pen on paper and the worship of dots and dashes. He would not call it draughtsmanship, and it certainly was not architecture.

Mr. F. G. F. Hooper and Mr. Arnold Mitchell having spoken, Mr. W. H. Seth-Smith said the judging committee valued the power of imagination displayed, and at the same time they looked upon a design as a study by one who was preparing for practical architecture, and they studied the plan and noted what mastery a student had of building construction. These two points of view he held to be essential.

The vote of thanks having been carried, Mr. Schultz, in reply, said that, in spite of what Mr. Pite had said, he was not converted; nor did he think there was any need of being so seeing that he had advised them to ignore assessors and do exactly what they pleased in their student designs and not to compete for the mere sake of winning the prize, for these were the ideas he himself had tried to express. As to the idea that students should design in a style he supposed they might do that in the same way that boys at school wrote Latin verse. It was easy to learn to design in a particular style, but somehow the tendency was for them not to get beyond it. If they once made their architectural compositions in an archæological manner the inclination was to go on doing so; whereas if they began at the root of architectural design, and studied materials and proportion, they would do something which would be worth looking at. As to the drawing materials he did not think it mattered in the slightest whether they used dark ink or light ink or thick lines or thin; whether the drawing was mounted on brown or on white paper or no paper at all; all that did not affect the result and was not considered at all. When the study of a subject was begun of course it was necessary to look up examples and find out how, for instance, such buildings as town halls or hospitals should be arranged; but even here it would be best to get such information from the practical side and not from books. After the information was obtained the student should begin at the beginning and think the matter out afresh.

Professor Pite, in his reply, said he was for actuality and not the sham and the fraud. Mr. Schultz wanted the student to study materials, but he had not seen that these were ink and paper, &c. If a man would be real he had to work with such things and send in drawings only if he went in for studentship competitions.

Views and Reviews.

Responsibilities of Architects and Builders.

FROM the variety of interests frequently affected by building enterprise, the relative positions of architect and builder are frequently so beset with difficulties that we can have nothing but cordial welcome for a work like the one under review, which is designed to save the unwary from many a pitfall. Mr. Roscoe's well-known "Digest," now in its fourth edition, is, as may be gathered from the author's preface, intended to be useful not only to lawyers but also to those engaged professionally in building transactions. It may be confidently stated that the greater portion of the book is calculated to interest the latter class, the Precedents of Pleading, which occupy about 8 per cent. of the whole, forming about the only part which appeals exclusively to the man of law.

The plan of the work is probably known to many of our readers from earlier editions of it. First we have a collection of digested cases, the subject-headings being arranged in alphabetical order, in the usual way, full reports of some especially interesting cases being added in an appendix. Other appendices are respectively devoted to professional charges, forms of building contract, &c., agreements and leases, and precedents of pleading. There are a concise index and a table of cases.

It is interesting to note the effect of some of the most recent legal decisions in defining the position of the architect both in relation to his employer and the builder engaged in executing the work. Thus, for example, the decision in *Whipham* v. *Everitt* went far to authorise the scale of professional charges approved by the Royal Institute of British Architects. "These charges," to quote Mr. Roscoe, "are not legally binding in themselves, but they are so strongly evidence of reasonableness, that for practical purposes they have the force of law. They form the only rate of payment in regard to which an architect can feel sure of his legal position, unless he has, before beginning any work, agreed with his employer as to the rate or amount of his remuneration." As regards the architect's responsibility for certificates, his position appeared until lately to be somewhat anomalous. As arbitrator between building-owner and builder, he could not be held liable for negligence in issuing an incorrect certificate, but as agent to the building owner he could. This was the effect of the decision in *Rogers* v. *James*. In *Chambers* v. *Goldthorpe*, however, tried in the early part of last year, the decision, writes Mr. Roscoe, comes to this—"that the architect, in regard to the giving of certificates, never loses his judicial character; it protects him throughout; that is to say, he is under no liability whatever to the building owner. For certain purposes he has judicial functions—the parties agree to his decision, they are prepared to abide by it as between themselves. Under these circumstances the building-owner cannot turn round and claim damages against the architect, in his capacity of agent, for what he has done in his capacity of arbitrator." The same principle was upheld in the recent case of *Restell* v. *Nye*, in which it was also decided that the architect could receive 2½ per cent. from the builder out of the contract sum for supplying bills of quantities even when he had agreed with the building-owner that the usual charge of 5 per cent. was to be an inclusive charge for performing the ordinary duties of an architect.

The builder is bound to pay the surveyor for supplying bills of quantities, if he is under agreement to pay him out of the first instalment which he is to receive from the employer, even if the builder abandons the work, and so never receives the first instalment. This was the effect of the decision in *McConnell* v. *Kilgallen*, and the principle was endorsed in *Mellor* v. *Britton*, as recently as last June.

It will be seen from some of the above references that Mr. Roscoe's work has been brought well up to date, and though, as he states, he has not increased its size in the present edition, he seems to have excluded nothing which should have been retained. G. H. B.

"A Digest of Cases Relating to the Construction of Buildings." By Edward Stanley Roscoe, Barrister-at-Law. (London: William Clowes and Sons, Limited. Price 6s.)

Masters and Men.

Proposed Reduction of Wages at Gloucester.—The Association of Master Builders for Gloucester and District have given bricklayers and carpenters and joiners notice of a reduction of a halfpenny per hour in their wages, to take effect from June 24th next. This step has been taken in consequence of the quiet state of the building trade in this neighbourhood, chiefly occasioned through the high prices of building materials and rate of wages. Bricklayers' labourers have recently asked for an advance of a halfpenny per hour in their wages, and have been refused for the same reasons.

The Joiners' Lock-out in the Blackpool District is having a paralysing effect upon the building trade. The building of two board schools and two Congregational churches, representing an expenditure of £50,000, is at a standstill through the strike. There is, however, a disposition to reconciliation. Letters have been addressed to both the committees of the masters' and workmen's organisations on behalf of persons intimately concerned in building undertakings which have come to a standstill, suggesting the name of Alderman Heap as arbitrator or mediator. Replies have been received from both sides accepting the principle, but not binding as to the personality of the arbitrator. The acceptance of the principle of arbitration is a good step forward.

HOLLOW WALLS WITH IRON TIES.

BY G. S. MITCHELL, F.S.I.

HOLLOW or "cavity" walls should be employed for external work in all situations where damp is likely to be caused by driving rain, the aspect most particularly to be protected in this way being the south-west. Much may be done in mitigation of dampness caused by driving rain by training creepers and ivy on the walls, or by planting quick-growing shrubs and trees to afford shelter In this connection perhaps the most useful tree to plant is the Austrian pine, as its rapid growth and compact habit soon cause it to form a good barrier to the wind. Thuja lobii is also a good guard and may be planted when of rather large size, but it is apt to be injured by frost and is not in any case very long-lived.

Cavity walls are particularly needed in the south of England, where the use of porous clamp-burnt bricks is so general. The writer has seen water from driving rain streaming down the inside of a 4½in. wall built of these bricks when the wind-pressure prevented it running down the outside.

Hollow walls may be of brick or stone with a cavity of from 2in. to 2½in. in width, and though the special wall-ties of stoneware or purpose-made bricks are good and clean in work, it is more usual to employ cast-iron or wrought-iron ties, of various patterns, spaced at about 36in. horizontally and 12in. vertically —wrought-iron ties are preferable to cast-iron as they are less liable to fracture should a slight settlement occur in the wall.

Speaking generally, the principle of construction of hollow walls is that the water penetrating the outer casing of the wall shall either run down the inner face of the exterior skin or drop off the ties to the bottom of the cavity. To effect this, care must be taken that neither by the construction nor by the form of the tie shall a bridge be made from the external to the internal half of the wall. Both halves of the wall should be founded equally, and for this purpose it is desirable that their footings should be common to both.

To ensure success it is necessary :—

1. That the ties should either have a V drip in the centre or be double twisted, as shown in Fig. 1, which latter is the author's favourite form of wrought-iron wall-tie. About 230 of these ties weigh 1 cwt. and cost sixteen shillings.

2. That the outer skin should never be allowed to get even fractionally higher than the interior skin, or the ties will have an inclination inwards and disaster is bound to result.

3. That no mortar should lodge on the ties during construction ; should mortar so falling remain upon the ties it will nullify the drip of the tie and will draw damp across to the inner casing by capillary attraction.

To obviate the chance of this, laths or hay-bands should be employed and drawn up as the work proceeds, and, if it should happen that mortar has accidentally lodged on any uncovered tie, a long lath should be inserted to poke it off before the building gets too far advanced. Otherwise it may very probably become necessary to cut the wall (from the inside of the building, for the sake of appearance) at that place ; whenever a roundish damp spot appears on the plaster of such a wall it is conclusive evidence either that a tie at that spot is not clean or that it has not been built fairly in the centre of the cavity and so loses the effect of its twisted form.

A very usual method of forming a hollow wall is that shown in Fig. 2, though such flimsy construction is not to be recommended for first-class work. It consists of two thicknesses of 4½in. brickwork with a cavity of 2in. in width, so that the total thickness is 11in. Such a wall is of less strength than one of solid 9in. work would be and the security it gives against damp is only obtained at the cost of its stability.

A much sounder building is obtained by the use of a 9in. interior casing with a 4½in. outer one, the timbers necessary for roofs and floors resting on the thicker and more stable portion of the wall. When, however, flint or stone is used the thicker skin will in all probability form the exterior portion.

Fig. 2 shows the method of construction which should be adopted for carrying the lower floor joists where two 4½in. thicknesses are employed. The damp-course should be divided as shown in order that any mortar droppings may fall into the cavity *below the damp-courses*, as it will be at once realised that, were the damp-course placed upon the solid work 3in. lower, a bridge for the water would be formed, even if no droppings were present.

The external half of the wall should have air-bricks at top and bottom in order that ventilation may take place in the cavities. The draught in walls so constructed is often such that no candle can burn.

Door and Window Openings.

That no wet may penetrate at the heads of doors and windows strips of lead should be inserted right through the outer wall above the lintel or arch ; this lead should be turned one inch upwards inside the cavity and one inch downwards outside the building, as shown in Fig. 4. The length of the lead strip should be about 2in. greater than that of the opening it covers, so that any drip at the ends may fall clear of the frame. A cheaper but much less efficacious method of dealing with these openings is to form a little cement gutter on the door or window head to fall rapidly each way. Care should be taken to secure that these gutters deliver clear of the frame.

I have occasionally found that rain will penetrate at the sides of a solid window frame even when apparently properly "stopped," and to prevent this I now tack a slight slip of wood about ½in. by ½in. section in a vertical position down the side of the frame and in the centre of the cavity. The haunch at the bottom of the frame must be partially cut away and the slip should go down a trifle below the lower side of the sill ; any rain then driving round the frame will be checked at the stop formed by the wood slip and will run down and drop clear from its lower extremity. This trouble caused by wet travelling round the window frame does not appear to take place where boxed frames are employed but only when they are solid and have therefore no projections on their backs.

Lean-to Roofs.

The same method of laying lead over applies where a lean-to roof comes on to a hollow wall, and a good method of construction for such a lean-to is given in Fig. 3, where it will be seen the plate to which the rafters are secured is carried by corbels from the outer skin of the hollow wall, a strip of 5lb. lead being laid through this wall and turned up 1in. inside the cavity and dressed down at least 3in. over the slates outside (the width of lead strip in the case of a 4½in. wall being thus 8½in.) ; to cover all a projecting weathered and throated string-course of splay bricks laid in cement ensures a water-tight joint.

Wherever a lower range of buildings abuts against the hollow wall of the main block somewhat similar precautions must be taken to prevent the exterior skin of the main wall forming a damp inner wall to the lower building.

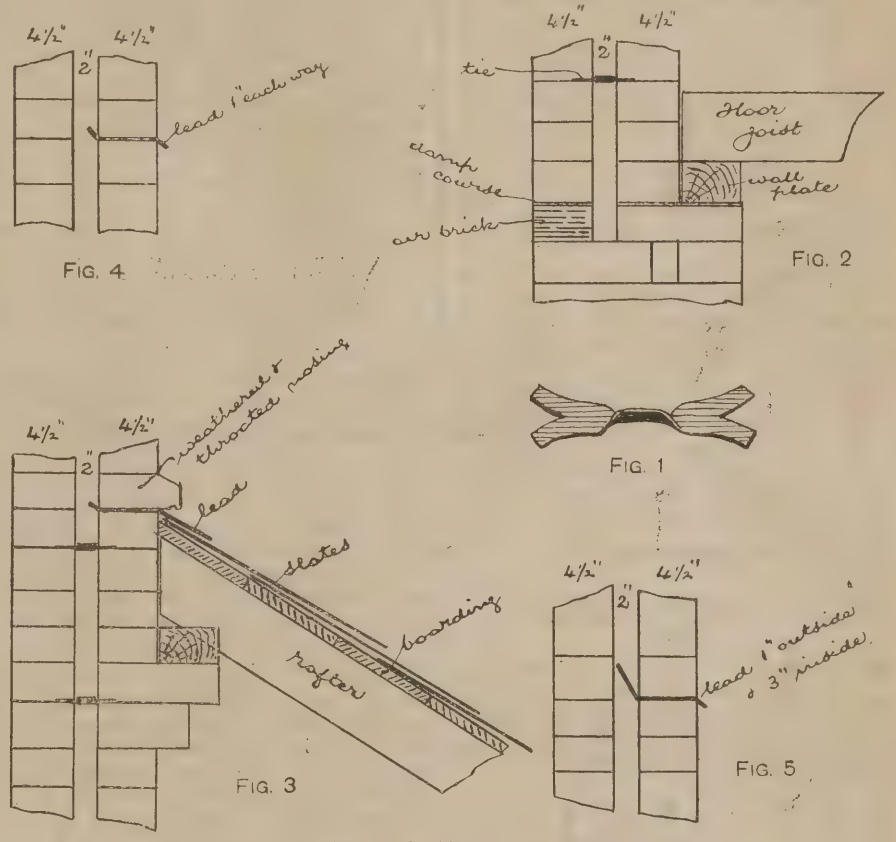


FIG. 4. FIG. 2. FIG. 1. FIG. 3. FIG. 5.

HOLLOW WALLS: DETAILS OF CONSTRUCTION.

Necessary precautions for hollow walls.

The builder of any hollow wall should bear in mind that mortar falls—

a, during the bricklaying.

b, afterwards during the building of the premises.

c, as long as there is any mortar left in the sides of the cavity.

The first-named (*a*) is wet mortar and is dealt with by precautions during the progress of the work as already described.

I have always found it profitable to commence this work by promising the foreman bricklayer a bonus of, say, £1 or £2 if upon completion no trouble is caused by mortar on the ties.

The second (*b*) is dry mortar and is chiefly dislodged during the laying of the floor boards. This is raked out from the bottom of the cavity just before the completion of the building, holes being left for this purpose at the ends of the cavities and at every change of their direction.

The third (*c*) should not be sufficient to fill up the 3in. space left at the bottom of the cavity for the special purpose of its reception, but, if it should do so, it must be removed by

cutting away and raking out as in the second case (*b*).

The chief place from which the later mortar falls is the interior face of the mortar joints (not the ties), as from the nature of the work the inner joints cannot be properly struck, and when the weight of the wall above comes upon the mortar it must squeeze out a little; and in the case of the outer casing certainly the effect of wet and frost will be to cause the over-hanging portion to fall to the bottom of the cavity.

In this connection I heard of a case a short time back where, "to make a thoroughly good job," a builder inserted lead over a long lean-to exactly as I have described it, but *turned up 3in. inside the cavity*, as in Fig. 5.

The result naturally was that not only was the extra 2in. width of lead quite wasted, but that actually a whole course of brick had to be cut away in order that its superabundance might be turned close up against the outer wall in the same position as a 1in. strip would have occupied! He had of course laid the lead so that it just missed the inner casing, and the falling mortar could not in this case fall to the bottom, and consequently quickly formed a bridge across where the lead obstruction did not allow it room to pass. A comparison of Figs. 4 and 5 will at once show this.

The author's specification clauses for hollow walls may be of service; they are as follows:—

"Pick bricks used externally for colour and quality.

"The external walls to be built hollow (as shown) with a cavity 2½in. wide, the two 4½in. thicknesses to be tied together with approved double-twist wrought-iron wall-ties dipped in boiling tar.

"Great care to be taken that the ties are not laid with an inclination inwards, and to keep them free from mortar—a lath to be laid on the ties for this purpose and drawn up as the work proceeds—and holes to be left at the foot of the walls to extract any droppings after floor boards have been laid. Provide and lay efficient damp-course of felt—well tarred—in all walls 3in. above ground line at the least. In the case of hollow walls it is to be laid one course above the solid work so as to allow a slight drop of mortar without injury."

Builders' Notes.

Mr. William Callaghan, who was for nearly half a century connected with the building trade of Liverpool, died recently in his 86th year. The deceased was for many years prominently connected with the Master Builders' Association.

The death of Mr. F. T. Wood, of the well-known firm of builders of Messrs. F. and F. J. Wood, of Cleveland Street, Mile End, E., occurred last week in his 58th year. Mr. F. T. Wood was one of the oldest of Mile End men. He was born in the parish, and lived there—as had done his father before him—all his lifetime.

Partnership Dissolved.—The partnership heretofore subsisting between Messrs. Frederick George Hall, Francis Andrew Hall, and George Wallis Hall, carrying on business as builders at No. 336A New Cross Road, S.E., London, under the style or firm of "Hall Brothers," was dissolved as and from the 31st day of December, 1900, by mutual consent. All debts due and owing by the firm will be received and paid by Messrs. Francis Andrew Hall and George Wallis Hall, by whom the business will in future be carried on under the same style or firm as before.

The new Church at Birmingham, the foundation-stone of which was laid recently, is to be built in lieu of the church of St. Peter, Dale End, one of the two churches demolished last year under the Birmingham Churches Act. The other building was Christ Church, New Street, in place of which a new church dedicated to St. Agatha is being erected at Sparkbrook. New St. Peter's is to accommodate 850 persons. The building alone is to cost nearly £13,000, in addition to the sum of £21,000 said to have been paid for the site.

The Hereford and District Master Builders' Association held its fourth annual dinner last week, Mr. Lewis Hodges, President of the Association, in the chair. Mr. Ramsden proposed "The Town and Trade of Hereford." Sanitary-inspector Sidney Protheroe, in response, said he believed the builders in Hereford had been very busy during the year. During the last twelve months, no less than 360 gulley-traps had been put into premises where the others had been defective, and many old buildings had been pulled down. They had been freer from infectious disease than in any previous year. Speaking of the St. Owen's improvement scheme, he should hail with delight the erection of several rows of model dwellings for the poor. Mr. A. J. Corner gave the toast of "The National Association." Mr. A. Krauss, the founder of the federation, in reply, mentioned that the representatives of the four federations had held a meeting to discuss the affiliation of the National Association of Master Plasterers and closer relations with kindred associations. After a lengthy discussion, they arrived at four distinct points on which they would welcome kindred associations:—(1) that we cannot recognise any members except they are affiliated to their local associations; (2) rule 3 to be admitted; (3) no one to be admitted if he is a member of a trades-union; (4) no monetary bond to be required. Mr. W. P. Lewis, sen., in giving the toast of "The Architects and Surveyors of Hereford," stated that he used to be troubled very much about the contract forms, but since the architects had adopted the contract form approved of by the Royal Institute of British Architects and the National Association of Master Builders, things have been much more satisfactory. In this form there was an arbitration clause, which was chiefly what they had been asking for, and also a strike clause. One clause the builders got in their specifications generally was as to the details that were to be provided thereafter. By the new contract form if the builder considered these details to be excessive, and failing agreement about them with the architect, he could refer the matter to an arbitrator. He did not think there was a man who would not say such an arrangement was fair and just. Mr. E. H. Lingen Barker, in reply, said that he thought he was correct in saying the builders of Hereford were bound together as an association for two purposes: defence, not defiance, of their proper position in the building world, and this not only against their workmen, but also against the building public. They combined, then, to get a fair contract, and to put an end to strikes; however, they could not do that, though they could do something towards it. Fortunately they were not face to face with anything of the kind at present. The men were apt to tell them and accuse them most unjustly of taking all the benefit that arose from low wages, but this was not so. Builders put, and very properly put, an extra price on to their contracts, if they had to pay their men more money, and the consequence was the building public hesitated to build. It would be a desirable thing if they could in some way or other enlighten working men, because many of them were misinformed, as to the real state of the matter. If they knew that the fact of asking for higher wages would prevent builders carrying out their contracts, and so employing them, thinking working men would hesitate before they pressed these demands on the masters. He did not quite know how it could be done, though the idea had occurred to him it might be possible to send competent persons to address the workmen on the question, and also by the distribution of printed leaflets, to show that two eightpences were better than one ninepence. He thought that thinking working men would come to the conclusion it was. If the men were persuaded it was not to their ultimate advantage in many cases, there would be far less agitation, and both architects and builders would find more works would be carried out than at present, as one of the reasons why business was not more brisk was on account of the fact he had mentioned.

Quarry Notes.

A Putty for Repairing Broken Stone is made by reducing the following ingredients to powder. Mix all together in a mortar, and make into a thick putty with water just before use. Ten parts of clay, four parts of fine iron filings, two parts of peroxide of manganese, one part of common salt (sodium chloride), and one part of borax. The heat will harden this cement. A cement for a similar purpose that will resist a very high temperature is prepared by making into a paste with solution of silicate of potash and borax one part of sulphate of barium and two parts of clay.

The death of Mr. James Haddon Bower, of Pitmurchie, occurred last week at the age of 70 years. Mr. Bower was one of the prominent granite merchants of the city, being leading partner of the old-established firm of Messrs. Bower and Florence, granite merchants and quarry owners, Spital Granite Works, King's Crescent, Aberdeen. He retired from active participation in the affairs of the firm some time ago, his place being taken by his eldest son, Mr. Haddon Anderson Bower, who had been for some time associated with his father in the business. During his time many important works have been carried out by the firm.

Slate-making at Angers, France.—At the slate quarries of Angers, France, roofing slates have to be dressed on the spot before the slate has time to dry and lose its fissility. The block is first divided with a chisel into thick slabs, the size of a slate. Then the splitter seated under a wind-screen, places the piece of schist between his legs, and with a very thin chisel and mallet strikes on the edge to detach the plates. It now only remains to give the plate its form and dimensions, which is done by the aid of a very heavy iron knife, the end of which is run through a ring, and falls down on the edge of a block. A skilled workman can make 700 to 800 slates per day, but the more the dimensions of the slate are augmented to compete with machine-made tiles, the more delicate the work becomes, and is a source of frequent disputes between masters and men.

A Hull Firm of Slate Merchants.—A change of style in a Hull firm, which since the year 1789 has undergone no alteration until now, is announced. This is the firm of "William Dawber and Son," slate importers and building material merchants. With the advent of the present century this firm changed its style to Dawber, Townsley and Co., Limited. It must have been even prior to the remote date of 1789 that the firm came into existence, for on the assurance of the late Mr. W. C. Dawber the firm's bank book for that year was in his possession. In connection with the building trade master slaters have been the pioneers in many a forward step, and have done much to build up the Welsh slate trade upon its present basis of popularity. The firm of W. Dawber and Son was not behind in this respect, for in pre-railway times, and during the early days of railway extension, it was no unusual thing to find several coasting vessels at the firm's wharves at Hull discharging freights into small barges to be conveyed by river or canal to inland towns—Goole, Leeds, York, &c. Operative slaters were sent out to fix these slates, and such were the conditions in those early days that the slaters went from job to job, only returning home once in, say, eight to twelve weeks, and in some instances considerably longer periods. To Hull belongs some little credit for the development of the slate trade on the Continent, for Messrs. Dawber sent the first cargo of slates ever imported into Hamburg. Of the firm Mr. William Dawber was the founder, and at his death, in 1829, he was succeeded by his son Robert, who continued business till early in the seventies. The late William C. Dawber then became the sole proprietor, and it was at this time that Mr. Townsley entered the firm, and subsequently became a partner. On the retirement of Mr. W. C. Dawber the business was converted into a private limited liability company, and has now undergone a change of style.

SMALL HOUSES FOR THE WORKING CLASSES.

IN the course of a lecture on "The Housing of the Working Classes," delivered last Thursday before the Sheffield Society of Architects and Surveyors, Mr. H. Potter, A.R.I.B.A, said that he did not intend to discuss the social or political side of the question, but to touch on the difficulties with which architects had to contend, to recognise the natural requirements made by owners as well as tenants, and to see how they could best serve the interests of both. In providing dwellings for the working classes, one of two methods was generally adopted, either to build blocks of four or five-storeyed tenement buildings in the centre of a town, or to erect cottages in suburban districts to accommodate one family only, or at any rate not more than two. He proposed to limit his paper to the consideration of the latter class, namely, small houses to be built either semi-detached, in blocks of four, six, or eight, or even in larger terraces. In a locality with a large working-class population earning good wages there must be a steady demand for this class of residence, and, owing to the existence of an excellent service of electric trams and cheap fares, Sheffield possessed one of the best aids for solving its own housing problem, for by this means there was easy access to the suburbs, enabling a working man to live where he and his family could enjoy a house and a reasonable space of ground to themselves, pure air, and be within easy reach of the country, instead of in a suite of rooms in a lofty tenement building situated in the centre of the city. But there were probably here, as in most towns, a certain number of men who, owing to the nature of their calling, must live in the heart of the business centre, and for these an excellent scheme is now being carried out by the Corporation in the Crofts area. There were many difficulties to be contended with by architects in designing these houses, which were all due to the important considerations of cost or the rent the occupiers can afford to pay, this being influenced by (1) the frequently high price of land; (2) the increased cost of labour and materials; (3) the adoption of more stringent building regulations by authorities. In reference to the last, no objection could be raised to by-laws that tended to check unsound and unsanitary buildings, but architects did feel at times that they added unnecessarily to the cost. In this respect Sheffield enjoyed privileges in two important instances, namely, it was permitted to have two storeys and rooms in the roof with a 9in. external and party wall, and it was not necessary to carry the party walls through the roof for a height of 15in. After giving some instances, the lecturer briefly referred to some points that arose in laying out estates. He suggested that instead of large owners and public bodies cutting up the land at the rear of the houses into small strips for so-called gardens, each house might have a small yard, and the remaining land be kept as one large open space for the benefit of all the adjoining houses. With sites 70 or 80ft. deep a space 40 to 60ft. wide could be obtained extending the entire length of the houses, which would form an excellent playground for the children, would facilitate the drainage, give good access to the rear of the premises for the delivery of fuel and collection of refuse, and save the loss of frontage caused by providing for this in the ordinary way. After making a few remarks about roads and the length of time these were sometimes allowed to remain in an unfinished state, the lecturer discussed the planning of these small houses in detail. He referred to a series of plans shown in the room illustrating houses occupying frontages of from 12 to 18ft., beginning with four-roomed cottages for one family, and gradually increasing in size up to six and seven rooms. Then followed plans for double tenements, representing a class of house for which there is an increasing demand in industrial centres. They consist of ground and first floors arranged in "flats," each having a separate front entrance, and being self-contained in every respect. They meet the requirements of a large class of people who are unable to pay the rent required for single tenement houses, and avoid all the inconveniences that arise if two families share a house that was originally intended to be occupied by one. In conclusion, the lecturer referred to the external treatment of these houses, and in making a plea for a more careful consideration of this part of the subject showed drawings illustrating the use of different materials in a simple but effective manner.

THE VICTORIA EMBANKMENT.

L.C.C. ELECTRIC-LIGHTING SCHEME.

WE print as plates this week plans and elevations of the new electricity generating station which has been erected by the London County Council on the Victoria Embankment, close to the Charing Cross Station of the District Railway. Portland stone has been used for the exterior, and the high-pitched roof is covered with green Westmorland slates. It may be mentioned that the design (by Mr. W. E. Riley, F.R.I.B.A., Superintending Architect to the Council) was submitted to the Royal Institute of British Architects, who made certain suggestions for improvement. The accommodation provided and general arrangement can be seen by examining the plans. The contractors are Messrs. Holloway Brothers, of Lambeth; Messrs. McClure and Whitfield, of Stockport, supply the dynamos, &c.; the gas engines are contracted for by Messrs. J. E. H. Andrew and Co., of Reddish, near Stockport; and Messrs. MacFarlane, of Glasgow, will supply the lamp standards. The lighting scheme will include the Victoria Embankment (extending from Blackfriars Bridge to Westminster Bridge), Westminster Bridge, and the approaches, so far as they are under the Council's control.

The lamps, each upon standards about 24ft. high, will be 144 in number, and will be of 500 watts. They will be divided into nine circuits, each circuit containing from 15 to 30 lamps in three to six groups, each group containing five lamps in series, the groups in each circuit being parallel. Lamps will be placed upon each side of the Embankment, on the kerb, at a distance of 45yds. apart, alternating on the two sides. On the land side the pavement is 16ft. wide, the roadway is 64ft. and more in width, and the pavement at the river side is 20ft. wide. No change, however, will be made with regard to the existing parapet lamps in which gas is now used, save that a new lantern will replace the old and will be occupied by a small arc light. Some of the trees will no doubt have to be removed in order that the full value of the new illuminant may be obtained. This has already been done, in fact, to some extent. And here it may be observed that such a wide avenue as the Embankment requires far more than the ordinary proportion of light, because, in addition to the trees, there is an absence of all illumination from shop windows, private lamps, &c.

The generating plant will consist of four units, each consisting of engine and dynamo. These units will be similar in all respects, and any three of them will be capable of supplying the whole of the current required, the fourth being kept against any emergency. In addition, there will be a motor generator for supplying the current required for lighting the station, for charging the accumulators, and for driving the motors. The four continuous-current dynamos are each to be capable of giving a current of 70 amperes at an E.M.F. of 550 volts and a maximum output of 40,000 watts, and each will be driven by a gas engine—which will be required to develop a maximum power of 68 B.H.P., the normal working load to be 54 B.H.P. when running at 210 revolutions per minute. The gas engines are to be on the "Otto" principle. The scheme has been prepared by the Council's chief engineer, Sir Alexander Binnie, and is being carried out under the immediate supervision of Mr. T. P. Gunyon.

An Isolation Hospital at Shardlow, Derbyshire, is to be erected at a cost of £9,143.

Engineering Notes.

Richmond Electric Tramways.—The Richmond Town Council have decided to oppose the new Electric Tramways Bill so far as it refers to their district.

Bristol Dock Extensions.—Bristol has resolved to proceed with the Bill for the construction of a new dock at Avonmouth for the largest type of vessels at a cost of £1,800,000.

Electric Trams for Chester.—The ratepayers of Chester have, by a poll taken last week, decided in favour of the Corporation's proposal for introducing electric traction on the tram lines.

The New Sanatorium, Malvern, is being warmed and ventilated by means of Shorland's Manchester stoves, patent exhaust roof ventilators and special inlet ventilators, supplied by Messrs. E. H. Shorland and Brother, of Manchester.

Dover Harbour Works.—The first stone of the eastern arm of the National Harbour of Refuge at Dover, weighing thirty tons, was laid on Thursday last. It is expected that in fine weather twenty to thirty blocks will be placed in position daily.

The Monte Video Harbour Works.—The Government Commission appointed to examine the tenders for the Monte Video Harbour Works has unanimously decided to recommend the Government to accept that of the French Allard-Coiseau-Dolleus Syndicate. The amount involved is about £2,400,000.

Electric Traction on the Underground.—At a special meeting of the Metropolitan District Railway Company held last week resolutions were passed for the raising of an additional capital of £500,000 and the creation and issue of £166,000 of debenture stock, in order that electric traction might be adopted.

Sunderland Tramways a Success.—The profits from the municipal overhead electric tramways in Sunderland have exceeded expectation. The receipts, which were estimated at 10d. a mile, have been 1s. 6d. a mile, and there is a nett profit of over £3,000. The Corporation has decided to spend £27,000 in extensions.

Hampstead Tubular Railway.—Among those on the committee of Hampstead residents who are opposing this scheme are Sir L. Alma-Tadema, Mr. Asquith, Sir Walter Besant, Mr. G. H. Bibby, F.R.I.B.A., Mr. Basil Champneys, Mr. Alfred East, Dr. Garnett, Miss Octavia Hill, Lord Iveagh, Mr. G. Shaw-Lefevre, Mr. David Murray, Mr. Briton Rivière, and Mr. Norman Shaw.

The Quirinal Tunnel at Rome.—The work of boring a tramway tunnel under the Quirinal Hill, at Rome, is now completed. Boring was begun at both ends of the tunnel, and the two openings were found to coincide perfectly. The total length is 350yds. and the total width 16yds. The work will connect the two busiest quarters of Rome, which centre respectively in the Via Tritone and the Via Nazionale.

Electric Motors for Cartage Purposes.—The Fulham borough surveyor has prepared for the consideration of the Council a special report on the use of electric motors for cartage purposes, in which he opposes their adoption on the ground of expense. In the neighbouring borough of Chelsea three steam motor vans have been in use for about six months, and have proved highly satisfactory both as regards economy and expedition in the parish work.

Sir William Preece on English Engineering.—Sir William Preece controverts the theory that decay in English industry is taking place. Engineers in this country have always been the pioneers, says Sir William. It is a mistake to say that we are behind America. The overhead electric railway at Liverpool is the first overhead electric railway in the world. If anyone wants to know what is best in locomotion work let him go to the London and North Western works at Crewe.

Bricks and Mortar.

APHORISM FOR THE WEEK.

A man may well be an artist though the tools of his craft be not in his possession.—SENECA.

Our Plates. SOME particulars of the new electricity-generating station erected by the London County Council on the Victoria Embankment will be found on page 457 of the present issue.—With regard to the church at South London, Ontario (Burke and Horwood, architects), the position of the site and the finances of the congregation made it necessary to adopt a basement schoolroom. It was also required that the entrance should be roomy and attractive, and that it should light up well at night, as the sides of the building would not be seen to any extent. The large porch permits broad stairs to the auditorium and easy and direct entrance to the basement to be provided.—Brislington is close to Bristol.

Somerset House Extensions. THE statements that have appeared to the effect that Somerset House is to be greatly enlarged are premature, says the "Birmingham Daily Post," for, although every year the need for such an extension becomes more pressing, the Government is not at present prepared to find the money, while a counter scheme is much favoured to transfer some of the work now done at Somerset House to another building. Plans for the proposed extension have been prepared, however, by an enthusiastic official upon his own responsibility. He has designed extensions, east and west, that would double the Strand frontage, and provide 800 new rooms, Sir William Chambers's stately work being closely imitated. "An enlargement of Somerset House, if the step be undertaken, will need to be closely watched, for every canon of artistic taste must not be outraged, as it was a year ago by the construction of a hideous red-brick barrack at the Tower of London, under the architectural auspices of the War Office, spoiling the view of that venerable structure from the Thames."

The Fallen Stones at Stonehenge. CONSIDERABLE correspondence has taken place in regard to the fallen stones at Stonehenge (see page 436 of last week's issue). Mr. Phelps remarks in the "Times" that there originally was an outer circle of uprights with lintels on top, fitted together not only with mortise and tenon on the upright, but also with notches on the centre of each lintel, one projecting, the other indented on opposite end. The lintel has fallen between the two uprights and their impost and is broken across, but the fallen upright is scarcely damaged, and could, Mr. Phelps thinks, be easily replaced. He hopes a scientific investigation will be undertaken as to the composition of the stones—whether natural stones or concrete, as some have maintained. "Surely," says another correspondent, "the time has come when the nation should take charge of this ancient monument:—(1) Under proper supervision, the three trilithons which came down in 1797 could easily be replaced, as well as the one just fallen, as careful drawings of them are preserved *in situ*; (2) then some judicious surface draining would save the remaining trilithons from being gradually undermined by every passing shower; (3) the circular vallum or ditch might be restored by deepening, so as to be a real fence to the temple." Another correspondent has an ingenious scheme for preserving the stones. He says:—"For about a foot along one side of a stone let the earth be cleared away to a depth, say, level with the bottom of the stone, and to a distance outwards of 6ft. A trench would thus be formed extending outwards from the stone and having a length of 6ft., a breadth of 1ft., and a depth of about 5ft. This trench is then filled with concrete to about 6in. from the top. Now form a similar trench on the opposite side of the stone and fill this with concrete also. A third trench would then be cut alongside the first—the concrete in which is now hard—and this third trench in turn is filled with concrete. A fourth trench could then be cut alongside the second and the operation repeated until the stone is embedded in and firmly attached to a solid mass of concrete. Of course cement or any other suitable material could be employed instead of concrete. By this method no considerable part of the stone is left unsupported at any time, and there is no risk of displacement during the progress of the work. The turf would then be replaced upon the concrete." Yet another correspondent calmly proposes that the fallen stone should "be joined up with iron clamps, let in and covered with cement to prevent corrosion." "Every practical man of experience knows, or should know," says Mr. Harry Hems, "that whenever iron clamps, in any form (galvanised or otherwise), are used in conjunction with masonry, ancient or modern, the stones themselves, sooner or later, are doomed. Had he suggested clamps—if any—of copper or bronze, the idea might, possibly, be open to serious consideration; but iron ones simply spell deliberate destruction."

Lift Accidents. THE Board of Trade report upon the accident that occured in June last to one of the lifts at the London Bridge Station of the City and South London Railway is instructive. As one of the lifts (in which there were three passengers and the lift man) was about to be lowered from the booking-hall to the level of the platforms, the overhead pulley-shaft of the counterweight broke in two places, causing the weight to fall and the cage of the lift to descend rapidly on to the buffers at the bottom of the well. Owing to the descent of the cage being in this way suddenly arrested, some heavy weights, which had been placed on the top of the cage, apparently for the purpose of adjusting the balance between the cage and the counterweight, became displaced from the girders on which they were resting, and broke through the roof of the cage, falling upon the persons inside. The results were very serious. The lift man and one passenger had their left legs broken, while another passenger sustained a bad fracture of the jaw. The third passenger was not struck by the weights and escaped all physical injury. The safety-gear consists of four cams actuated by springs which are released as soon as any one of the ropes supporting the cage breaks or becomes slack. In this case, as no rope broke, and as the friction of the ropes on the drums caused a constant strain to be maintained on them and so kept them tight, the springs would not have been released and the cams would not have come into play, even if the safety-gear had been available. To remedy this defect in the safety-gear it is proposed to add a rope passing direct from the clutches over the pulley at the top to the counterweight. Any alteration then in the distance between the cage and weight, measured along the course followed by this subsidiary rope, will at once cause the clutches to come into operation. As probably the majority of lifts in use in this country are fitted with safety-gear of a description similar to that described, it is desirable that steps should be taken in all such cases to guard against the defect referred to.

The Third Admiralty Block. AS stated in our last issue, Messrs. Leeming and Leeming are at present engaged on the plans for the third block of Admiralty buildings in Whitehall. When this enterprise was begun the necessity for this third block was not foreseen, and the intention was to carry along the north side of the Horse Guards Parade an ornamental screen consisting of a covered passage-way connecting the old buildings with the new. Long before the second block was finished, however, the expansion of the Navy necessitated a corresponding expansion in the Admiralty staff, and it was perceived that this third building would be imperatively necessary. Two years ago £150,000 was voted for the purpose, and that is now going to be expended. The first erection cost £190,000; the second, which is now fully occupied chiefly by the Accountant-General's department, cost £160,000; so that by the time the quadrangle is complete the total expenditure on the new Admiralty will be not less than half a million of money. It is now clearly foreseen that this third extension will not be the completion of the business, and the site for a fourth addition is already under consideration, and by the time the work now to be undertaken has been carried through, and extension number four has been got under weigh, the probability is that it will be found the original Admiralty is hopelessly out of date and out of keeping with the new erections behind it and the imposing pile of the new War Office in front of it, and Mr. Shaw-Lefevre's proposal to rebuild it will no doubt come to the fore again. It is well known that the old building has a very unsatisfactory foundation, consisting of two layers of oak planks laid on what was a sort of swamp, and the levellings taken for the new architecture have revealed the fact that one corner has subsided to the extent of 8in. The forthcoming third block will occupy a very prominent and important position, and it is intended that it shall constitute the front of the whole establishment. It will overlook the Horse Guards Parade, and the general design of it will be more elaborate and imposing than the other façades. It will be richer in ornament, and will be embellished with sculpture. How long it will take to complete cannot now be definitely stated.

An Extensive West-End Improvement. THE Tottenham Court Road estate of the Corporation of London, which comprises about 4½ acres, was one of the properties bequeathed by old John Carpenter, the City's Town Clerk, in 1440. Beyond its historical associations there are literary and social memories connected with the site which are deeply interesting. The leases of the properties are rapidly falling in, and the next ten years will witness a complete change in a large portion of Bloomsbury. It must be remembered that Bloomsbury is a modern suburb, in spite of its literary and artistic associations, and that less than a century ago it was a pastoral domain upon which the lowing herds browsed peacefully enough. A map of 1808 shows Alfred Place with its north crescent in Chenies Street, and its south crescent in Store Street, still unbuilt, though planned out. The architect responsible was George Dance, R.A., who was the clerk of works to the Corporation. Mr. Dance was very partial to crescents. Welby Pugin once resided in Store Street. The bulk of the leases on this estate fall in two years hence, while the later ones end in 1908. The crescents will be abolished in favour of a block form of building, and new streets will be made in conformity with the improvement. Alfred Place will be prolonged northward and southward, on the north to meet Alfred Mews (to be widened to 50ft.), and on the south to meet a new street which will run into Tottenham Court Road, and will also be 50ft. wide. As several properties facing Tottenham Court Road have recently been rebuilt little alteration will be made upon the line of frontage. The plans have been drawn by the City Surveyor (Mr. A. Murrray), under whose direction the important improvement will be carried out.

Carshalton Park. THE charming village of Carshalton, in Surrey, is in the hands of the builder, for the greater part of Carshalton Park is about to be covered with houses, and the fine old brick wall which hid house and trout stream from view is already down. It is to be hoped that the very handsome hammered-iron gates, which possess quite a reputation, will not be lost sight of or allowed to fall to ruin. It is said, indeed, that a possible purchaser has appeared from America; but the gates deserve as happy a fate as befell those of Chiswick House, which were removed not very long ago to Devonshire House, in Piccadilly, where they add a touch of splendour to the ugly brick wall in front of the ducal abode.

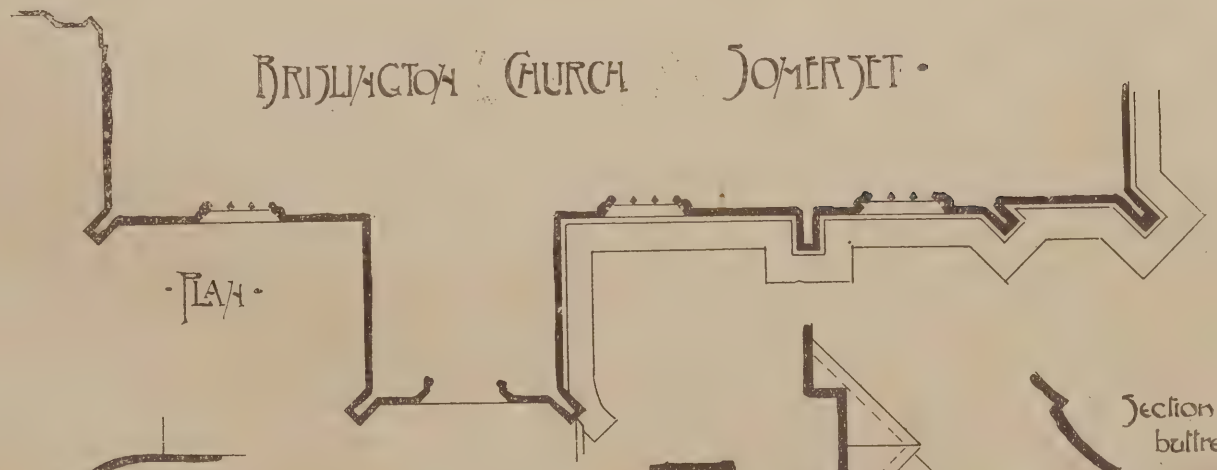
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Wednesday, January 16th, 1901.

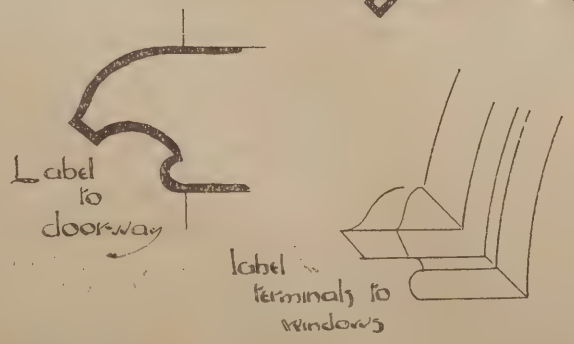


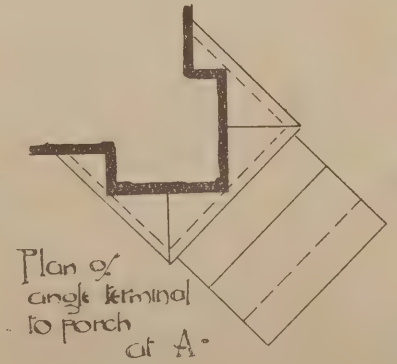
ELEVATION OF SOUTH AISLE

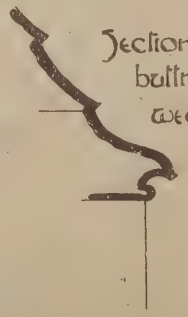
BRISLINGTON CHURCH SOMERSET

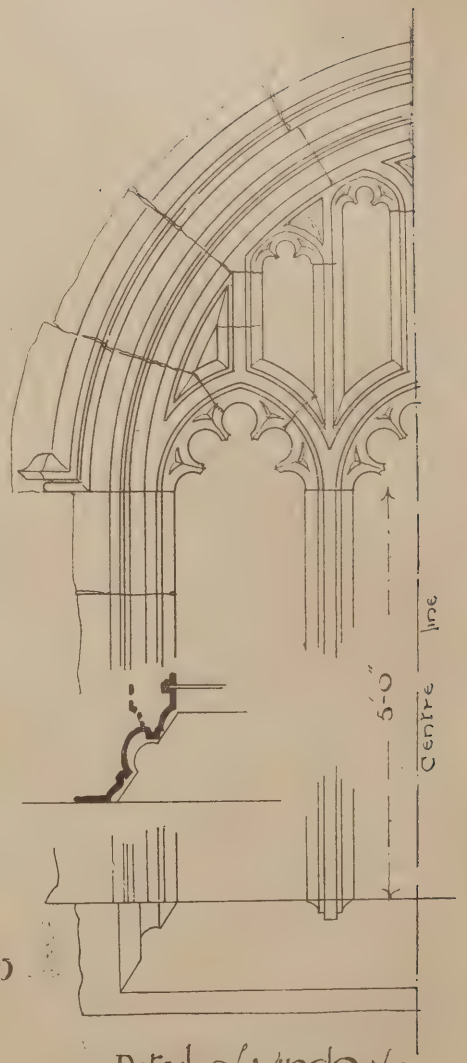


PLAN





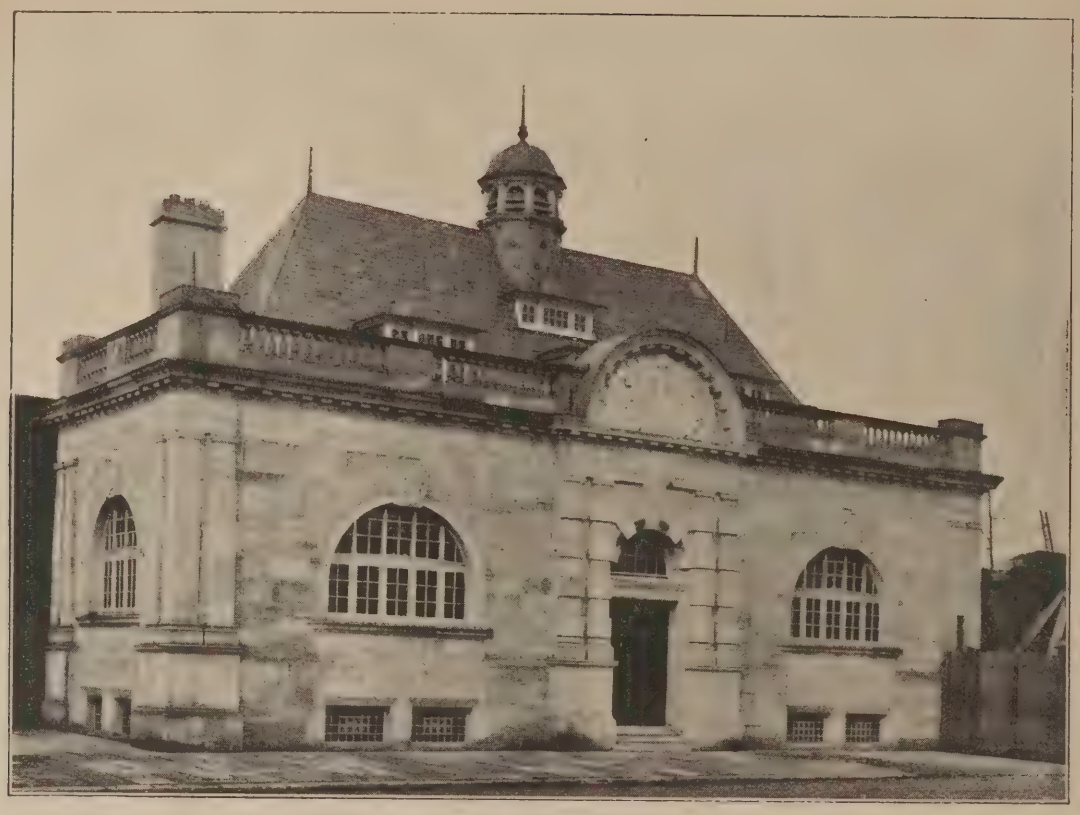


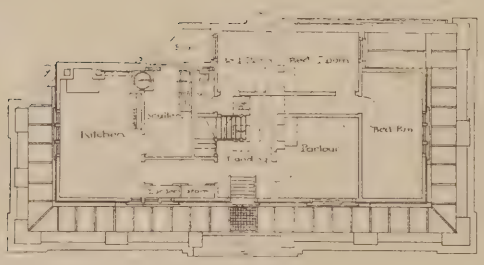


DETAIL OF WINDOW

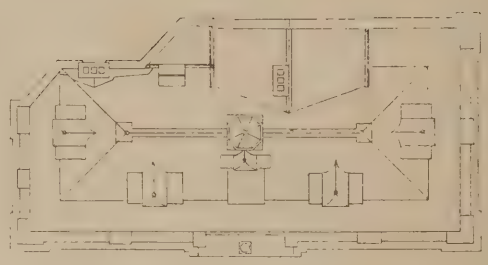
Measured and Drawn by W. LEE CLARKE.

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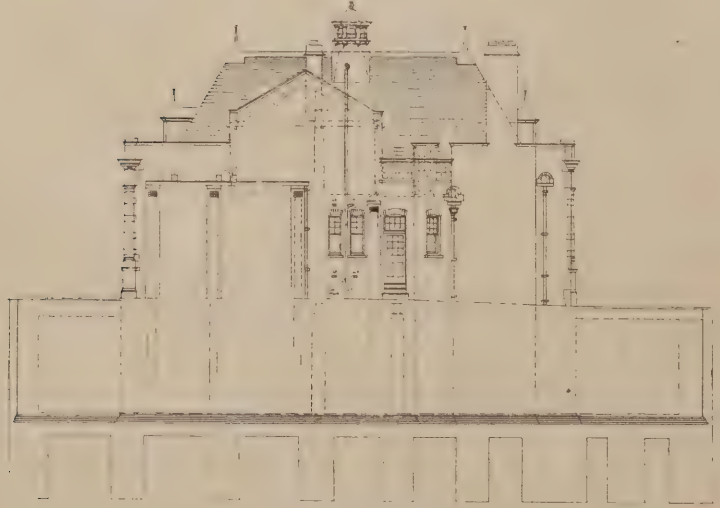




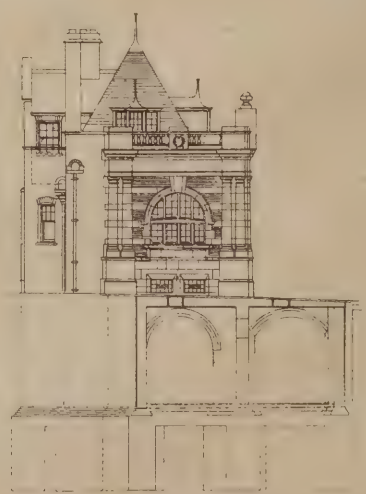
ATTIC PLAN



ROOF PLAN



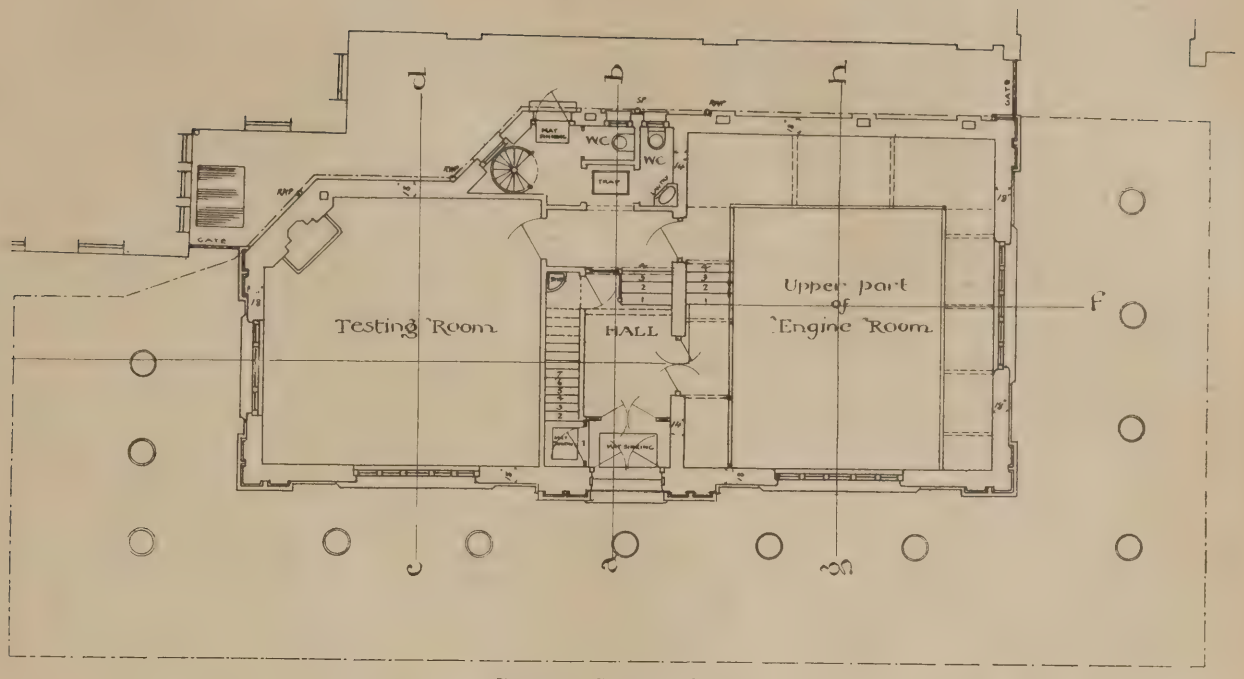
BACK ELEVATION



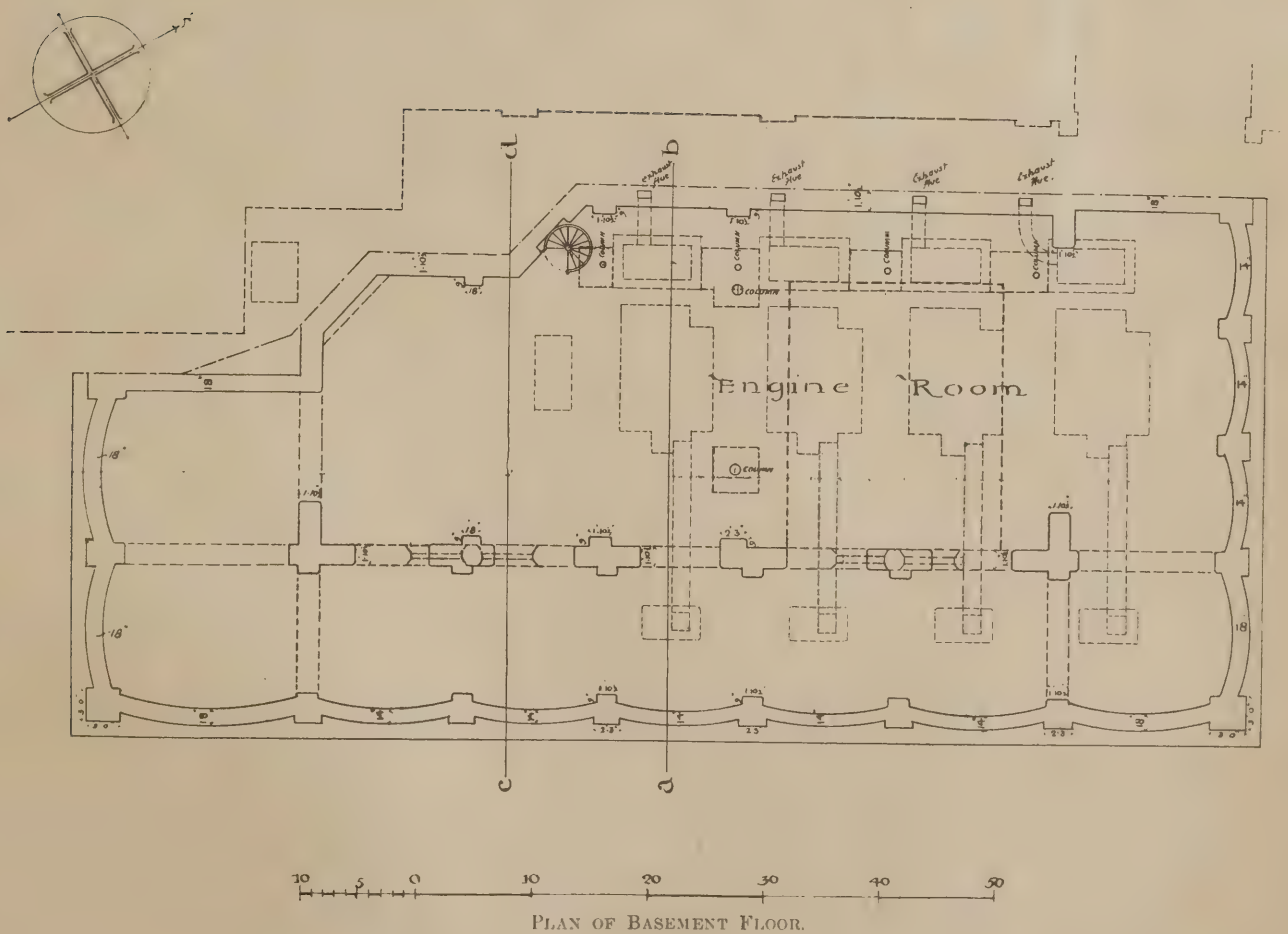
SOUTH ELEVATION

LONDON COUNTY COUNCIL ELECTRI

By W. E. RILEY, F.R.I.B.A.,



PLAN OF GROUND FLOOR.



PLAN OF BASEMENT FLOOR.

GHTING STATION, VICTORIA EMBANKMENT.

rintending Architect to the Council.

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CHURCH AT LONDON SOUTH, ONTARIO, CANADA. Burke & Horwood, Architects.

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ANCIENT LIGHTS.

JOINT REPORT OF R.I.B.A. AND SURVEYORS' INSTITUTION.

THE joint committee of the Royal Institute of British Architects and the Surveyors' Institution appointed to consider the law relating to ancient lights have issued their report. They recommend the following amendments:—

1. The right to ancient lights shall, in all cases where such rights have not been already acquired, be limited to a right to receive light sufficient for all ordinary purposes, but shall not include a right to light of extraordinary amount for special purposes.

2. After the passing of the Act the owner of any tenement not at the time servient to some neighbouring tenement, but over which such neighbouring tenement would in course of time acquire dominant rights, may serve upon the owner of such neighbouring tenement a formal notice, in form and manner prescribed by the Act, and may advertise the same in the daily papers, and register the same at the Land Registry, where one exists, of the district, or, where no such Land Registry exists, at the offices of the county or municipal council of the locality. Such notice shall have the same effect as though an interruption had been submitted to for one year, and such notice shall run with the land.

3. The owner of a building which is about to be taken down may cause plans, sections, and elevations to be prepared, and such drawings if they be attested by the district surveyor in London, or the county or borough surveyor elsewhere, shall be accepted as legal evidence. Such drawings shall on demand be certified and registered by the officers above named, who shall be paid fees on a scale appended to the Act.

4. No building erected after January 1st, 1905, shall acquire any fresh rights of light or air where it abuts on any streets, highway, road, court, or alley used by the public, or as an access to various tenements, either held in the same ownership or in various ownerships.

5. The owner, lessee, or occupier of any tenement, who considers that his ancient lights will be or have been interfered with by the erection or proposed erection of new premises or alterations to old ones, shall have the right to inspect (or have inspected on his behalf) the drawings which shall be prepared by the building owner of the premises which cause such interference; or if no drawings are in existence, to be informed of the intentions of the building-owner, and to take or have taken such particulars from the drawings or information or from the building itself, if erected, as may enable him to ascertain where there is ground for complaint.

6. If such neighbouring owner, lessee, or occupier considers that the lights of his premises will be interfered with, he shall, within seven days from obtaining such information as aforesaid, give notice in writing by registered post of his objection to the building-owner, together with the name and address of a surveyor who shall have power to act on his behalf.

7. Within seven days of the receipt of such notice the building-owner shall acknowledge the said notice, by registered letter, and infom the person from whom he received notice of objection of the name and address of his surveyor, who shall also have power to act on his (the building-owner's) behalf.

8. Such two surveyors so appointed shall, within ten days of the date of the appointment of the last of them, select and appoint an umpire under their hands in writing, such umpire being a member of the Royal Institute of British Architects or of the Surveyors' Institution. The first-named two surveyors shall within the like period meet and discuss the points raised by the owner, lessee, or occupier, with a view of settling the same, and failing coming to a settlement they shall refer the matter to the umpire appointed as aforesaid. The said umpire shall view the site and buildings of both plaintiff and defendant, and shall have power to take such evidence upon oath as he may think necessary, and he shall, within 21 days from the date of the matter being placed before him, or within such extended time as he may from time to time determine, issue his award, in which he shall determine either or all of the following points: the right of the building-owner to carry out his intended works, the alteration (if any) necessary to be made in carrying out the proposed new buildings or alterations to prevent or lessen the obstructions complained of, and the amount (if any) of compensation of every description to be made to the owner, lessee, or occupier, the alterations or improvements to the adjoining premises by light-reflecting surfaces, enlargement of lights, heightening of premises, or other means, the amount of costs to be paid by each or either party, and generally all matters required to arrive at a settlement.

9. In the event of either party neglecting to appoint a surveyor within the time prescribed, or of the unwillingness of the umpire appointed to act, and no other umpire being agreed upon within a further period of ten days, either party shall apply to the president for the time being of the Royal Institute of British Architects, or the president of the Surveyors' Institution, who shall appoint an umpire forthwith, with all the powers as before described.

10. If either party shall be dissatisfied with the decision of the umpire, he may appeal to an Appeal Committee to be formed of nine persons, appointed annually, namely: three architects to be appointed by the Royal Institute of British Architects, three surveyors to be appointed by the Surveyors' Institution, and three barristers to be appointed by the Home Office. Three members, of whom one shall be an architect, one a surveyor, and one a barrister, shall form a quorum. The decision of this committee, save as hereafter mentioned, shall be final, and they shall have full discretion as to costs. Before giving a decision the members sitting on the case shall personally visit the premises of the plaintiff and defendant, and shall have power to decide whether, and if so to what extent, the proposed new buildings shall be amended, or the dominant premises altered.

11. In the event of either party refusing to accept the decision of the committee in all cases in which a larger sum than £500 is awarded either in money, damages, or works, or in which the interference with the proposed works exceeds £500 in value, he shall have power within one month from the publication of the said decision to bring the matter before the High Court of Justice by a summary process. The Court shall have the full powers set out in clause 8 aforesaid.

12. In any action to restrain building on the ground of its interference with the rights of light, and whether an interim injunction has been obtained or not, either party may apply to the judge by summons, either to hear the same with an assessor or assessors, or to refer the same to arbitration in accordance with clauses 8 and 10. If at the hearing of such application or motion for injunction it appears to the judge that the claim may be satisfied by damages, he may himself refer the case to such arbitration, and if he considers that the action for an injunction has been commenced unreasonably or unnecessarily, may order the party bringing such action to pay the defendant's expenses and costs on such scale as he may deem fit.

The committee—which consists of Messrs. T. Roger Smith (chairman), E. A. Gruning, J. Douglass Mathews, J. Fletcher Moulton, Q.C., H. T. Steward, Alexander R. Stenning, H. Chatfeild Clarke and George M. Freeman, Q.C.—further recommend that they be empowered to expend the necessary funds in drafting a public Bill to carry out the above provisions.

The report has been adopted by the Council of the Royal Institute of British Architects, and intimation of such adoption has been conveyed to the Council of the Surveyors' Institution.

A Marble Bust of Richardson, the novelist and printer, is to be presented to the St. Bride's Foundation Institute by Mr. Passmore Edwards. It is being sculptured by Mr. George Frampton, A.R.A.

Enquiries Answered.

The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional, or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Stability of Townsend Chimney, Glasgow.

GALWAY.—D. E. S. writes: "While reading a certain work relating to building I observed the following statement: 'The Townsend chimney at Glasgow oscillates to the extent of 3ft., that is to say, 18in. on each side of the vertical.' The chimney is stated to be 454ft. high. I should be glad to learn what stress would be set up in the brickwork at the ground level through the oscillation mentioned."

This is, or was, the tallest chimney in the world. It was designed and built by Mr. Robert Corbett, of Glasgow, in the years 1857–9, and contained 1,300,000 bricks, exclusive of those for the flues. The diameter at the bottom (ground line) is 32ft. and at the top 13ft. 4in. The height from ground line is 454ft., and from bottom of foundations 468ft. From Professor Rankine's report on its stability the weakest point appears to be at 200ft. above ground-level, the greatest safe pressure of wind being estimated by him at 63lbs. per sq. ft. For full particulars of this and other tall chimney shafts see Bancroft's "Tall Chimney Construction" (Calvert, Manchester). The total weight above ground line is about 6 500 tons. The thickness at bottom is 5ft. 7in. The following is an attempt to calculate the stress under the conditions stated, but it must not be looked upon as more than a very rough approximation. The chimney shaft will be in the condition of a cantilever loaded throughout its length; therefore

$$\Delta = \frac{P L}{8 E I}$$

where Δ = deflection in feet; L = length (height) in feet; P = total wind-pressure in tons; E = modulus of elasticity in tons per sq. ft. ($450 \times 144 = 64{,}800$); I = moment of inertia.

Then by transposition

$$P = \frac{8 E I \Delta}{L^3}$$

$$\text{Now } I = \frac{\pi (D^4 - d^4)}{64}$$

$$= \frac{3{\cdot}1416}{64} (32^4 - 13\,3^4)$$

$$= {\cdot}0491\ (1{,}048{,}576 - 31{,}290)$$

$$= \text{say, } 50{,}000,$$

$$\text{and } P = \frac{8 E I \Delta}{L^3} = \frac{8 \times 64{,}800 \times 50{,}000 \times 1\,5}{454^3}$$

$$= \frac{38{,}880{,}000{,}000}{93{,}576{,}664}$$

$$= \text{say, } 400 \text{ tons.}$$

But also $P = \frac{2 I C}{D L}$ where P = tons distributed acting at centre of pressure; I = moment of inertia; C = maximum stress in compression per sq. ft. produced by wind; D = outside diameter at base in feet; L = height in feet to centre of pressure.

Then by transposition

$$C = \frac{P D L}{2 I} = \frac{400 \times 32 \times \text{say,} 225}{2 \times 50{,}000} = 28 \text{ tons per. sq ft.}$$

To this must be added the compression produced by the dead load of the brickwork.

$$W = 6{,}500 \text{ tons.}$$

$$A = \frac{\pi}{4} (D^2 - d^2)$$

$$= 7854\ (32^2 - 13\,3^2)$$

$$= 665 \text{ sq. ft.}$$

$$W = \text{intensity of pressure per sq. ft.} = \frac{6{,}500}{665}$$

= say, 10 tons. Total intensity of pressure on leeward side in strong gale 28 + 10 = 38 tons per sq. ft. or, say, two-thirds of ultimate crushing strength. HENRY ADAMS.

Section of Plate Girder.

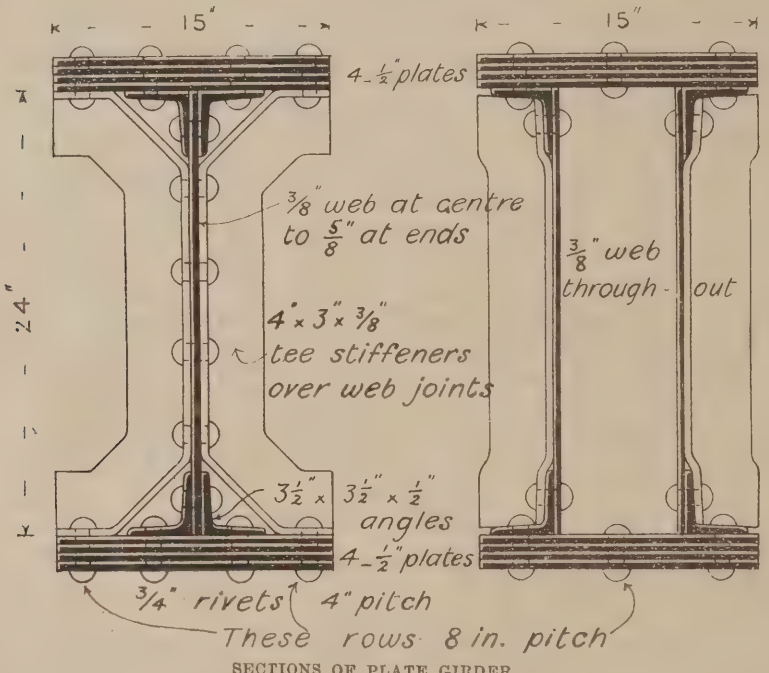
GRAVESEND.—C. J. P. writes: "Kindly state a simple formula for setting out the section of

a plate girder. I should also be glad to have an example worked out."

The simplest formula for sectional area of flange in plate girder is $A = \frac{W l}{8 d f}$

where A = gross sectional area of either flange in square inches,
W = distributed load in tons,
l = length of span } in same units,
d = depth of girder }
f = maximum stress allowed per square inch—say, 4 tons on wrought iron and 6 tons on steel:

but it must not be imagined that this is all the calculation needed in designing a girder. To put in all the figures that would have to pass through the draughtsman's mind would occupy four or five pages of foolscap closely written. Such a book as "The Practical Designing of Structural Ironwork" (Spon: 8s. 6d.) should be carefully studied and examples worked out. The following case is given by way of illustration, but is very much condensed and many of the details assumed without calculation as would be done at an examination. Example: Give design for a beam of 25ft. span to carry 80 tons distributed load. Wrought iron of stock sizes to be used, but no rolled-iron joists. Give calculations (Architectural Association, 1884). Assume 25ft.



SECTIONS OF PLATE GIRDER.

to be effective span. Weight of girder, $\frac{W l}{400} = \frac{80 \times 25}{400} = 5$ tons. Total load distributed, $80 + 5 = 85$ tons. Maximum shear stress, $\frac{85}{2} = 42.5$ tons. Depth of web, say, 2ft.; mean depth, 25½in. Thickness of web, $\frac{42.5}{3 \text{ tons per sq. in.}} = 14.17$ sq. in., $\frac{14.17}{24} = .612$in. thick; say, single web ⅝in. thick, or box girder, 2 webs, each ⅜in. thick. Maximum stress in flanges $\frac{W l}{8 d} = \frac{85 \times 25}{8 \times 25\frac{1}{2}} = 125$ tons. Sectional area of flange $\frac{125}{4 \text{ tons per sq. in. gross}} = 31.25$ sq. in. Angle irons, say, $3\frac{1}{2} \times 3\frac{1}{2} \times \frac{1}{2}$. Flanges, say, 15in. wide × 2in. thick, i.e., 4 − ½in. plates. Say ¾in. rivets 4in. pitch. HENRY ADAMS.

Plans for Drainage of Houses.

WALTON-ON-THAMES.—R. R. writes: "A engaged B to prepare plans for drainage connections to twenty-nine houses. The plans were made and passed by the Urban District Council. A day or so after A died. C, being solicitor to the estate, introduced a *personal* friend, D, to carry out the proposed work. D preferred to make his own plans, which were rejected by the Urban District Council, the plans prepared by B being adhered to. As the work was not done according to the regulations of the Council, and the workmanship was very inferior, B complained to the Council that it should have been passed by the sanitary inspector. This was about six weeks ago, but up to the present B has not heard anything from the Council. But as B lived in one of the houses, and had done so for twelve years, he was served with notice to quit, which he did within the week. (1) C being solicitor and trustee to the estate, and also clerk to the Urban District Council, was it legal for him to employ D in the capacity of his engineer and to uphold him in carrying out work not in accordance with the requirements of the Council? (2) Being trustee to the estate, was it legal for him to continue to have such work done after knowing it was detrimental to the property? (3) Has B any remedy against the estate? (4) How does the sanitary inspector stand in respect to the Local Government Board, he having been in the habit of canvassing for and making plans for drainage connections (some of which no council could possibly pass), and passing the work in complete disregard to the regulations of the Council?"

(1) There is no legal objection to C employing D as engineer to carry out the work, nor is C responsible to the Council for the manner in which the engineer executed the work. (2) The trustee to the estate presumably employs a properly-qualified engineer to superintend the execution of the drainage work, and the responsibility for the way in which the work is performed rests with the engineer. (3) B can claim against the estate for the preparation of the original plans. (4) A sanitary inspector should occupy a perfectly independent public position, and, speaking generally, is not permitted to engage in paid private work of such a nature as may interfere with the proper performance of his official duties. T. E. C.

Colonial Appointments for Professional Men.

BELFAST.—H. L. V. writes: "I should be glad to know if you could give me a list of Government appointments open to architects and surveyors in Canada, British Columbia, Egypt and India, and where full particulars of such appointments (especially those in Canada and British Columbia) may be obtained."

There was formerly a book published containing all the information required, and it can probably be still obtained from John Pulker, Esq., Emigrants' Information Office, 31 Broadway, Westminster, S.W., upon enclosing a P.O. for 1s.

HENRY ADAMS.

R.I.B.A. and Other Certificates.

LONDON, N.E.—R. H. O. writes: "Being desirous of obtaining a certificate from one of the following: R.I.B.A., the Institute of Civil Engineers, and the Surveyors' Institution, I should be glad to know what subjects need to be studied, and which of the three certificates mentioned would be easiest to obtain. I may say I have passed the advanced Building Construction examination."

It would be best to write to the secretaries of the three bodies mentioned, and to those of the Society of Architects and the Incorporated Association of Municipal and County Engineers also, for particulars of the examinations which they conduct. Their addresses are: R.I.B.A., 9 Conduit Street, W.; the Surveyors' Institution, and also the Institute of Civil Engineers, Great George Street, Westminster, S.W.; the Society of Architects, St. James's Hall, Piccadilly, W.; and the Incorporated Association of Municipal and County Engineers, 11 Victoria Street, S.W. The certificate mentioned is but a poor qualification compared with that of membership of any of these bodies, and we would suggest that our correspondent select which to work for, rather with regard to his tastes and the value of the qualification to him in after life than on account of the ease with which the examination could be passed.

G. A. T. M.

Books for R.I.B.A. Intermediate Examination.

BOLTON.—STUDENT writes: "Kindly recommend the best text-books for the following four subjects for the Intermediate R.I.B.A. examination:—Classic ornament; characteristic mouldings and ornament of each period of English Architecture from A.D. 1000 to A.D. 1550; the Orders of Greek and Roman Architecture, their origin, development and application; outlines of the history of mediæval and Renaissance Architecture in Europe."

To a great extent the four subjects mentioned must be considered as but branches of one for the purposes of study. In our opinion the best books to obtain are Hamlin's "History of Architecture," Sturgis's "European Architecture," Spiers' "Orders," Rickman's "Gothic Architecture," Colling's "Ornament" and Anderson's "Italian Renaissance." The study of these books should, however, be supplemented by plentiful sketching and measuring. Good examples of Gothic work are to be found in most parts of England, but for Classic detail it is necessary to work in the British Museum. G. A. T. M.

Stained-Glass Windows.

NANTWICH.—E. H. E. writes: "I have recently designed a stained-glass window with a representation of Christ in two characters, namely, The Light of the World and The Good Shepherd; shown by His carrying a lantern in the left hand and a lamb on His right shoulder. This appears to be unusual. Is it on this account canonically or in any way incorrect?"

The subject of the Good Shepherd is essentially one of those belonging to early Christian art, and occurs continually in wall-paintings and on sarcophagi until the seventh century, after which it is rarely met with until modern times. It was treated from several points of view, as in the abstract sense, the shepherd seated with his flock around him, the shepherd grieving over the loss of the sheep, the shepherd catching it (generally by the tail), and the shepherd bearing the recovered sheep home on his shoulders in various fashions. This last is generally also considered to be a symbol of the Resurrection. There can be no question of its being canonical. With regard to the other subject—which I believe was invented by Mr. Holman Hunt—objections were made to the title "The Light of the World" on the score of the light streaming from the lantern and not from Christ, and he altered it and exhibited the picture as "The Light of the Word," though the engravings were published under the original title. Mrs. Jameson does not even mention the subject, which indicates that it is one of purely modern growth. At the same time the symbolism is intelligible and may be considered legitimate, but if the lantern be objected to I would suggest that it might be explained as that which the shepherd had used to seek out his sheep. A. W.

Size of Joists and Stanchions.

PECKHAM.—J. B. writes: "In a small factory of three floors (ground floor, first floor, and second floor), with 8in. concrete roof, it is proposed to have steel stanchions, made out of rolled steel joist. What should be the size of the joist, size of base, &c.? The floors are to carry 2½cwt. per sq. ft., and the roof 1½cwt. per sq. ft. The heights of the floors are respectively 12ft. 6in., 11ft. 6in., and 10ft. 6in. The walls are 18in. thick. I enclose plan (not reproduced). Also, what should be the size of joists which the stanchions carry for the floors and the concrete roof?"

In this case there is a factory of three floors consisting of a main block of 56,000 cub. ft. and an annexe of 25,600 cub. ft., where all the interior and roof are to be of steel construction. If the correspondent is in difficulty in regard to any particular part, the columns of THE BUILDERS' JOURNAL are the right place to look for assistance, but to ask for complete details of the whole construction is unfair to those experts who make it their business to advise on such matters; besides, a full answer would involve a considerable amount of labour, and occupy too much space, in view of the limited interest the subject would have for other readers. Approximately, 9 × 7 × 58 lb. rolled-steel joists will be required for the stanchions, with a base 2ft. 6in. square on a stone 3ft. 6in. square; for the main girders in floors and roof 12 × 6 × 54 lb. rolled-steel joists; and for cross girders of roof 8 × 4 × 25 lb. joists 4ft. apart. Care must be exercised in all the connections.

HENRY ADAMS.

Ancient Lights.

MARGATE.—C. F. H. writes: "B has agreed to allow A (his next-door neighbour) to carry up some back additions, which will take away B's right of light, provided A will build B a skylight as per sketch (not reproduced). Will B lose his right of light after a certain number of years if he does not demand a yearly nominal fee so as to keep his right of light, as B may build a second storey on his office, in which case he would require A to take down his new additions? Should there be a written agreement between the two parties?"

B loses his right of light over A's property when he allows A to raise his building so as to obstruct B's light; and he cannot subsequently require A to take down his new additions. There should be an agreement between the parties to provide against A acquiring a right of light through any windows in his new addition over B's property. Otherwise A would acquire such right by 20 years' user, and so prevent B raising his building. G. H. B.

Performance of Contracts.

MORGANWG.—A CONSTANT READER writes: "I am a builder and contractor. Among the jobs which I have on hand at present is the conversion of an old warehouse into a double-fronted corner lock-up shop and a sitting-room, to be used in connection with business premises already existing. I prepared specification and estimate, which were accepted. There was a clause in my estimate to the effect that payments were to be made in two instalments, half when half the work had been done and the remainder on completion. What I want to know is, if I consider that I have finished the job according to the specification and the proprietor says that he is not satisfied and consequently will not settle, shall I not be entitled to hold possession of the lock-up shop?"

You cannot take possession of the premises unless your agreement gives you express power in writing, and this does not appear to be the case. A. O. H.

Books on Building Construction.

NEWCASTLE.—A. C. writes: "I am desirous of passing the Elementary Building Construction Examination which takes place in May. What is the best book on that subject to study?"

Rivington's "Building Construction," vol. 1. 8s. (Longmans, Green and Co.); or Mitchell's "Building Construction and Drawing:" First stage. 2s. 6d. (Batsford.)

Interior Perspective.

DARWEN.—SUBSCRIBER writes: "Kindly name a good book on 'Interior Perspective.'"

"Linear Perspective," by G. A. T. Middleton, A.R.I.B.A., 1s.; and "Architectual Perspective," by F. O. Ferguson, 3s. Published by Mr. B. T. Batsford, 94 High Holborn, W.C.

Second-hand Books.

DERBY.—W. H. C. writes: "Where can I obtain a second-hand book upon Civil Engineering, Land Surveying, and Levelling in London?"

Apply to Messrs. H. R. Hill and Son, Mr. S. H. Lazarus, Mr. Joseph Solomon, Messrs. Albert I. Myers and Co., or Mr. William Ridler, all of Holywell Street, Strand, W.C., and Mr. B. T. Batsford, 94 High Holborn, W.C.

THE FORUM EXCAVATIONS.

A SUMMARY BY MR. RUSHFORTH.

AN interesting summary of the most important results obtained last year by the excavations in the Forum at Rome was given in a long letter from Mr. Rushforth, director of the British School at Rome, published in the "Times" for January 9th.

The greater part of the Basilica Æmilia, for the excavation of which in the first instance the world has to thank the liberality of Mr. Lionel Phillips, has now been laid bare. Private property bars any further advance for the present; but one can walk upon the marble flooring of the great hall and wonder what was the catastrophe which would explain the large quantity of half-melted copper coins of the fourth century which have been found there. Everywhere are traces of fire; notably on the fragments of the columns of African marble which divided the nave from the aisles. It is difficult not to believe that these are the columns which Pliny says made the Basilica "wonderful." By a slip which is pardonable in an encyclopædist, he calls them Phrygian marble ("Pavonazetto"). The fragments show that the columns were nearly 3ft. in diameter, which would give a height of about 30ft.; and there was besides a corresponding series of rather smaller size on the upper storey. A complete set of columns of these proportions might well be said to excite admiration. To use no other argument, it is incredible that if, as has been suggested, the "Pavonazetto" columns were carried off to St. Paul's without the Walls in A.D. 386, the same age could have replaced them by these splendid monoliths of "Africano." The idea carries its own refutation with it.

Below the pavement of the Basilica a great sewer, with side-walls of travertine, coming from under the Via Cavour, has been opened. Just where it passes under the steps which led up from the street to the outer arcade of the Basilica the base of a small circular shrine projects into the roadway. It has been suggested that this is the temple of Venus Cloacina, the cleansing goddess.

The western end of the Basilica and a portion of the ancient street which separated it from the Curia have been laid bare, but as yet nothing has been discovered to throw any light on the temple of Janus which was somewhere close by. For the present the monastery buildings attached to St. Adriano stop further progress. Some interesting excavations in the later roadway opposite to this angle of the Basilica have revealed in excellent preservation a fairly early tufa pavement of the Republican Forum. The way in which the slabs are set, obliquely to the lines of the buildings and streets of post-Cæsarian times, is a good illustration of the original orientation of the Forum.

The greater part of the Comitium has now been laid bare, but it is not yet possible to estimate the various layers of which it is composed. The most striking objects which have been found on its upper surface are the pedestal of a statue to Mars and the founders of Rome set up by Maxentius (306–312), and the base of a fountain immediately opposite to the door of the Curia (St. Adriano). Mr. Rushforth suggests that this represents the fountain of Tarpeia, but thinks it is perhaps safer to suppose that the fountain belongs to a rather later age, and formed the *cantharus* in front of the church which Honorius I. constructed in the Curia about the year 635.

Leaving the Black Stone and the primitive objects beneath it, about which no further material facts have been discovered, we pass to the curious structure which has been unearthed between the Imperial Rostra and the Temple of Saturn and forms, according to one theory, the Rostra built by Julius Cæsar when he changed the orientation of the Forum. Below a platorm finished with a plain cornice, a row of eight low arched chambers, so small that they may be described as cells, faces the central area of the Forum. The tufa construction, which might well belong to the first century B.C. and is peculiarly neat in finish, has been completely covered with stucco. The floor of the chambers is paved with brick tesseræ, and this extends continuously for some way in front of the structure. The effect of the whole, though neat, is plain to a degree—even humble.

Another series of discoveries of very great interest has taken place at the opposite extremity of the Forum. On the south-east side of the Temple of Castor and exactly opposite to the three columns which alone remain standing, the Lacus Juturnae has been found, just in the position in which it is marked, though not named, on a fragment of the ancient plan of Rome now in the Capitoline Museum. The Lacus is a deep rectangular reservoir lined with marble. The centre is occupied by a large oblong base of masonry, also faced with marble, upon which no doubt stood side by side, as is suggested in the ancient plan, the pedestals with Castor and Pollux holding their horses.

There is a small group of chapels to the south-east of the Lacus, and in these some pieces of sculpture have been found, mostly poor work of the second century A.D., or even later. Immediately to the right of these buildings rises the shrine of Juturna, a tall niche of brickwork originally cased in marble. The shrine, though in its present form of comparatively late date, has preserved the original orientation facing north.

Finally we come to the great church which has been revealed by the removal of S. Maria Liberatrice and the ground behind it. At right angles to the entrance, and immediately behind the shrine of Juturna, is a smaller church, which, as the well-preserved eighth-century fresco of the apse shows, must have been dedicated to the Forty Martyrs. The principal church consists of the two great halls which, constructed in the second century between the Palatine Hill and the massive brick structure known as the Temple of Augustus, were partly remodelled in Christian times and completely decorated internally with painting. What was this church? On December 21st last the discovery of an inscription answered the question and put an end to a long controversy. It is S. Maria Antiqua—"Old St. Mary's," as we should say. It was already "old" by the middle of the seventh century, when it is first mentioned.

Of the two halls of Classical times, the outer, though not open to the sky, was perhaps treated as an atrium, as shown by the numerous burial recesses (*loculi*) excavated in its walls. Its sides, at least, were completely covered with paintings, but they have suffered so severely that little of importance can be made out. The inner church is far better preserved. In places the frescoes on the walls are to all intents and purposes as fresh as the day that they were painted, and the architectural arrangements are fairly easy to trace. An apse has been hollowed out of the back wall of the square sanctuary which is flanked by two chapels, while the nave of the church was separated from the aisles by two granite columns on either side. Low screens divided up the space in a curious way. Every inch of the surface of walls, screens and columns was covered with painting. Most of that which has survived belongs demonstrably to the middle of the eighth century.

Fragmentary as are the remains, and poor from an artistic point of view as is the work of the eighth century which forms the bulk of them, they are nevertheless of immense importance for the history of painting as helping to bridge the gap between the end of the Classical tradition and the beginnings of the Italian Renaissance, just where the evidence has hitherto failed us. It is feared that the paintings, now that they are exposed, will soon lose the freshness of their colouring, as, indeed, some have done already.

New Patents.

These patents are open to opposition until February 19th.

1899.—Cement Manufacture.—22,549. J. C. GOSTLING, College Hill Chambers, Cannon Street, J. H. FRAZER, Millwall, and R. BOOTH, 110 Cannon Street; all of London. This invention relates to the combination with a rotary kiln and gas-supply apparatus of an air-heating device, so arranged that the hot burnt cement is brought into contact with the in-rushing air immediately on leaving the kiln and before it (the cement) has been materially reduced in temperature. By this means a very high temperature is maintained in the kiln.

Blocks made of Granite Waste, Slate Waste, &c.—24,812. E. REESE, Mount Pleasant, Machynlleth, North Wales. Refuse from granite, slate, or stone quarries is mixed with 3 per cent. of tar, 5 per cent. of bitumen, sulphur between 5 and 10 per cent. of the quantity of tar and bitumen, and alum about 50 per cent. of the amount of sulphur. Blocks are moulded with this mixture in the usual manner.

Smoke-consuming Fireplaces.—25,124. A. J. BOULT, 111 Hatton Garden, London (communicated by G. A. Mahler and M. Friebe, both of Dresden, Saxony). This smoke-consuming fireplace has a closed or "blind" chamber above the grate, from which the evolved gases are drawn through the grate, air-inlet passages being arranged immediately above and below the level of the grate surface.

1900.—Dovetail Threads.—8,839. W. C. FISCHER, 29 Gillingham Street, Pimlico, London, S.W., This invention consists of a dovetail-shaped male and female screw-thread. It has special reference to the joining together of the two halves of split pulleys.

Scaffolding.—12,498. I. SZALAY and J. KOROM, both of Budapest VII., Hungaria ut 79, Hungary. This scaffolding consists essentially of upright standing ladders braced together with diagonal struts. Collars or sockets are provided at the top of the ladders for the addition of other ladders, and boards are placed across the rungs at intervals to act as platforms.

The following specifications were published on Saturday last, and are open to opposition until February 28th. A summary of the more important of them will be given next week. The names in italics within parentheses are those of communicators of inventions.

1899.—25,158, GREENHALGH, waste-water closet apparatus. 25,216, HEYL-DIA, electric cable conduits. 25,621, LUNDBERG AND LUNDBERG, electric-light switches.

1900.—410, DUFF, gas producers. 504, SMALLCOMBE, hoists controlled by friction. 506, THOMSON, kitchen ranges. 1,336, CHICKEN AND SMITH, apparatus for purifying acetylene gas. 1,718, CHADWICK, channelled dishes for gully traps. 2,405, GULLYES, GULLYES AND GULLYES, locking devices for taps, &c. 2,670, HUTCHISON AND PACKARD, electric incandescent lamps. 2,740, GREEN, construction of fireproof floors and roofs. 3,097, GREEN, doors and apparatus for supplying air to furnaces and kilns. 3,227, PYE, humidifiers and ventilators. 3,258, SPOONER (*Neveur*), electric switches. 3,262, LAKE (*American Wood Fireproofing Company, Ltd.*), fireproofing of wood and other combustible substances. 3,305, RIGBY, guard for circular saws. 3,423, PROPERT, water closets. 3,528, HICKS, levels. 3,631, gas producers. 4,046, HEMINGWAY AND COLEY, fusible cut-outs for electric installations. 4,181, ECKLEY AND FRANKHAM, gate hinges. 5,142, DOHM, calculating apparatus for ascertaining the section of beams, girders, columns, &c. 5,358, GODREJ, locks. 7,107, DANNHARDT AND MAILER, deep-boring earth or rock drill. 9,314, HOPTON, appliance for fitting to band saws for cutting wood on the twist or wind. 11,562, HEWITT, electric lamps. 12,816, MILLER, hand street-sweepers. 13,134, WALTON, electric arc lamps. 14,743, CLAYTON, electric cut-outs. 17,071, LESTER AND DEAN, refuse furnaces. 18,343, SEITZ, centrifugal pumps. 18,950, HOFF AND HAGLIN, concrete piles. 19,120, JAHN, chimney, ventilating, and similar shafts. 19,327, CHISHOLM, manufacture of metal-pipe unions. 20,107, COPELAND, portable walls or ceilings. 20 636, KENNEY, valves for water closets. 20,731, CROFT-SMITH, portable scaffoldings. 20,921, ADAMS, jointing sanitary ware and metal. 20,922, ADAMS, closets. 21,059, WETTER (*Beck*), slabs or plates for asphalt and similar pavements.

Surveying and Sanitary Notes.

A Proposed Manchester Park.—A Local Government Board enquiry was held recently into the application of the Manchester Corporation to borrow £12,500 for laying-out Brookdale Estate, Newton Heath. The estate was recently purchased by sanction of the Local Government Board for £26,500.

A Much-needed London Improvement.—A meeting of influential traders and ratepayers of St. Pancras has been held to consider the question of widening the Hampstead Road at its junction with the Euston Road, and a committee, including representatives from all the large business houses in Tottenham Court, Euston and Hampstead Roads, was formed with a view of bringing the matter before the London County Council as a metropolitan improvement. The congestion of traffic at this corner is now so great that it is of the utmost importance that something should be done to relieve it.

Sewer Ventilation.—In a system of sewer ventilation now being introduced by Messrs. J. Stone and Co., of Deptford, water is employed as a means both to extract foul gas from the sewer and to purify it before it is discharged into the atmosphere. The apparatus consists of a small tank which is placed at any convenient position in the upper part of the sewer. In this tank, which is always filled with water up to a certain level, there is an ejector arrangement, laid horizontally, which is worked by a jet of water derived from the ordinary water main. The mere act of admitting the water from the main puts the apparatus into action, and it so continues until the water is shut off. The suction produced by the jet is arranged to do three things:—First, to draw in water from the tank (the ejector arrangement being submerged); secondly, to suck in air from the sewer; and, thirdly, to suck in fresh air from the outside. Thus the sewer gas is thoroughly churned up with clean water and fresh air by the action of the jet, and the result is to wash it of its offensive constituents, the water after use passing away down the sewer, while the purified air escapes to the atmosphere. The cost of water for treating 10,000 cubic feet of gas is put at about 1s. 6d., and it is considered that only intermittent employment of the apparatus, at times when the ordinary means of ventilation are particularly inefficient, would be required. One machine, it is stated, could deal satisfactorily with half a mile of sewer, and the cost of its installation would compare favourably with that of the tall ventilating shafts which are employed in some districts, even if they were erected only at such long intervals as 200 or 300 yards.

A New Theatre at Newcastle-upon-Tyne is to be erected. It will be called the "Royal."

Professional Practice.

Aberdeen.—An improvement has been effected in the hall of the Y.M.C.A., Union Street. Formerly the hall was seated only for 650 persons, and presented a very plain appearance. The hall has now been enlarged so as to accommodate 1,000 persons. It has been redecorated, and its acoustic properties improved. The platform, which formerly ran along the west side, has been removed to the south end, and the two recesses which flanked the former east gallery have been thrown into the hall, while an elaborate new gallery now runs round three sides. By these changes the hall has been made rectangular in shape, while 350 additional seats have been obtained. A new covered passage with a fire-proof stair to the gallery is in course of construction on the east side, and will be continued out to the line of Union Street, thus doing away with the old entrance court, and providing a new public entrance to the hall. A retiring room and cloakroom accommodation have been provided, and the hall is now fitted with an installation of electric light, and new heating and ventilating apparatus. The scheme of decoration has been carried out by Messrs. Gordon and Watt, painters. The lighting of the hall has been greatly improved by the removal of the former alcove lights, and the insertion of roof lights, while artificial illumination is brilliantly effected by numerous electric lamps. The alterations, which have been designed by Mr. A. C. Bruce, architect, are estimated to cost from £1,400 to £1,500, and the contractors are Mr. Alexander Hall, carpenter; Messrs. James Stephen and Son, plasterers; Messrs. Blaikie and Son, plumbers; Messrs. Gordon and Watt, painters; Messrs. Pratt and Keith, electricians; Mr. William Coutts, slater; and Mr. Robert Tindall, heating engineer.

Bristol.—The Bristol Council have approved of the plans submitted on behalf of Sir William Henry Wills for the new art gallery that gentleman has offered to erect for the city, the Council undertaking to carry out in conjunction with it a much needed enlargement of the Museum, which institution the new gallery will adjoin. The plans have been prepared by Mr. Frank Wills, in association with Messrs. Houston, of London. The architects' description of the accommodation is as follows:—On the ground floor there are two large rooms, one 63ft. by 35ft., and the other 63ft. by 33ft. 3in.; two other rooms, 43ft. by 29ft. 6in. each. The height of these rooms will be about 25ft., in accordance with the Town Clerk's letter, so that in the event of an extension of the premises being required, gallery space around these rooms could be obtained. The gallery around the hall leads to rooms that could be used as refreshment rooms and other offices. The Art Gallery on the top floor consists of two large rooms, each 64ft. by 30ft.; two smaller rooms, each 43ft. by 30ft., and a fifth room 47ft. 6in. by 30ft. The basement, to which there is a separate entrance, contains storage space, workshops and heating apparatus, together with other offices. A lift will be provided from the basement to each floor.

Chester.—A new practising school has been erected at a cost of £4,000 in connection with the Chester Diocesan Training College. The new school, a large brick block, which has a frontage to Parkgate Road and stands in the middle of a large gravel playground, has been designed by Mr. H. Beswick, Chester, and built by Mr. W. W. Freeman. Accommodating 300 children, as compared with 200 in the case of the old school, it consists of a large central hall, with gallery, five commodious class-rooms, headmaster's room, cloak room, lavatory, &c. The floors are all of wooden blocks, there is an improved system of heating apparatus, and the building is lighted throughout by electricity.

Grange.—A new council-hall and assembly-room has been opened. The site of the building is a central and commanding one, about halfway up the main street between the railway station and the Crown Hotel. Mr. Hutton, of Kendal, was the architect for the new hall, which was designed in conjunction with the council offices and bank premises, the work

being carried out as one scheme. The block of buildings facing Main Street has a frontage of about 70ft. and is devoted to council, office and bank purposes; the rear portion of the building standing at right angles to the main front is the public hall. The style adopted is Renaissance, freely treated, and the material employed is local limestone, with Prudham freestone dressings. The hall is entered from Main Street through a vestibule the width of the council offices, which gives easy access, an additional porch being built on the adjacent side of the hall for the quick exit of the audience. The hall is 70ft. long and 36ft. wide, with a ceiling height of 30ft., and is lighted by six large windows and two ceiling lights of stained glass. The internal decoration of the hall has been treated in the same style of architecture as the main building, having around the walls pilasters with fluted shafts, bases and enriched capitals, arcaded walls between pilasters, carrying an ornamented frieze and cornice. From the pilasters spring the main ribs of the coved ceiling which divide the ceiling into bays transversely and longitudinally, smaller ribs being inserted between the main ribs, forming a panelled ceiling. A panelled pine-wood dado runs around the hall and forms also the front of the stage. The stage is of ample proportion and approached from the hall by two small flights of steps, and has direct communication with the retiring rooms. The lighting is by wrought-iron ornamental sun-burners in the ceiling and copper and iron brackets around the walls, the stage being fitted with the latest style of footlights. The heating is done by iron radiators placed in the window recesses. Retiring rooms have been provided for the use of stage and hall. The total cost of the whole block of buildings was about £4,000, the hall costing about half of this amount. The contractors were: Building, walling, and mason work, Mr. Enoch Denny; joinering, Mr. W. Till; plumbing and gas-fitting, Mr. B. Ward; painting and glazing, Mr. W. Braithwaite; plastering, Mr. J. Chippendale.

Kingston-on-Soar.—The church of St. Winifred, Kingston-on-Soar, has recently been rebuilt and restored at a cost of between £4,000 and £5,000. Owing to the condition of the church it was found necessary some time ago to pull down the whole of the main part, which was erected about 60 or 70 years ago, the original plan of rebuilding embracing a nave, south aisle, vestry and porch, with a square embattled tower at the west end. After the commencement of the work it was discovered that the walls of the interesting old chancel and chapel, which survived the last restoration, were so much out of the perpendicular, and in such an insecure state, that it was advisable to take them down and put in new foundations. This has accordingly been done, care, however, being taken to rebuild on exactly the same plan, and put back every suitable stone in the position it formerly occupied, while all the windows and traceried work have been replaced. In the chancel stands an ancient and curious old canopy for the tomb of Sir Anthony Babington, and this was not removed during the work of rebuilding. The designs, which were executed by Mr. Richard Creed, F.R.I.B.A., of London, were in the late Perpendicular style, and harmonised throughout with the old chancel. The walls are built of Coxbench (Derbyshire) stone, with Weldon stone dressings, and the roof of the chancel is of oak, the floor being laid with tesselated tiles, specially designed by the architect. In the tower has been placed a large clock and three bells (supplied by Messrs. Taylor, of Loughborough), provision being made for seven bells which it is hoped eventually to place there. The church has been reseated throughout with wainscot oak and a reredos included. The whole of the work of rebuilding has been carried out by Messrs. Walker and Slater, of Derby. The internal fittings are of a very complete and substantial character, and the edifice is heated throughout with hot-water pipes and lighted by gas.

London, S.W.—The new wing of St. John's National Training College, Battersea, S.W., illustrated on this page, has recently been erected. The institution has made great strides since its start some years ago with only about eight students owing to the energy of the Principal, the Rev. H. Wesley Dennis, and will be still further enlarged shortly. The materials used are dark red-brick dressings and piers, with picked yellow stocks on the ground floor between and rough-cast on first floor. There is a specially-moulded terra-cotta cornice moulding under the eaves. The Mansard roof is of green slates. On the ground floor are a lecture room and two classrooms; on the first floor two studying rooms, two masters' bedrooms and twenty cubicles; and on the second floor a temporary art room and physical laboratory. There is a double system of heating—hot water and open grates. The architect was Mr. Arthur H. Ryan-Tenison, A.R.I.B.A., and the contractors were Messrs. Barker and Co., of Kensington.



ST. JOHN'S NATIONAL TRAINING COLLEGE, BATTERSEA, S.W.: NEW WING. A. H. RYAN-TENISON, ARCHITECT.

Workmen's Dwellings in London.—A deputation of the London County Council has visited Glasgow to enquire into the question of workmen's dwellings, a subject with which the Glasgow Corporation successfully dealt some years ago.

Correspondence.

Use of Centrolinead for Perspectives.

To the Editor of THE BUILDERS' JOURNAL.

SIDMOUTH.

SIR,—I am obliged to Professor Adams for his endeavour to further explain the use of the centrolinead and how to set it. I should have replied before, but I wished to see whether anyone else had any explanation to offer; and I was pleased to see in last week's issue that two more gentlemen have essayed an explanation. Of Mr. Ramm's remarks it is perhaps only necessary to say they show a confidence which is born of ignorance. As a past student of the Royal Academy I am aware that Mr. Phené Spiers is the master of the architectural school, and that he is a clever man; but if Mr. Ramm's quotation from him on this subject is complete, then all I can say is he is not very explicit, as he says not one word about how the instrument is set, and that is the only question I ask. Mr. Griffiths' description is somewhat involved, I think, but he is on the right track; even he does not state how the positions of the pins or studs on which the arms work are determined.

The question is simply this:—You have set out your plan and determined your vanishing points, and the long one is, say, 20ft. off the board. How will you set the centrolinead to work as from that point?

I can set the instrument perfectly accurately and fix my guiding pins with the simple aid of a set-square and without any further diagrams than that formed by the horizontal line and the line of the top of the building. This method was discovered by my master, Mr. Henry Hopton, who holds the secret, which I do not feel at liberty to divulge. But, as I said before, in my limited experience I have not found anyone, except Mr. Hopton, having a straightforward simple method of setting the centrolinead. I therefore ventured the opinion, which I repeat, that it seems a strange thing that a man should invent a thing which he could not use, as according to Professor Adams' first answer Mr. Nicholson was indebted to Mr. Bryan for an explanation of how to use his (Mr. Nicholson's) instrument.—Yours truly,

R. W. SAMPSON.

Law Cases.

Scaffold Accidents. — Joiner's Successful Claim.—At the Gateshead County Court last week, before his Honour Judge Greenwell, arbitration was applied for on behalf of John Gradon, a joiner, of Pelton. The facts of the case were that on August 28th, 1900, the applicant was working at Ouston, near Pelton, and with two other workmen was engaged on a building which was being erected for the Birtley Co-operative Society. The men were putting in a facia board above a window, when the scaffolding, which was over 30ft. in height, collapsed. The applicant sustained a fracture and dislocation of the cervical spine, resulting in complete paralysis below the neck. Gradon, by his work as a joiner, had been making 37*s.* 6d. weekly up to the time of the accident, and he now claimed for 18*s.* 9d. weekly. His Honour gave judgment for the payment of the amount applied for.

Architect's Claim for Services.—At last week's special sitting of the Wrexham County Court, before his Honour Judge Sir Horatio Lloyd and a jury, an adjourned action was heard in which Mr. John Harris, architect and surveyor, Wrexham, sought to recover from Mr. Edward Babb, of Rossett, the sum of £30 16*s.* This amount was made up of £20 16*s.* balance of account for professional services, and £10 for attending Chester Assizes under subpœna as a witness on the defendant's behalf in a certain case. There was a counterclaim of £150 damages, alleged to have been sustained by the defendant by reason of the plaintiff's incompetence and negligence as an architect. At the adjourned hearing Mr. E. J. Muspratt, from the office of Messrs. Douglas and Minshall, architects, of Chester, said the work was not completed when Mr. Harris gave his final award and declared the work to be finished. He found many defects in the buildings concerned. He discovered that best Ruabon dressed bricks had not been used, that the water came into the cellar, that snow got in through the roof, and that the outer walls were not bonded properly to the inner walls. The drains were badly constructed, and the work generally faulty. The jury found for the plaintiff on the claim and awarded him £36 10*s.*, and on the counterclaim they ordered the plaintiff to pay £82 14*s.*, while his Honour reserved his decision respecting a further sum of £40, a disputed account for bricks.

Dispute over Building a Church.—At the Wrexham County Court last week his Honour Judge Sir Horatio Lloyd gave judgment in a claim brought by Messrs. Rogers and Son, builders, of Brymbo, against Mr. W. F. Butler, proprietor of Vron Colliery, near Wrexham, for the sum of £15 2*s.* 9d. for extra work in connection with the building of Vron Church. His Honour, in reviewing the facts of the case, said that the Rev. Daniel Davies decided to build a new church at Vron. Mr. Butler gave the bricks, and took great interest in the erection. Mr. Butler was not altogether pleased with the original plans, and suggested certain alterations, including a screen, stalls and an altar. The vicar said he was quite agreeable to Mr. Butler altering the plans provided he was not made responsible for more than a certain sum, and that Mr. Butler was responsible for the extras. At the same time he wrote to the builders telling them that they must look to Mr. Butler for payment for any alterations he made in the plans. There was no doubt the plans had been altered by Mr. Butler, and that he had directed certain work to be done in the interior of the church to make it, if possible, a model church. He was of opinion that Mr. Butler, by his presence and interference, had made himself responsible for the money claimed; but he thought there should be no costs for the builders, who went to work without a definite contract, and also delayed the work. He gave judgment for the amount claimed, but allowed no costs of any kind.

Keystones.

A Masonic Temple at Newbury was dedicated recently, a block of ancient buildings formerly used for public purposes having been converted for the requirements of the Masonic Lodges in Newbury. A feature of the temple is the oak panelling. The style adopted is Jacobean.

Glasgow International Exhibition.—Messrs. Richmond and Company, Ltd., of Warrington, London, &c., have just secured one of the principal contracts for furnishing with their most modern cooking apparatus the kitchens, &c., of one of the catering pavilions at the coming Glasgow International Exhibition.

Architectural Association of Ireland.—At a meeting of this association held on January 8th a resolution was passed to the effect that the present system of pupilage concurrent with a compulsory collegiate training and qualifying examination affords the best promise for the architect of the future.

Leeds Improvements.—The City Council have decided to promote a Parliamentary Bill empowering them to make additional waterworks and for other purposes, including the erection of a crematorium, the consolidation of the city securities, and the adoption of the mansion on the Harehills Estate as judges' lodgings. The improvements will entail an expenditure of a million pounds sterling.

Ramsay House, Edinburgh.—In reference to the article on this building which was published in last week's issue, a correspondent states that the block next to the esplanade shown on page 432 was designed by Mr. Capper, now Professor Capper, of Montreal. The loch referred to as St. Mary's was anciently known as the "Nor' Loch." St. Mary's Loch is situated to the south, in the Border country.

A New Church at Long Eaton has been erected at a cost of £1,000 as a memorial to the late Canon Dolphin.

A Butter, Fish and Poultry Market at Douglas, I.M., is to be erected by Mr. Frederick Callow, builder, at a tendered cost of £2,170.

The Norfolk County Lunatic Asylum at Norwich is to undergo additions and alterations. The cost will be about £48,000, about £20,000 of which will be for electric light and engineering work.

A new Congregational Chapel at Brislington is being built. The building is to be of pennant stone with Bath stone facings, and the cost will be about £3,500. Mr. Frank Wills is the architect and the contractors are Messrs. Cowlin and Son. For the present it is only intended to erect the front elevation and so much to the rear as will accommodate 350 persons, but the plans provide for an extension to 800.

A new Sunday School at Rye for the Wesleyans has been erected. The building is about 35ft. wide, 60ft. long, and is of stock bricks with red brick facings and red-tiled open timber roof. There are six classrooms, with kitchen and offices. Inside the walls are cemented and wainscoted around the base. The heating is by hot-water pipes and the lighting by incandescent gas-lights. Mr. A. W. Pocock was the architect and Mr. Knock the builder.

A Reading and Recreation Room at Seascale has been erected on a site offered by the Furness Railway Company. The building is a wood pavilion with corrugated iron roof and is 55ft. long. It consists of three rooms: the games' room is 16ft., the news room 28ft. long, connected by a movable partition, so that the two rooms can be made into one for a lecture or concert. The third room is a private room or can be used as an ante-room for the platform. There is a porch with cloak-room accommodation.

A Statue of the Queen at Birmingham has been erected in the square in front of the Council House. It was executed by Mr. Thomas Brock, R.A. The statue is in its main design a replica of that executed by Mr. Brock for the city of Worcester in commemoration of the Queen's Jubilee in 1887. The figure is erect, standing 11ft. high, the medium being Sicilian marble. Her Majesty is represented in her Royal robes and bearing the sceptre and the orb in either hand. The statue is mounted on a richly-moulded pedestal of Cornish granite 12ft. high. To the right of the site is a statue of Priestley, and to the left one of J. Skirow Wright, a Birmingham worthy. The cost of the work was £2,000.

St. Mary's Church, Swaffham Prior, near Cambridge, is proposed to be restored. The walls on the north side, the arcades of the north and south aisles, as well as the three bottom stages of the tower, the two lowest of which are Early Norman, are in their original state. Sir A. Blomfield once said that he believed the form of tower at this church to be unique in England, the base being square, the second stage octagonal, and the third sixteen-sided, a graceful spire originally crowning the whole. It is now intended to rebuild the remainder of this church (whose chancel was restored twenty years ago) to mark the beginning of the twentieth century.

Architectural Association of Ireland.—The sixth technical demonstration of this society was held recently at the Engineering Works of Messrs. J. and C. M'Gloughlin, Limited, Great Brunswick Street, Dublin. After a brief but comprehensive sketch of the production and qualities of iron and steel, the members were conducted round the extensive works and shown the processes in operation of converting the ordinary or merchant bar iron into the finished article. Much interest was shown in the working of the enormous steam hammer and in the welding of two lengths of iron bar, which afterwards was submitted to a tensional test and found to be strongest at the joint. Punching, drilling, mitreing and sawing machines were seen at work, a feature of the demonstration being the beating up of iron foliage with the hammer.

A New Synagogue is to be erected at Finsbury Park, N.

The Annual Dinner of the R.I.B.A. this year will be held in Glasgow on Thursday, October 3rd.

Workmen's Dwellings are to be erected in Wedmore Street, Upper Holloway, N., by the London County Council.

A Memorial Church in Moss Vale, New South Wales, is proposed to be erected to the Australian soldiers who have fallen in the South African war.

A Statue of Lord Lansdowne has been erected at Calcutta at a cost of £4,650. The late Mr. Harry Bates, R.A., and Mr. Onslow Ford, R.A., were the sculptors.

A New Fire Station and Police Sub-Station, proposed to be erected at a cost of £29,200 at Bootle, formed the subject of a Local Government Board inquiry recently.

An Exhibition of Drawings by John Ruskin in water-colour will be held during February at the Gallery of the Old Water-colour Society, 5A Pall Mall East, S.W.

A Technical School at Tyldesley is to be erected in Upper George Street. Mr. J. Holt, of Manchester, has prepared the plans, and it is estimated that the total cost will be about £4,500.

The Danish Pavilion at the Paris Exhibition, which was bought by Sir George and Lady Lewis, is now on its way to England. The variety and beauty of the polished woods of Denmark will be well illustrated in this imported pavilion on the Links at Grimsby, its destination.

Mr. T. Walter L. Emden, L.C.C., president of the Society of Architects, has been presented with a valuable piece of plate in recognition of his services as chairman of the defunct London Board of Works; as member of the London County Council; and in connection with the Wimbourne Habitation of the Primrose League, of which he is Deputy Ruling Councillor.

Mr. W. W. Morris, architect and surveyor, of Middlewich, died last week at the age of 40 years. Prior to going into Cheshire Mr. Morris was in practice with his father in Bolton. At Middlewich he held several public positions, including the surveyorship to the Urban Council, and clerkships to the Parish Vestry and the consolidated charities.

Frescoes Discovered at Boscoreale. — These frescoes, as to the scientific importance of which the verdict of the Italian Government Commission has still to be pronounced, are preserved, after being carefully detached from their original walls, in a building opposite the railway station of Boscoreale. There are about 60 frescoes, some of which are marvellously fresh and undamaged by their long burial. Many are more than four yards square.

The Glasgow and West of Scotland Technical College Architectural Craftsmen's Society held a meeting last Friday evening, Mr. Alex. Davie, I.M., President, in the chair, when a lecture, entitled "An Architectural Craftsman's Visit to Italy," was delivered by Professor Gourlay, B.Sc., A.R.I.B.A. The lecturer began by recommending all architectural craftsmen to make at least one visit to the Continent, though for a short time only, to enable them to realise their insular position, and, further, as an incentive to reading and study. Whether disappointed, satisfied, or exalted feelings pervaded one when studying a building on the spot, the result of the study of worthy buildings either at home or abroad was to inspire the student to greater excellence in his future work than he had gained in the past. Beginning with Venetian architecture, a bird's-eye view of Venice was shown on the screen, and the many parts of the city and its buildings were pointed out. Thereafter views of buildings showing Byzantine, Gothic and Renaissance work in Venice, Ravenna, Verona, Milan and Vicenza were shown. Passing to Tuscany, the Romanesque, Gothic and Renaissance architecture of Florence, Siena, Pisa, Pistoja and Prato was reviewed; finally the Ancient, Early Christian and Renaissance architecture of Rome.

A new Town Hall at South Shields is proposed to be erected on the vacant site at the corner of Ogle Terrace and Westoe Lane; £25,000 is the largest sum the Corporation are prepared to expend on the scheme.

A new Church at Dewsbury is proposed to be erected in Moorlands Road. Plans have been prepared by Mr. John Tweedale (Messrs. Smith and Tweedale, Leeds). The land was generously given some time ago by the late Mr. John Tweedale, the architect's father-in-law. The chancel and east window will face down Willans Road, and the entrance to the church will be from Moorlands Road, where a tower is also to be constructed.

Improvements at Farnworth.—The Urban District Council have decided to erect a town hall at the estimated cost of £12,000. Plans have been approved for the building, which is to be erected on a site on the market ground. Much attention is also being directed to the development of the tramways and electric undertaking of the township. At present the Bolton Corporation work the electric cars in Farnworth, but the District Council have resolved to purchase cars of their own.

Ruskin in France.—Ruskin is about to engage the attention of the Sorbonne. M. Jacques Bardoux, a candidate for the degree of Doctor of Letters, has taken for the subject of his thesis, which he is to read before the learned examiners to-day, "John Ruskin and the Idealist and Social Movement in English Literature in the Nineteenth Century." The keen interest taken in the life and work of Ruskin by many young Frenchmen at present is most noteworthy.

A new Parish Church for Waverley Park, Lewisnam, to be known as St. Silas, is to be built on the now vacant triangle at the end of Ivydale Road, by Inverton Road. The new church will be in the diocese of Rochester. The architecture of the new edifice will be a reproduction of the more common style of modern church, except that the steeple will be only joined to the church itself by a corridor. Properly speaking it will be a square tower, not a steeple, built after the Tudor style. At the further end of the church on the roof is a small one-bell tower.

Truro Cathedral.—Owing to the continuance of unfavourable weather, the short days, and the Christmas holidays, the building of the nave has not been very rapid of late. The clerestory stage of the building is reached, and should the weather improve, the great circular or "rose" window, filling the gable of the west front, with its well-designed plate-tracery, will soon be fixed. The windows in the north transept have been ordered. There are three windows with two lights in each, and the subjects will be six of the ancestresses of Christ, viz., Eve, Sarah, Rahab, Ruth, Tamar, Bathsheba.

A Pompeiian Statue.—The fine Greek statue in bronze recently discovered near Pompeii has been placed in the Naples Museum, where examination has shown it to be covered with a layer of fine silver. This peculiarity gives the statue unique value, as there is believed to be no other bronze statue in the world so covered, though several of the more valuable Greek masterpieces, like the bust of Berenice and the Dancers of Herculaneum, in the Naples Museum, have their lips or their garments ornamented with silver. The fact that the bronze of the statue is completely covered with the precious metal is considered a proof that the Pompeiians themselves valued it highly.

Chichester Cathedral.—The dedication of the new north-west tower of the cathedral and the opening of the new wing of the Bishop Otter Memorial College, will take place on April 16th next. The rebuilding of the tower has now reached the full height of 96ft. Though the exterior has been completed, a certain amount of interior work has to be accomplished. The new tower has occupied two and a half years in building, and is a solid and substantial structure, not likely to share the fate that befel the central spire some years ago. The restoration of the chapel of St. Clement on the south side of the nave in memory of Bishop Durnford is now complete all but a slight matter of gilding.

"Restoring" a Reynolds.—Mr. Commissioner Kerr disposed of a case in the City of London Court recently, in which Mr. W. H. Thompson, of 524 Oxford Street, sued Mr. W. Graves, architect, of Winchester House, E.C., for £7 for restoring an oil-painting and providing a frame for it. The picture was by Sir Joshua Reynolds, the defendant's grandfather having been the great painter's engraver. The plaintiff was authorised to varnish the picture, which was a fine sketch of a head and shoulders, but it was stated he had added an arm, thinking, apparently, that Sir Joshua could be improved upon. The plaintiff indignantly repudiated the suggestion that the picture had been altered. It was more like one of Sir Thomas Lawrence's than Sir Joshua Reynolds's. When it was brought to him it was in a very dirty condition, and he was asked to "put it right." The defendant had paid £4 into court which the Commissioner said the plaintiff must be content with.

An old carved Pew.—The late Mr. William Nathaniel Forbes of Dunnottar and Auchernach, has bequeathed to the kirk-session of Auchernach the old carved panels of the Auchernach pew in order that they may be re-erected in the new church. Mr. Charles S. S. Johnston, architect, Edinburgh, states that these two fragments of what was latterly called the "Auchernach Pew" were removed to the mansion house of the same name on the demolition of the old Parish Church of Strathdon in the year 1834, being the property of Mr. Forbes. This pew was constructed in the year 1686 by his predecessor, William Elphinstone of Bellabeg. The initials and dates refer to the ancestors of William Elphinstone. The carvings were executed in strongly-grained Scottish fir or larch, and, having never been painted or varnished, possess a rich and attractive effect. Not a vestige now remains of the original church, nor of the one which was erected in 1757.

Manchester City Architect: A Dispute.—At the last meeting of the Manchester City Council considerable discussion arose in reference to a resolution of the Town Hall Committee to the effect that Mr. Meek, the Corporation architect, had forfeited the confidence of the Committee, and that he be requested to send in his resignation. The circumstances arose out of the erection of a workshop by the Corporation on a plot of land in Jackson's Row. One of the walls of the workshop, the plans for which were prepared by Mr. Meek, the work being carried out under his supervision, had settled down and had to be rebuilt. Mr. Meek had been held responsible for this because of certain action he had taken in cutting away the "footings" of the wall. The Lord Mayor said he thought the Committee should take the matter back for further consideration. The Council agreed that this course should be adopted, and that a resolution with regard to the clerk of the works on the building in question should also be referred back.

R.I.B.A. "Suggestions" for Architectural Competitions.—On page 426 of our issue for January 2nd last we published the revised paper of "Suggestions for the Conduct of Architectural Competitions." The proposals came before the business meeting of the Royal Institute of British Architects held on January 7th, when the revised paper was adopted with the following amendments:—Clause 2, section (*a*), reads: "To draw up the particulars and conditions (*as far as possible in accordance with the principles set forth in these suggestions*) as instructions to competitors, and *also* to advise upon the question of cost." Clause 2, section (*b*) reads: "To determine *whether* the designs conform to the instructions, and to exclude *any which do not.*" Clause 8 reads: "Where a deposit is required for supplying the instructions, it should be returned *either* on the receipt of a bonâ-fide design, or if the applicant declines to compete and returns the said instructions within a month after their receipt." Clause 4 reads: "The number and scale of the required drawings, &c. *Perspective drawings are not necessary; but if the assessor advises that they are desirable it should be so stated*; and such drawings should be uniform in size, &c." The words in italics are new.

New Companies.

Simplex Properties Company, Limited.

This company was registered on December 19th, 1900, with a capital of £2,000 in £1 shares to acquire the business of property owners, &c., carried on by N. Elliott and others, at 35 Villiers Street, Sunderland, Durham, as the Simplex Property Company, together with certain properties in Monkwearmouth and Sunderland, and to carry on the business of builders, contractors, lime, brick, timber, and hardware merchants, &c. Registered office: 35 Villiers Street, Sunderland, Durham.

G. H. Bulbeck, Limited.

This company was registered on December 19th, 1900, with a capital of £20,000 in £1 shares, to acquire the business carried on at Arundel and Littlehampton, Sussex, and elsewhere, by G. H. Bulbeck, and to carry on the business of timber growers and merchants, sawmill proprietors, iron merchants, &c. The first directors (to number not less than three nor more than seven) are G. H. Bulbeck, H. C. Bulbeck and W. F. Mapleston. Registered office: Shipyard, Arundel, Sussex.

New Pearson Pottery Comp any, Limited.

This company was registered on December 19th, 1900, with a capital of £3,500 in £1 shares to acquire the business carried on at Brook Street Potteries, Hanley, Staffordshire, as the New Pearson Pottery Company, and to carry on the business of china, stoneware, earthenware, encaustic and other tile and glazed brick makers, &c. The first directors (to number not less than three nor more than five) are G Hassall, W. B. Hackney and C. Wilcox. Registered office: Brook Street Works, Brook Street Hanley.

Penn Hill Park, Limited.

This company was registered on December 20th, 1900, with a capital of £20,000 in £100 shares to adopt an agreement with the London Home Counties and South Coast Land Company, Limited, to acquire certain lands and hereditaments known as Penn Hill Park, Dorset, and any other property in the counties of Dorset and Hants, and to carry on the businesses of builders, contractors, engineers, &c. The first directors (to number not less than three nor more than seven) are to be appointed by the subscribers. Registered office: 88–90 Chancery Lane, W.C.

William Hewitt and Co., Limited.

This company was registered on December 19th, 1900, with a capital of £7,000 in £1 shares (2,000 pref.) to acquire the business carried on at the Bradwell Hall Brick and Tile Works, Chesterton, Staffordshire, as William Hewitt and Co., and to carry on the business of stone, clay and marl workers, brick, tile and pipe makers, coal and ironstone merchants, &c. The first directors (to number not less than five nor more than seven) are W. Hewitt, G. H. Downing, D. G. Chilton, W. Hill, J. P. Hancock, S. H. Hancock and G. Eades. The three first-named are permanent.

Brookes, Limited.

This company was registered on December 19th, 1900, with a capital of £250,000 in £1 shares to acquire the business carried on by N. Brooke, A. Brooke and W. Brooke, trading as Joseph Brooke and Sons, the Hard York Nonslip Stone Company, and the Hard York Patent Stone Company, and to carry on the business of quarry owners, stone and granite polishers, stone merchants, patent stone manufacturers, brick and tile makers, dealers in timber, hardware, and building requisites, colliery proprietors, miners, &c. The first directors (to number not less than two nor more than seven) are Newton Brooke (chairman and managing director), Aspinall Brooke and Willie Brooke, each of whom may retain office so long as he holds £10,000 shares. Registered office: Hipperholme, near Halifax, Yorkshire.

Turner and Brown, Limited.

This company was registered on December 19th, 1900, with a capital of £1,000 in £1 shares to acquire the business carried on at Clifton Drive, Little Martin, near Blackpool, as Turner, and Brown, and to carry on the business of concrete manufacturers, builders, contractors, timber and hardware merchants, &c.

Decorative Fireplace and Materials, Limited.

This company was registered on December 21st, 1900, with a capital of £5,000 in £1 shares to carry on the business of ironmongers, timber, metal, cement, marble, stone, and slate merchants, &c.; the subscribers are to appoint the first directors. Registered office: 20 Bucklersbury, E.C.

Wardle Brick and Tile]Company, Limited.

This company was registered on December 21st, 1900, with a capital of £15,000 in £1 shares to carry on the business of brick, tile, and pipe makers, artificial stone manufacturers, quarry owners, stone merchants, &c. The first directors (to number not less than three nor more than seven) are A. Dongill, D. Rhodes, T. Palmer, A. Woolfe and H. Bonser.

Fulham and Hampstead Property Company, Ltd

This company was registered on December 20th, 1900, with a capital of £40,000 in £10 shares (2,000 preference) to carry on the business of land and property owners, builders, contractors, house agents, &c. The first directors (to number not less than two nor more than six) are W. Hunt, A. H. B. Ellis, S. F. St. J. Steadman and B. B. Van Praagh.

Higgs, Sons and Co., Limited.

This company was registered on December 19th, 1900, with a capital of £25,000 in £1 shares to acquire the business carried on at Tilehurst, Berkshire, as Higgs and Sons, and to carry on the business of brick and tile manufacturers, potters, ballast burners, and merchants, &c. The first directors (to number not less than three nor more than five) are H. Higgs, G. Higgs and J. Higgs.

Alabama Portland Cement Company, Limited.

This company was registered on December 21st, 1900, with a capital of £100,000 in 9,950 £10 ordinary shares and 500 £1 founders' shares to carry on business as cement manufacturers at Demopolis, in the State of Alabama, U.S.A., and elsewhere. The first directors (of whom there are to be not less than three nor more than seven) are to be elected by the signatories—J. T. Richardson, F. Richardson, J. H. Pirrie, J. H. Lewis, C. Hunt, J. J. Waller and W. H. Young.

George Swift, Limited.

This company was registered on December 19th, 1900, with a capital of £25,000 in 1,300 preference shares of £10 each and 12,000 ordinary shares of £1 each to acquire the business carried on by G. Swift, J. H. Swift, and J. H. Harvey at the Temple, Dale Street, and Binns Road, Liverpool, as George Swift, and to carry on the business of brick, tile, terra-cotta, earthenware, and sanitary ware manufacturers and merchants, potters, miners, &c. The first directors (to number not less than three nor more than five) are G. Swift (chairman), J. H. Swift and J. H. Harvey. Registered office: Swan Tile Works, Binns Road, Liverpool.

Samuel Bibbington, Limited.

This company was registered on December 18th, 1900, with a capital of £42,000 in £5 shares to acquire the business carried on at Doveholes, Derbyshire, and at Manchester, Bolton, Rochdale, and Hindley Green, Lancashire, by Sarah J. Rainbow, Elizabeth Bibbington, Samuel E. Bibbington, Amelia Yates, Kezia Yates, and Anne E. Bibbington, as Samuel Bibbington, and to carry on the business of quarryowners, lime burners, and merchants, plaster and cement manufacturers, brick and tile makers, &c. The first directors (to number not less than three nor more than five) are S. Bibbington, Miss E. Bibbington and W. Yates.

Egerton Property Company, Limited.

This company was registered on December 22nd, 1900, with a capital of £5,000 in £1 shares to carry on the business of land, house, and real property buyers, sellers, and dealers, contractors, stone, sand, lime, timber, hardware and building material merchants, &c.

P. and H. Lewis, Limited.

This company was registered on December 22nd, 1900, with a capital of £10,000 in £5 shares to carry on the business of timber and brick and tile merchants, &c. The first directors (to number not less than two nor more than seven) are W. H. Cochran, A. G. Kaye and W. J. Harris. Registered office: Pensarn Timber Yard, Conway.

Thomas Turner and Son, Limited.

This company was registered on December 18th, 1900, with a capital of £20,000 in £1 shares to acquire the business of quarryowners, stone merchants, builders, farmers, brick and pipe manufacturers, &c., carried on at Lightcliffe as Thomas Turner and Son. The first directors (to number not less than two nor more than five) are J. W. Turner, F. Robertshaw and W. Brook.

Wellington-on-Tyne Brickworks, Limited.

This company was registered on December 23nd, 1900, with a capital of £1,200 in £1 shares to carry on the business of brick, tile, pipe and terra-cotta manufacturers, cement, lime, clay, stone, sand, timber and hardware merchants, builders, contractors, &c. The first directors (to number not less than three nor more than five) are L. S. H. C. Orde, T. A. Thorp, and W. R. Orde. Registered office: 1 St. Nicholas Buildings, Newcastle-on-Tyne.

Lloyd's Park Estate, Limited.

This company was registered on December 22nd, 1900, with a capital of £200 in 160 £1 "A" shares and 80 10s. "B" shares to acquire the freehold and leasehold property at Walthamstow known as Lloyd's Park Estate, and to carry on the business of landowners, builders, contractors, timber, hardware, and brick merchants, &c.; the subscribers are to appoint the first directors. Registered office: 369–371 Brixton Road, S.W.

Bradley Star Tap Company, Limited.

This company was registered on December 22nd, 1900, with a capital of £3,000 in £10 shares to manufacture and deal in taps in accordance with William Bradley's patents and to carry on the business of tap manufacturers, manufacturing and jobbing plumbers, ironmongers, &c. The first directors (to number not less than three nor more than five) are W. Bradley (chairman), F. J. Bramwell and F. W. Bramwell. Registered office: Canton Works, West Street, Sheffield.

Neo-Pompeian Marble Company, Limited.

This company was registered on December 20th, 1900, with a capital of £2,000 in £1 shares to carry on the business of marble, cement, lime, plaster of Paris and whiting manufacturers, chalk, flint, gravel, stone, clay, sand and ballast merchants, brickmakers, artificial stone and marble manufacturers, &c. The first directors (to number not less than three nor more than five) are to be appointed by the subscribers. Registered office: 4 Inner Temple, 24 Dale Street, Liverpool.

T. C. R. King, Limited.

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COMPLETE LIST OF CONTRACTS OPEN.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
	BUILDING.		
Jan. 18	Londonderry—Villas		E. J. Toye, Architect, Strand, Londonderry.
„ 18	Newport, Mon.—Council Chamber	County Council	W. Tanner, County Surveyor, Town Hall, Newport, Mon.
„ 18	Salford—Alterations		Borough Engineer, Town Hall, Salford.
„ 19	Cornholme, near Todmorden—Erection of Church		Rev. J. H. Loman, Harley Wood Vicarage, Todmorden.
„ 19	Glasgow—Reconstruction of House	Corporation	J. M. Gale, 45 John Street, Glasgow.
„ 19	Southbank, Yorks—Houses		O. O. Beadle, Redcar Road, South Bank.
„ 19	Weston-super-Mare—Church Extension		S. J. Wilde and Fry, Boulevard Chambers, Weston-super-Mare.
„ 19	Aberystwyth, Wales—Cement	Town Council	R. Jones, Borough Surveyor, Corporation Offices, Aberystwyth.
„ 19	South Bank—32 Dwelling Houses		O. O. Beadle, Redcar Road, South Bank.
„ 19	Walker, Northumberland—Refuse Destructor	Urban District Council	Handcock and Dykes, 1 Victoria Street, Westminster, S.W.
„ 21	London, N.—Brick Storm-Water Culvert	Hornsey Urban District Council	E. J. Lovegrove, Offices, Southwood Lane, Highgate, N.
„ 21	London, N.—Branch Public Library	Hornsey Urban District Council	Surveyor, Council Offices, Southwood Lane, Highgate, N.
„ 21	Bury, Lancs—Retorts, Firebricks and Fireclay	Gas Committtee	H. Simmonds, Engineer, Gasworks, Bury.
„ 21	Upminster—Cemetery Chapel, &c.	Romford Rural District Council	E. M. Whitaker, 1 Gresham Buildings, Basinghall Street, E.C.
„ 21	Perth—Erection of Villa	Mr. Boyd, Glasgow Road, Perth	David Smart, architect, Perth.
„ 21	Stornoway, Scotland—Masonry	Lewes District Committee	H. Miller, district clerk, Stornoway.
„ 21	Walsden, near Todmorden—Shed	Pioneer Mill Company, Limited	J. Wood, consulting engineer, Bridge Street, Todmorden.
„ 21	Romford—Laying out Cemetery	Rural District Council	E. M. Whittaker, Gresham Buildings, Basinghall Street, E.C.
„ 22	Branksome, Dorset—Additions, &c.	Urban District Council	S. J. Newman, 3 Tennyson Buildings.
„ 22	Bowling Junction, near Bradford—Passenger Station	Lancashire and Yorkshire Railway Co.	Engineer, Hunt's Bank, Manchester.
„ 22	Esclusham, Wales—Wall		Esclusham Vicarage, Esclusham.
„ 23	Lanchester—Additions	Joint Hospital Board	G. I. Wilson, 121 Durham Road, Blackhill.
„ 23	Louisville, Monaghan—Boarding School Wing	St. Louis Convent	Hague and M'Namara, 50 Dawson Street, Dublin.
„ 23	Surbiton—Mortuary	Urban District Council	S. Mather, Surveyor, Council Offices, Ewell Road, Surbiton.
„ 24	Bolton—Fireclay Articles	Gas and Lighting Committee	W. Walch, Gas Offices, Bolton.
„ 24	Nelson, Lancs.—Fireclay Articles	Gas Committee	A. Allan, Engineer, Gas Works, Nelson.
„ 25	Glasgow—Hospital	Parish Council	Thomson and Sandilands, 241 West George Street, Glasgow.
„ 25	Branksome, Dorset—Repairing, &c., Police Station	Standing Joint Committee	County Surveyor, County Council Offices, Sherborne.
„ 25	Dungeness, Kent—Coastguard Buildings	Admiralty	Coastguard Watch Room, No. 2 Battery, Dungeness.
„ 25	Coventry—Post Office	H.M. Commissioners of Works, &c.	Postmaster, Coventry.
„ 25	Bexhill, Sussex—Sessions Court	East Sussex County Council	F. J. Wood, County Surveyor, County Hall, Lewes.
„ 25	Gortlettera, Mohill, Co. Leitrim—Alteration to Church	Very Rev. J. Maguire, P.P.	Hague and M'Namara, 50 Dawson Street, Dublin.
„ 25	St. Mawes, near Falmouth—Coastguard Buildings	Admiralty	Director of Works Department, 21 Northumberland Avenue, W.C.
„ 26	St. David's, Pembrokeshire—School Buildings	St. David's County School	D. E. Thomas, Architect, Haverfordwest.
„ 26	Briton Ferry—Public Library and Council Offices	Urban District Council	H. A. Clarke, Council Offices, Briton Ferry.
„ 28	Erith, Kent—Board Offices and Cookery Centre	School Board	Ford, Son and Burrows, 21 Aldermanbury, E.C.
„ 29	Dartford—Fire Station and Cottage	Urban District Council	W. Harston, Surveyor, High Street, Dartford.
„ 30	Swanley, Kent—School for Children	Metropolitan Asylums Board	Newman and Newman, 31 Tooley Street, London Bridge, S.E.
Feb. 4	Burgess Hill, Sussex—Isolation Hospital	Cuckfield Rural District Council	G. T. Hine, 35 Parliament Street, Westminster, S.W.
„ 5	Aldershot—Ward Block	Urban District Council	N. F Dennis, Surveyor, Council Offices, Aldershot.
„ 5	Windsor—Lime	Royal Gaslight Company	J. H. Strange, 2 Victoria Street, Windsor.
„ 12	London, N.—Water Tower, &c.	Islington Borough Council	A. H. Tiltman, 51 Russell Square, W.C.
„ 15	Ashford, Middlesex—Two Board Schools	School Board	Fleetwood, Son and Eversdon, 3 New Court, Lincoln's Inn, W.C.
No date	Watford—School Lecture Room	Endowed Schools Governors	C. P. Ayres, Architect, Burvale, Watford.
	ENGINEERING.		
Jan. 18	Wimbledon—Ironing Machine	Urban District Council	C. H. Cooper, Engineer, Council Offices, Wimbledon.
„ 18	Glasgow—Telephone Apparatus	Corporation	J. Young, 88 Renfield Street, Glasgow.
„ 19	Rotherham—Electricity Meters	Corporation	H. Copnall, Town Clerk, Council Hall, Rotherham.
„ 19	Colne, Lancs—Electricity Plant	Electrical Committee	A. G. Cooper, Borough Electrical Engineer, Colne.
„ 21	Ilford—Electric Lighting	Urban District Council	J. W. Benton, Council Offices, Ilford
„ 21	Ilford, Essex—Roadmaking Plant	County Council	Chief Surveyor, County Offices, Chelmsford.
„ 21	Rotherham—Trenches	Waterworks Committee	Borough Surveyor, Rotherham.
„ 21	Sheffield—Engine	Tramways Committee	A. L. O. Fell, General Manager, Town Hall, Sheffield.
„ 22	London, E.C.—Locomotives and Tenders	H.H. the Nizam's State Railways Co., Ltd.	H. Rendel, 50 Old Broad Street, E.C.
„ 22	London—Foundations, &c.	London County Council	Engineer's Department, County Hall, Spring Gardens, S.W.
„ 23	London, E.C.—Locomotive Sheds	East Indian Railway Co.	Company's Offices, Nicholas Lane, E.C.
„ 24	Nelson—Purifying Plant	Gas Committee	A. Allan, Engineer, Gasworks, Nelson.
„ 26	Littlehampton—Waterworks	Urban District Council	H. Howard, Town Offices, Littlehampton.
„ 26	Carisbrooke, Isle of Wight—Waterworks	Corporation of Newport	H. R. Hooper, 16 Quay Street, Newport, I.W.
	IRON AND STEEL.		
Jan. 21	Leeds—Floor Plates	Gas Committee	R. H. Townsley, Gas Offices, Leeds.
„ 21	Rotherham—Pipes	Waterworks Committee	Borough Surveyor, Rotherham.
„ 21	Plymouth—Rails, Fishplates, &c.	Corporation	Borough Engineer, Plymouth.
„ 21	London, S.W.—Wrought-iron Hurdle Fencing	County Council	Parks Department, 11 Regent Street, S.W.
„ 22	London, W.—Girders, &c.	Great Western Railway Company	Engineer, Paddington Station, W.
„ 23	Amsterdam—Metal Work	H.M. Consul	Commercial Department, Foreign Office.
„ 24	Glasgow—Railing	Corporation	Public Works, 64 Cochrane Street, Glasgow.
„ 24	Manchester—Pipes	Waterworks Committee	G. H. Hill and Sons, Albert Chambers, Albert Square, Manchester.
„ 26	Littlehampton—Pipes	Urban District Council	H. Howard, Town Offices, Littlehampton.
	ROADS AND CARTAGE.		
Jan. 18	Gourock, Scotland—Road Works	Town Council	Burgh Surveyor, Gourock, Scotland.
„ 18	Rushden, Northants—Material	Urban District Council	W. B. Maden, Engineer, Vestry Hall, Rushden.
„ 18	Preston, Lancs.—Paving, &c.	Corporation	Borough Surveyor, Town Hall, Preston.
„ 21	Warrington—Forming Streets, &c.	Paving and Sewerage Committee	T. Longdin, Borough Engineer, Town Hall.
„ 21	Northwich—Street Works	Urban District Council	J. A. Cowley, Council Offices, Northwich.
„ 21	Accrington—Street Works	General Works Committee	W. J. Newton, Borough Engineer, Town Hall.
„ 22	West Ham—Street Works	Council	J. G. Morley, Borough Engineer, Town Hall, West Ham.
„ 22	London, S.W.—Making-up Roads	Wandsworth Borough Council	Council House, East Hill, Wandsworth.
„ 22	Motherwell, Scotland—Road Metal	Commissioners	Burgh Surveyor, Town Hall, Motherwell.
„ 23	Surbiton—Making-up Roads, &c.	Urban District Council	S. Mather, Surveyor, Council's Offices, Ewell Road, Surbiton.
„ 23	Sutton, Surrey—Making-up Roads	Urban District Council	C. C. Smith, Municipal Offices, Sutton.
	SANITARY.		
Jan. 21	London, N.—Sewers, &c.	Hornsey Urban District Council	E. J. Lovegrove, Engineer, Offices, Southwood Lane, Highgate, N.
„ 22	Tottenham, N.—Sewers	Rural District Council	Engineer, 712 High Road, Tottenham.
„ 26	Godstone—Sewage Disposal	Rural District Council	Fairbank and Son, 13 Lendal, York.
„ 28	Birkenhead—Removal of Nightsoil	Corporation	Chief Inspector of Nuisances, Town Hall, Hamilton Sq., Birkenhead.
„ 28	Dartford—Stoneware and Iron Sewers	Rural District Council	G. H. Tait, Engineer to Council, Lowfield Street, Dartford.
„ 28	Dartford—Pipe Sewers and Pumping Station	Rural District Council	G. H. Tait, Engineer to Council, Lowfield Street, Dartford.
„ 28	Henfield, Sussex—Drainage	Steyning West Rural District Council	E. Cripps, Council Offices, Hams Road, New Shoreham.
„ 29	Dartford—Pipe Sewers, &c.	Rural District Council	W. Harston, Surveyor, Sessions House, Dartford.
	TIMBER.		
Jan. 22	London, W.—Creosote	Great Western Railway Company	G. K. Mills, Secretary, Paddington Station, W.
„ 24	Glasgow—Wood Paving Blocks	Corporation	Office of Public Works, City Chambers, 64 Cochrane Street, Glasgow.
„ 24	London, S.E.—Timber	Lambeth Borough Council	H. Edwards, Borough Engineer, Town Hall, Kennington Green, S.E.

COMPETITIONS OPEN.

DATE OF DELIVERY.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	BY WHOM ADVERTISED.
Jan. 18	Hindley—Public Offices	£50, £25, £10	A. Holden, Surveyor, Hindley.
„ 28	Tanfield, Tantobie—3- and 4-roomed Workmen's Cottages	£10, £5	R. Heslop, Surveyor to Urban District Council, Dean View, Burnopfield
Feb. 13	Bristol—Alterations, &c., to Petty Sessional Court	£100, £50	P. Addie, City Valuer, Market Chambers, Bristol.
„ 14	Ballarat, Australia—Statue		J. W. Nedwell, Hon. Sec., Soldiers' Statue Fund, Ballarat, Australia.
March 25	Basford—Sewerage Scheme		C. J. Spencer, Clerk, Public Offices, Basford.

COMING EVENTS.

Wednesday, January 16.

NORTHERN ARCHITECTURAL ASSOCIATION.—Students' evening.

BRITISH ARCHÆOLOGICAL ASSOCIATION.—Dr. Fryer, M.A., on "Fonts in Cornwall," 8 p.m.

SOCIETY OF ARTS.—Mr. H. Snowden Ward on "Photography of Natural Colour by the McDonough-Joly Process," 8 p.m.

ST. PAUL'S ECCLESIOLOGICAL SOCIETY.—Mr. F. Herbert Mansford on "Notes on City Churches," 7.30 p.m.

BUILDERS' FOREMEN AND CLERKS OF WORKS' INSTITUTION.—Annual Meeting at 8 p.m.

INSTITUTION OF CIVIL ENGINEERS.—(Students' Visit to the Ventilating, Warming, Drainage, and Lighting arrangements at the Houses of Parliament, 2.30 p.m.

EDINBURGH ARCHITECTURAL ASSOCIATION.—Prof. G. Baldwin Brown on "Colour in Architecture," 8 p.m.

Thursday, January 17.

SOCIETY OF ANTIQUARIES OF LONDON.—Meeting at 8.30 p.m.

CHEMICAL SOCIETY.—Meeting at 8 p.m.

ROYAL INSTITUTION.—Dr. Arthur Willey, M.A., D.Sc., on "The Origin of Vertebrate Animals," 3 p.m.

SOCIETY OF ARTS (INDIAN SECTION).—Dr. John W. Evans, D.Sc., LL.B., on "Metalliferous Mining in India," 4.30 p.m.

Friday, January 18.

ARCHITECTURAL ASSOCIATION.—Mr. Edwin T. Hall, F.R.I.B.A., on "Flats," 7.30 p.m.

ROYAL INSTITUTION.—Prof. Dewar, M.A., LL.D., F.R.S., on "Gases at the Beginning and End of the Century," 9 p.m.

INSTITUTION OF MECHANICAL ENGINEERS.—Annual General Meeting at 8 p.m.

ARCHITECTURAL ASSOCIATION OF IRELAND.—Technical Demonstration at the works of Messrs. G. Rowe and Co., 22 Moss Street, Dublin: Mr. Malcolm on "Limes, Lathing, Plastering, Cement, &c.," 4.30 p.m.

Saturday, January 19.

BRITISH INSTITUTE OF CERTIFIED CARPENTERS.—Visit to Mansion House, E.C., at 3 p.m.

Monday, January 21.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.—Award of Prizes and Studentships, Mr. J. J. Stevenson, F.R.I.B.A., F.S.A., on "Difficulties and Hindrances in Producing good Modern Architecture," 8 p.m.

SOCIETY OF ARTS (Cantor Lecture).—Mr. J. Liberty Todd on "Elementary Art Education."—I., 8 p.m.

LIVERPOOL ARCHITECTURAL SOCIETY.—Mr. Ronald P. Jones, B.A., on the "Saracenic Architecture of Cairo."

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.—Annual Dinner, 6.30 p.m.

SURVEYORS' INSTITUTION.—(Junior Meeting) Mr. L. S. Wood, F.A.S.I., on "Income Tax, Schedule A," 7 p.m.

Tuesday, January 22.

CARDIFF, SOUTH WALES AND MONMOUTHSHIRE ARCHITECTS' SOCIETY.—Mr. C. B. Fowler, F.R.I.B.A., on "Interesting Portions of Ancient Architecture in the Diocese of Llandaff."

ROYAL INSTITUTION.—Professor J. A. Ewing on "Practical Mechanics."—II., 3 p.m.

ARCHITECTURAL ASSOCIATION OF IRELAND.—Mr. P. J. O'Reilly on "Two Monts St. Michaels—Irish and Norman," 7.45 p.m.

GLASGOW ARCHITECTURAL ASSOCIATION.—Mr. R. Douglas Sandilands on "Hospital Planning."

Wednesday, January 23.

RUSKIN SOCIETY OF BIRMINGHAM.—Mr. Lionel Cust, M.A., on "Portraits as Historical Documents," 8 p.m.

GEOLOGICAL SOCIETY OF LONDON.—Meeting at 8 p.m.

NORTHERN ARCHITECTURAL ASSOCIATION.—Mr. James Bruce on "Recent Data concerning Concrete Beams and Concrete Floors," 7.30 p.m.

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Lard Oil	per cwt.	1 19 6	—
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Do. red	do.	1 0 4½	—
Linseed Oil, barrels ..	do.	1 10 3	1 10 6
Petroleum, American ..	per gal.	0 0 6⅜	0 0 6½
Do. Russian ..	do.	0 0 6½	0 0 6¾
Pitch	per barrel	0 7 6	0 8 0
Shellac, orange	per cwt.	2 19 0	—
Soda, crystals	per ton	3 2 6	3 5 0
Tallow, Home Melt ..	per cwt.	1 5 6	—
Tar, Stockholm	per barrel	1 8 6	—
Turpentine	per cwt.	1 8 3	1 8 6

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Iron, Staffs., bar	do.	7 10 0	9 10 0
Do Galvanised Corrugated sheet ..	do.	12 0 0	—
Lead, pig, Spanish ..	do.	16 5 0	16 7 6
Do. do. English common brands	do.	16 15 0	—
Do. sheet, English, 3lb. per sq. ft. and upwards	do.	21 0 0	22 0 0
Do. pipe	do.	23 0 0	—
Nails, cut clasp, 3in. to 6in.	do.	12 0 0	13 0 0
Nails, floor brads ..	do.	11 15 0	12 15 0
Steel, Staffs., Girders and Angles	do.	7 0 0	7 10 0
Do. Mild Bars	do.	7 10 0	8 0 0
Tin, Foreign	do.	119 0 0	119 10 0
Do. English ingots ..	do.	124 0 0	125 0 0
Zinc, sheets, Silesian ..	do.	22 10 0	—
Do. do. Vieille Montaigne	do.	23 2 6	—
Do. Spelter	do.	18 17 6	19 2 6

TIMBER.

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Fir, Dantzic and Memel ..	per load	3 0 0	4 0 0
Pine, Quebec Yellow ..	do.	4 7 6	6 0 0
Do. Pitch	do.	2 15 0	3 13 0
Laths, log, Dantzic ..	per fath.	4 10 0	5 10 0
Do. Petersburg ..	per bundle	0 0 9	0 0 10½
Deals, Archangel 2nd & 1st	per P. Std.	10 5 0	12 5 0
Do. do. 4th & 3rd	do.	9 5 0	10 0 0
Do. do. unsorted	do.	—	—
Do. Riga	do.	6 15 0	8 10 0
Do. Petersburg 1st Yellow	do.	14 15 0	15 5 0
Do. do. 2nd „	do.	8 15 0	14 15 0
Do. do. Unsorted „	do.	5 5 0	13 0 0
Do. do. White	do.	9 10 0	11 5 0
Do. Swedish	do.	8 10 0	13 10 0
Do. White Sea ..	do.	10 0 0	16 15 0
Do. Quebec Pine, 1st ..	do.	20 10 0	27 0 0
Do. do. 2nd	per P. Std.	18 15 0	—
Do. do. 3rd &c.	do.	9 0 0	9 15 0
Do. Canadian Spruce, 1st	do.	16 15 0	—
Do. do. 3rd & 2nd	do.	7 5 0	12 15 0
Do. New Brunswick ..	do.	7 5 0	8 0 0
Battens, all kinds ..	do.	7 10 0	10 10 0
Flooring Boards, 1in. prepared, 1st ..	per square	0 11 0	—
Do. 2nd ..	do.	0 10 6	—
Do. 3rd &c. ..	do.	0 9 0	0 9 3

HARD WOODS

Ash, Quebec	per load	3 17 6	4 10 0
Birch, Quebec	do.	3 12 6	3 17 6
Box, Turkey	per ton	7 0 0	15 0 0
Cedar, 1in., Cuba ..	per ft. sup.	0 0 4	—
Do. Honduras ..	do.	0 0 3⅞	—
Do. Tobasco	do.	0 0 3⅛	—
Elm, Quebec	per load	0 12 6	5 10 0
Mahogany, Average Price for Cargo, Honduras ..	per ft. sup.	0 0 4⅛	—
Do. African ..	do.	0 0 3⅛	—
Do. St. Domingo	do.	0 0 6	—
Do. Tobasco ..	do.	0 0 4⅛	—
Do. Cuba ..	do.	0 0 4⅛	—
Oak, Dantzic and Memel	per load	3 15 0	5 7 6
Do. Quebec	do.	4 12 6	5 0 0
Teak, Rangoon, planks ..	do.	8 5 0	13 10 0
Wainscot, Riga (Baulk)	do.	3 15 0	5 15 0
Do. Odessa Crown	do.	3 15 0	5 15 0
Walnut, American ..	per cub. ft.	0 3 1	—

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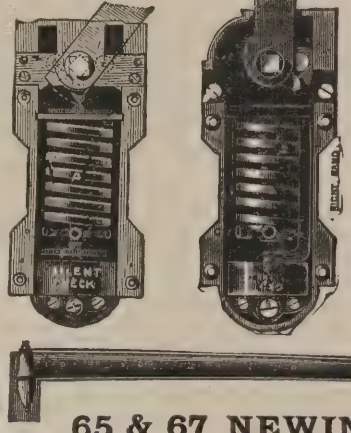
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TENDERS.

Information from accredited sources should be sent to "The Editor." Results of tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the Work.

CHESTER.—For the construction of sewers, Little Sutton, for the Wirral Rural District Council. Messrs. Beloe & Priest, MM.Inst.C.E., 13 Harrington Street, Liverpool:—

J. E. Gabbutt	£10,700 7 10	J. Taylor	£7,450 0 0
Charles Burt	9,920 0 0	Simon Johnson, Irlams-o'-th' Heights, Manchester*	6,657 0
W. Jowett	9,156 6 7		
Marr & Sons	8,684 0 0		
Philp & Eaton	8,110 13 4		
J. MacCabe	8,100 0 0		

* Accepted.

CROYDON.—For alterations and additions to stabling at Messrs. Crowley's Brewery, High Street. Mr. R. A. Crowley, A.R.I.B.A., architect, High Street, Croydon:—

Hanscomb & Smith	£1,234	S. Page	£1,115
Bulled & Co.	1,195	D. Waller (Croydon)	1,090

DUDLEY.—For sewering Netherton and Woodside districts for the Corporation. Mr. John Gammage, Borough Engineer, Town Hall, Dudley. Quantities by surveyor:—

Barnes & Co.	£24,707 0 0	McCarthy & Co.	£21,927 0 0
S. Saunders	24,176 0 0	Hughes & Son	20,461 17 1
W. Westwood	23,025 13 11	Nowell & Sons	19,073 1 10
J. Owens	22,165 0 0	G. Law, Kidderminster*	17,897 0 0
J. Mackay	21,945 2 4		

* Accepted.

HIGH WYCOMBE.—For the construction of the Queen Victoria Road, for Earl Carrington. Messrs. J. Carter, Jonas & Sons, surveyors to Earl Carrington:—

S. Saunders	£2,660 0 0	Lawrence & Thacker	£2,213 10 9
J. C. Trueman	2,650 0 0	R. H. Parkinson	2,213 0 0
H. Flint	2,446 1 9	Siddons & Free.	
F. Talbot	2,444 17 4	man, Oundle*	2,183 0 0
J. Macklin	2,804 8 9	H. Williams†	2,128 9 7
Lee & Son	2,237 3 1	W. Wilson†	1,471 12 4
T. Adams	2,248 0 0		

* Accepted. † Withdrew.

TUNBRIDGE WELLS.—For the execution of street works, Rusthall, High Street, for the Corporation:—

A. C. Soan	£2,101 11 8	J. Jarvis	£1,450 0 0
Lawrence & Thacker	1,585 5 8	W. H. Wheeler	1,411 16 8
		T. Fallett*	1,361 9 8

* Accepted.

WOLDINGHAM, Surrey.—For the erection of cottages and lodge for Sir W. R. Clayton, Bart. Messrs. Goodwyn & Sons, architects, Granville Chambers, Portman Square, W.:—

Burton & Son	£1,469	Marriage & Co.	£1,189
W. Potter (too late)	1,270	Thompson	1,075
Smith & Son	1,245	D. Waller (Croydon)	998
T. Churchill	1,231		

* Accepted.

CONTRACTS OPEN.

ROMFORD RURAL DISTRICT COUNCIL.
TO BUILDERS AND CONTRACTORS.

The above Council are prepared to receive TENDERS for the LAYING-OUT and FENCING of a CEMETERY at Upminster, and the ERECTION of a CHAPEL, &c., in connection therewith.

Plans, specifications, and conditions may be seen at the office of the Architect, Mr. E. M. WHITAKER, 1 Gresham Buildings, Basinghall Street, London, E.C., between the hours of TEN a.m. and FOUR p.m., except on Saturdays.

Bills of quantities can be obtained from the Architect on payment of Two Guineas, which will be returned on receipt of a bonâ-fide tender.

Tenders under seal, endorsed "Tenders for Laying-out Cemetery," must be delivered at my Office not later than FOUR p.m. on MONDAY, the 21st day of JANUARY next.

The Council do not bind themselves to accept the lowest or any Tender.

By order,
WILLIAM SMITH,
Clerk.

North Street, Romford,
December 31st, 1900.

SOUTHWICK SCHOOL BOARD.
TO BUILDERS AND CONTRACTORS.

The Southwick School Board invite TENDERS from competent contractors for Extensive ADDITIONS to the BOARD SCHOOL at Southwick, providing for an additional 245 children, in accordance with plans prepared by their Architects, Messrs. CLAYTON & BLACK, 152 North Street, Brighton.

Builders willing to Tender are invited to send their names to Messrs. CLAYTON & BLACK, together with a deposit of £1 1s., to be returned on receipt of a bonâ-fide Tender; and bils of quantities will in due course be forwarded.

Tenders will be required to be sent to me on a form which will be supplied on or before the 30th inst.

The Board do not bind themselves to accept the lowest or any Tender.

By order,
JOHN BOYLING,
Clerk to the Board.

Southwick, near Brighton.

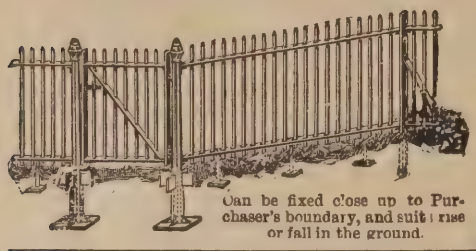
WATFORD ENDOWED SCHOOLS.
TO BUILDERS AND CONTRACTORS.

The Governors of the Watford Endowed Schools invite TENDERS for the ERECTION of a NEW LECTURE ROOM, &c., at the Schools, Derby Road, Watford, according to plans and specification prepared by Mr. C. P. Ayres, of Burvale, Watford, Architects, from whom full particulars, copies of the bills of quantities, and form of Tender can be obtained on payment of Two Guineas, which sum will be returned upon receipt of a bonâ-fide Tender.

The Governors do not bind themselves to accept the lowest or any Tender.

H. MORTEN TURNER,
Clerk to the Governors.

Watford Place, Watford.
January 1901.

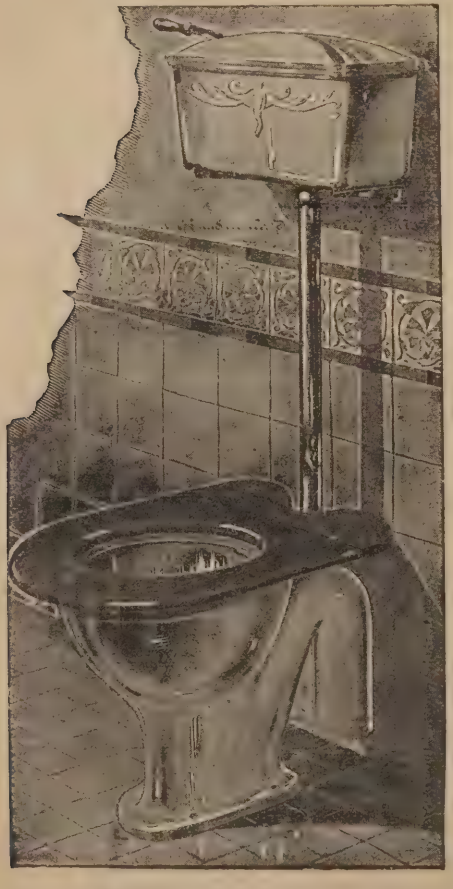


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THE BUILDERS' JOURNAL & ARCHITECTURAL RECORD

JANUARY 23, 1901. No. CCCXI.

HEPPINGHAM HOUSE, ARUNDEL STREET, STRAND, W.C.

An Architectural Causerie.

Macadam Roads. WE have not yet arrived at that perfection which would enable us to call road-making an exact science. But in regard to macadam roads in particular there is not such diversity of opinion as that which at present characterises the subject of heating and ventilation, because Macadam himself laid down rules which, if intelligently observed, will result in a good road being formed. In a city like London, however, with its vast amount of incessant traffic, the problem is made most complex, and up to the present time no entirely satisfactory solution has been found. The paving which comes nearest to perfection is, perhaps, asphalt, because it wears well and is non-absorptive; but with a little rain it becomes exceedingly greasy and, consequently, is then dangerous to horses, though it must be admitted that this defect could be largely remedied if systematic washing with water were practised. Wood, both hard and soft, has not this disadvantage, but it is much less sanitary. Cobbles are altogether too noisy. Lastly, there is macadam. It cannot be said that the roads in London made in this manner are satisfactory. Take the Victoria Embankment, for example, upon which so much money has been spent with such indifferent results. The common practice when forming a new surface is to lay down cartloads of machine-crushed granite, to level with heavy steam rollers, and to cover the whole with "hoggin" of some friable material. More rolling, with watering, is then performed until the surface looks solid and attractive. Such a road gives little trouble when the weather is fine, but as soon as the rain comes it washes under the thin crust and gets into the interstices, so that the stones (which were never properly consolidated) become displaced and the road is made into a bad condition. It is of course assumed that all this while a heavy traffic is passing over the road, the knife-like rims of the 'bus wheels and the hammering of the horses' feet having a very different effect to the steam rollers, with their great wide wheels. It is interesting to note Macadam's own opinion as to the size of stones to be used. He says: "The size of stones for a road has been described in contracts in several different ways, sometimes as the size of a hen's egg, sometimes at half a pound weight. These descriptions are very vague, the first being an indefinite size, and the latter depending on the density of the stone used. . . . The size of stone used on a road must be in due proportion to the space occupied by a wheel of ordinary dimensions on a smooth level surface; this point of contact will be found to be, longitudinally, about an inch, and every piece of stone put into a road which exceeds an inch in any of its dimensions is mischievous." (Remarks on the present system of road-making, eighth edition, 1824, page 35.) But it does not appear that macadam roads, however well made, can withstand the enormous wear and tear of a traffic like that which daily fills the London streets. Asphalt and wood offer more advantages, and, as has already been stated in these columns, the Embankment will never be satisfactory till one of these pavings—or something similar—is laid down. The expense would, of course, be very great, but the money would be expended in a better manner than it is at present—for the continual repair of a road which is never satisfactory in wet weather.

A Good Exhibition. THE exhibition of specimens of modern illustration now open in the Indian Section of Victoria and Albert Museum, Imperial Institute Road, is well worth visiting. It has been organised by the Board of Education in collaboration with the Society of Arts, and may be considered as a sequel to the Exhibition of Lithographs held at the South Kensington Museum two years ago. It was decided to restrict it to typographic work suitable for book, magazine and newspaper illustration, the term "modern" including all work of this class executed since "the sixties," when there was such an outburst of fine illustrative design: moreover, it is since 1860 that photography has been available for reproductive purposes and "process" has come into being. Without going into the history of reproduction, it is perhaps opportune to point out that in the palmy days of wood-engraving the artist drew on the block (or his drawing was transferred to it) and the lines were cut by the engravers, for, as an economy of time, the block was generally divided into many pieces so that several engravers might work at the same time on the drawing. By the present photographic methods an absolute facsimile of the original drawing is obtained on metal, and though the value of the line is not quite equal to that obtained from a wood block it is nevertheless possible to see the artist's original work, not the wood-engraver's interpretation of it. That in many cases the drawing lost considerably by this interpretation is apparent from the examples shown at this exhibition, and it is almost pathetic to see how Millais scribbled notes to the engraver over the proofs of some of his illustrations. Rossetti was much displeased with results when working for Dalziel's illustrated "Tennyson." He wrote: "I have designed five blocks for 'Tennyson,' save seven which are still cutting and maiming. It is a thankless task. After a fortnight's work my block goes to the engraver, like Agag delicately, and is hewn in pieces before the Lord Harry." He adds these lines:—

"O, woodman, spare that block,
O, gash not anyhow!
It took ten days by clock,
I'd fain protect it now.
Chorus—Wild laughter from Dalziel's workshop."

It is hardly within our province to deal at any length with the purely pictorial or decorative drawings which constitute the main portion of this exhibition, but even the architectural student can study these, for there is much to learn, both in technique and design, and much to admire. Many "fragments" of architecture are to be found among these drawings; for example, in Sir Edward Poynter's "Joseph before Pharaoh" we have a clever rendering of part of an Egyptian hall, with the lotus capitals and the mystic decorations, while a portion of a gabled house is to be found among the work of Mr. Alfred Parsons, whose flower and tree studies are so exquisite. Notice should also be taken of Daniel Vierge's "Plasterers at Work" (No. 1322): Vierge is a mastsr who has influenced modern illustration very considerably. Another interesting exhibit is the engraving of John Ruskin by H. S. Uhlrich. It shows the great writer in the prime of life (he was then clean shaven) and it met with his approval, for he wrote to the artist in July, 1879: "The portrait of me is out and out the best done." The architectural draughtsmen are represented by Joseph Pennell, Hedley Fitton, John Ruskin, Herbert Railton, Henry C. Brewer, F. G. Kitton, Edmund H. New, F. L. B. Griggs, H. P. Clifford, Frank L. Emanuel, Ernest Peixotto, C. Gerald Horsley, Philip Norman, F. Hamilton Jackson and Holland Tringham; many of the drawings exhibited have been illustrated in "The Architectural Review" and in our own columns. The drawings by Mr. Brewer and Mr. Pennell are specially notable; the illustrations to "The Romance of Spain" by the former include a fine view of Gerona (No. 1238), showing a skilful treatment of light and shade, and a beautiful interior of Toledo Cathedral (1239) with shafts of lights striking through the clerestory windows. Of Mr. Pennell's drawings those of the Stationers' and Brewers' Halls (1551 and 1560), Laon Cathedral (western doorway, 1558) and Le Puy En Velay (1552—which he considers to be the most beautiful spot in the world) are specially worthy of note. Mr. Fitton, unlike Mr. Railton, is not at all well represented, and we miss the work of several other architectural draughtsmen, such as Mr. Norman Shaw, Mr. C. E. Mallows and Mr. W. R. Lethaby—and Martin Rico. But, as a whole, the exhibition is an excellent one, and the organisers are to be congratulated on the success of their enterprise.



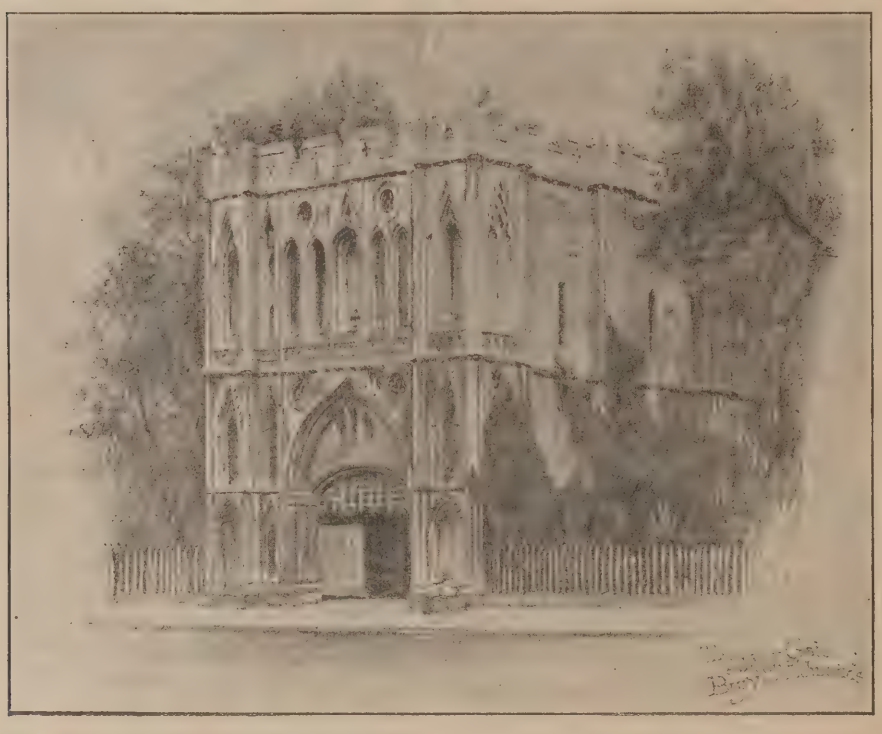
QUEEN'S HEAD, GREAT CLACTON. DRAWN BY HENRY T. REES.

Queen's Head, Great Clacton. THE drawing shown on this page of the Queen's Head at Great Clacton, by Mr. Henry T. Rees, is a striking example of the fact that "old times are changed, old manners gone," for this one-time busy hostelry has outlived its day and its extensive outbuildings and stabling accommodation are out of keeping with modern requirements. It is only for a brief season of the year that the advent of the cyclist restores to it some semblance of its former glory, when the toot of the horn announced the arrival of the mail coach and all was life and bustle within.

BURY ST. EDMUNDS.

BY EDWARD WALKER.

IF during the pursuit of his studies the architectural student, following upon a sojourn at Ipswich and that inevitable acquaintance with its foundries, its busy quayside and busier streets, should visit the town of Bury St. Edmunds, it will be to experience a sense of relief on observing the quiet old-world air of the place; and should he go there with the object of making some additions to his sketch-book he will especially regard with satisfaction the almost deserted streets. Such, at least, was the experience of the writer. He should not however be too sanguine, for if he expects to find in Bury St. Edmunds specimens of domestic architecture equal to the beautiful work of that character to be seen at Ipswich, he will probably be a little disappointed at the comparative fruitlessness of his search; but only let him visit the spot where once stood St. Edmund's ancient abbey, that grand old monument of ecclesiastical architecture, and one would fain watch the change produced in him by the Abbey Gate and Norman Tower of the combination of strong fortress and ornamental gatehouse—images concealing the oylettes, and the stations for the archers being entirely hidden both from the outside and from persons entering the gateway. The principal room, 28ft. square, was lighted by a large window to the east, and by two smaller ones on either side. From the large east window, the elegant tracery of which is still well preserved, and looking into the Abbey grounds, a most enchanting and interesting view must have been possible. In the foreground would appear the court and palace of the abbot, with the magnificent pile of monastic buildings rising behind; then the beautiful gardens and vineyard; and between, the rivers Lark and Linnet winding through a fertile valley and uniting their waters under the picturesque bridge (still existing) at the extremity of the Abbey grounds. A drawing of the western front of the Abbey Gate is given on this page. The Norman Tower, which is also illustrated (see page 472), is the work of Abbot Anselm, and was erected by him as the principal entrance to the cemetery of St. Edmund about the year 1125. Though, doubtless, somewhat heavy, its architecture is yet simple and dignified, well befitting its character as the gateway to a



DRAWN BY EDWARD WALKER.

and the two churches of St. Mary and St. James.

It is true that the traces of the Abbey itself are little more than huge grass-grown mounds and heaps of stones, yet even these, shapeless though they be, are of the greatest interest to the painstaking student, as they enable him to follow step by step the general planning, and thus to form some idea of what the edifice must have been before the work of demolition commenced. Fortunately the Abbey Gate and Norman Tower are in a remarkably perfect state of preservation. The first-named was formerly the main entrance to the Abbey, and is, perhaps, one of the finest examples of Decorated architecture in the Kingdom. Erected about the year 1347, after the destruction of a previous gateway, it is 41ft. wide and 62ft. high, being richly ornamented with exquisite tracery and crocketted arcading, while the details of the carved strings, capitals and mouldings are as beautifully wrought and pure in style as, surely, it is possible for them to be. In the south-west and north-west angles were staircases, and one of these remains, giving access to the battlements. The entrance to either staircase is within the inner area, so that access to the gallery might be obtained even when an enemy had forced the portcullis. The whole structure is a very curious example burial ground. The accompanying illustration shows the east front facing into the cemetery, but the corresponding large semicircular arch of the western façade is carved with chevrons and other elaborate Norman enrichments in its receding planes, and is altogether a remarkably fine example. The tympanum of the great arch was originally filled with symbolic sculptures, but these were removed in 1789 to afford freer access for loads of hay and straw, the tower at that time doing duty as a storehouse for such commodities.

Close to the Norman Tower and the ruins of the Abbey are the two churches of St. Mary and St. James. The former, a large Perpendicular structure with a nave 140ft. in length, is covered by an open timber roof of such beauty of design and exquisite workmanship as to cause it to be considered—and by those eminently qualified to judge—one of the most beautiful hammer-beam roofs remaining in the whole country. The exterior of the church, though of good design throughout, has nothing of remarkable interest, with one justly-famous exception—the north porch, also known as the "Notyngham porch." A drawing of the side of this porch is shown on page 470, but this, it is feared, can convey but a slight idea of the extreme beauty of this truly superb and wonderfully-complete example of the richest, possibly the best, period of English Gothic architecture. Of a similar period, St. James' church is equally interesting, and, with the exception of the Notyngham porch, quite as fine as St. Mary's.

Although, as already remarked, there are considerably fewer relics of domestic architecture at Bury St. Edmunds than at Ipswich, yet one or two houses in the former town are worthy of attention, notably the ancient building known as Moyse's Hall, a curious specimen of an early Norman dwelling-house; and the "Cupola House" dated 1693, a picturesque building, the quaint skyline of which is here illustrated. Among the public buildings should be mentioned the Town Hall, by Robert Adam, the abler of the famous Brothers Adam, and the Guildhall, which latter, though re-fronted in 1807, possesses a good fifteenth-century porch and a well-preserved and finely-moulded Early English arch.

THE PLANNING OF SMALL COUNTRY HOUSES.*

BY M. H. BAILLIE SCOTT.

IT would be difficult to overestimate the practical importance of the subject of this paper—"The Planning of Small Country Houses." We most of us live in small houses and depend for our daily comfort and well-being, to no small extent, on the amount of skill displayed in their design, and yet in the majority of cases the small house presents but little evidence of careful planning—a bay window and some leaded glass in the front door are held to be more than sufficient substitutes for solid and less obvious advantages.

Let us consider for a moment a practical example and let us imagine a man who, in the language of the advertisements, may be described as a tired brain-worker, seated in his study in the throes of literary composition, or steeping his weary brain in the purple pages of modern fiction. Over his head the children of his family are beating a tattoo, to which the chandelier jumps in unison. From the kitchen unutterable odours exude and rancorous voices engage in laughter or wrangle. Let us follow him to the dining-room, which is apparently all table and sideboard, or edge our way past the hat-stand and so into the drawing-room, where the milking-stools and painted tambourines are and where occasional tables hardly seem to justify even such a limited demand on their services as their name implies. A few simple rules suggest themselves at once as remedies to these defects in his surroundings. The children's room need not be arranged to come over the study, the floors generally should be deafened and fairly solid walls should divide the kitchen premises. Then the kitchen should have good ventilation and, finally, most of the furniture should be ejected.

As a contrast to such a house and as a guide to better things, I can perhaps hardly do better than quote a few lines from the "Eagle's Nest," which suggests a somewhat different picture:—"And in actual life let me assure you in conclusion the first wisdom of calm is to plan and resolve to labour for the comfort and beauty of a house, such as, if we could obtain it, we would quit no more. Not a compartment of a model lodging-house, not the number so-and-so of Paradise Row, but a cottage all of our own, with its little garden, its pleasant view, its surrounding fields, its neighbouring stream, its healthy air and clean kitchen, parlour and bedrooms."

It is very useful to keep such a picture before one, because it suggests nothing "artistic" in the ordinary sense. One may cheerfully dispense with the half-timber work, barge boards, finials and the rest, and be content to rely on quiet and restrained building and simply-proportioned masses. The walls should be as thick as may be, the windows small and few, the roof simple and low, and all the external materials such as Nature will deal kindly with. Inside one recognises the value of whitewash and scrubbed wood, of low rooms

* A paper read before the Liverpool Architectural Society on January 7th, 1901.

with little furniture and fewer ornaments. There is no influx of the cabinet-maker's shop and if there are few things of great artistic value at least there is nothing which is vulgar.

In presenting to your notice what may be described as a "fancy plan," a cottage if not a castle in the air, I feel it necessary to anticipate the criticism of the practical man, who declares that, inasmuch as each house presents a special problem and represents the particular requirements of a particular client, it is idle to design except to order. With all the varieties of individual requirement it will be found, however, that the fundamental requirements of the average family are still the same. We all like light and sunny rooms and we all appreciate planning which results in substantial comforts as well as beauty and economy. We all require places for dining, for sleeping and for talking in, and in the large majority of families these requirements are practically identical. I had thought this particular plan might be the more interesting to you if, besides illustrating various features in the small house which are considered in connection with this paper, it should also be modified to make

An Architect's House;

that is, a house particularly adapted for the requirements of an architect who works at home.

In will be well to remember at the outset that in planning a house one is providing accommodation for what we may call two distinct communities, the family and the servants. Then again the family itself may be divided into adults and children, and besides these there are the visitors to be considered, though perhaps not to the extent which leads us to describe our rooms as reception rooms.

Having first secured in the plan due privacy as between the family and the servants, one is led to consider the habits of the members of the family itself as a further basis for planning. One realises that the evolution of the modern house has led to the development of special cells for special functions, and that in the limited space at one's disposal in planning a small house this sub-division has resulted in extremely cramped conditions, so that the house consists of a series of small rectangular boxes, each filled to overflowing with cumbrous and useless furniture. In one's own conception of a small house one realises the necessity for one room, call it hall or living room, which shall be a meeting-place for the members of the family. This room at least should be of reasonable size, and should have the best aspect and prospects available. It may be broad and low in proportion, or it may be made two storeys high. It should never be a passage-way to other rooms, and its furnishing should be of the scantiest; broad, wide floor spaces are better than a house full of cabinets and knick-knacks.

It will next be necessary to provide special retreats for each member of the family grouped round this central room—the ladies' bower, the man's study or den, and the children's room, and inasmuch as it is not desirable that the general sitting-room should be used for meals, a special cell develops itself for this function, and adjoining this are the kitchen premises, while the upper floor provides the necessary bedrooms and bathroom.

The Hall

In considering the hall one is led back to the time when the house consisted of one simple primary cell, and that cell the hall or house-place. Gradually, as the house developed and special cells became necessary for special requirements, the hall itself began to dwindle and became absorbed in its dependencies, which usurped its functions. Its occupation, its uses, were gone, and though it persisted in the larger houses, in those which were necessarily planned under economic conditions it dwindled down to the lobby. And so the modern revival of the hall in the small country house has not altogether been a success. It is a passage for servants and visitors, a sitting-room where no one sits, and from the economic point of view a room wasted for mere effect. And yet one cannot but feel that this central sitting-room is still the best expression of the family life of to-day, and its introduction is more than justified if one can arrange that it shall not be a passage-way to the other rooms. The plans before you (see centre plates of this issue) will show how this has been done in one or two examples. In the house at Knutsford, for instance, the hall is used as the principal sitting-room, and there is nothing to disturb its privacy and comfort; this plan is given as a practical working example of what may possibly be considered as a mere theory.

It has been objected to such a restriction of the uses of the hall that when it ceases to be a passage it ceases also to be a hall, and becomes merely a sitting-room—a parlour if you like. But the real characteristic of the hall, which differentiates it from the sitting-rooms, is that it is the room from which the other rooms in the house open, the focus and nucleus of the plan.



In a house where the ceilings of the sitting-rooms are low, it affords a pleasant change to have the height of the hall running through the two storeys. When this is done, however, it is desirable not to indulge too much in open galleries, and to fit any upper openings with leaded glass or shutters. This secures the privacy of the hall and helps to prevent draughts. When the site and other local conditions permit it, I always prefer to place the hall on the sunny side of the house, with sitting-rooms to the right and left—to make it indeed the centre of a row of rooms, all of which have a southern aspect. This means a long house rather than a square one, and although the latter may be more compact and possibly warmer, these advantages will hardly compensate for the sunless hall. Such arrangements will, of course, be modified when there are special views to be considered, although when it is a question between sun and view I should be inclined to choose the former, though in most cases it is possible to secure both.

The Dining-room.

The functions of the dining-room in the small house are not so limited as its name would imply. It is a room set apart for meals, and, though beyond this, it often becomes a sitting-room, this use cannot be recommended, as it is hardly desirable to spend one's evenings encompassed by the lingering odours of the table. In the small house, however, a separate room set apart for only such occasional use appears somewhat a waste of space, and so I have shown how a dining recess can be arranged as a kind of adjunct to the hall, an arrangement which, besides meeting the practical problem, is also, I venture to think, eminently picturesque in character and probably preferable to the small rectangular box which necessarily constitutes the ordinary dining-room in the small house.

A glance at the plan will show how such a recess admits of service from the kitchen without disturbing the privacy of the hall, and in one's general aim to bring back to the modern house, so dull and so prosaic, some of that spirit of the true romance which inspired the houses of our forefathers, one must count as really helpful this arrangement of the dining table. The outcome of practical and economical requirements, it is yet capable of treatment which will lend an added beauty to the hall. The curtains which screen the recess may be perhaps of reddish brown and decorated with some broad and simple design in appliqué embroidery, and when these are drawn back one becomes aware of a table set with few and dainty appointments relieved against a dark background of seats, the whole picture glowing in the soft suffused light of candles. Such a picture certainly runs counter to all conventional ideas, and so already I find myself to have so far overstepped the province of a mere architect as to try and criticise and amend the customs of the dweller in the small house and to set up an ideal for him and his family, not the foolish aping of the customs of the "rich and great," but a simple ritual of daily life, which, admitting in its service nothing that is ugly, nothing that is without some individual beauty, be it only a knife or spoon, will among other things help us to recognise the innate vulgarity of that survival of barbarism which finds its modern expression in elaborate menus and gorgeous flunkeys.

Drawing-room.

The drawing-room, or ladies' room, should obviously bear in its character a feminine relation to the hall. As an adjunct to the hall, its dainty whiteness is a welcome note, and it is at least helpful to the designer if the room is described as the bower, as it helps to remove one a step further from the drawing-room as one remembers it in a hundred modern homes. A long heritage of misdoing in the way of furnishing makes it indeed almost a foregone conclusion that the drawing-room will not be a success. It is written that one should be haunted there by innumerable photographs and surrounded by precarious tables set with books and albums and a hundred knick-knacks. These things, it would appear, are part of the eternal feminine in her modern manifestations, and without such pitfalls and such distracting trifles she would probably pine away. And so we suffer them gladly, and in our artistic endeavours we learn to place the drawing-room among the might-have-beens.

And yet the drawing-room is capable of such gracefulness and elegance of treatment that in spite of its ultimate furnishings one hopes to influence it for good to some extent. It may appear fanciful to the practical person, but I must confess here to a habit of taking some appropriate line of poetry as a suggestion and inspiration for a scheme of decoration. In a drawing-room recently executed such an inspiration was provided by a line from a beautiful ballad by George Meredith, and "A frost of beauty white" helped to suggest a room with delicately-moulded white panelling, modelled plaster frieze and ceiling, where the foliage of oak and ash and hawthorn are untouched with colour, and a forest of tapered shafts is disposed in varied grouping round the room, bearing capitals of carved leafage and fruit.

The Nursery.

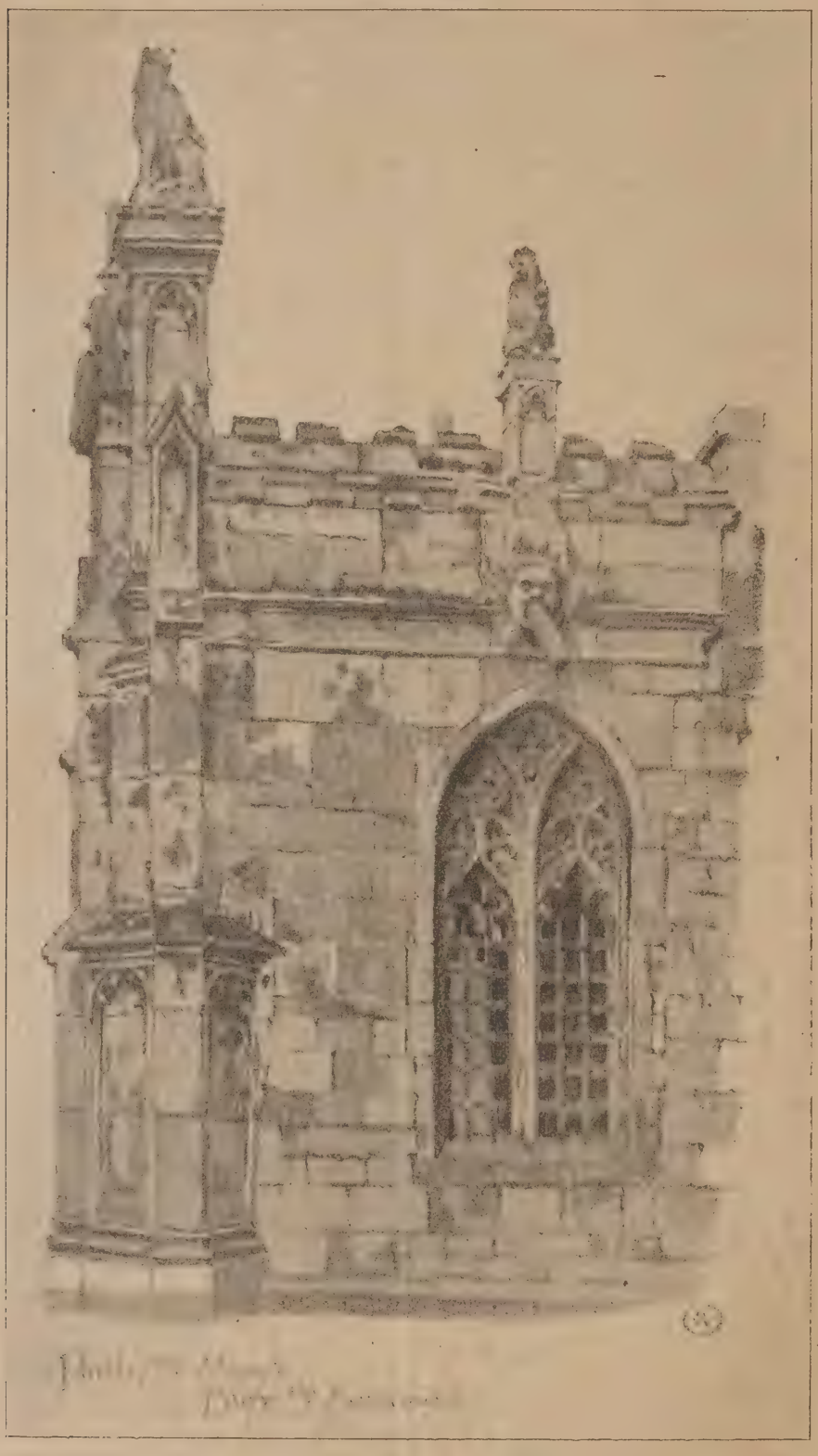
The nursery will probably be subjected to harder wear than any other room in the house, and should be finished accordingly. A dado of matchboarding (which need not be of equal narrow widths, with neat V-joints) will probably be the best treatment for the lower part of the walls, and it will be an advantage if one can take the ceiling partly into the roof, so that a beam may perhaps be introduced for a swing. Those who believe in the unconscious influence of habitual surroundings on children will recognise the necessity for a picturesque and cheerful treatment of this room, and those who value quiet will appreciate the desirability of due attention being given to the placing of the nursery.

The Kitchen.

It is rather curious to consider that modern inspiration in furnishing has largely been

obtained from the kitchen. Nor is this to be wondered at, because as the furnishing and decoration of the reception rooms of the house became more and more influenced by the dictates of fashion and the desire for a showy effect, in the natural reaction which followed one turned with relief to the one room in the house where everything was made for use. And so by slow degrees the kitchen furniture began to invade the rest of the house. The simple table with its scrubbed deal top, the rush-bottomed chairs, the dresser with its rows of plates and brass candlesticks from the mantel; all these things were found to be better in the small house than all the old imitation splendours. And so in considering the kitchen in the kind of house we are discussing there is not much to differentiate it from the other rooms.

The best treatment of the walls, when price will allow, is probably white glazed tiles, or the red brick wall may be left visible above a dado of matchboard, with red tiles for the floor. It is most essential to provide good ventilation, for which a special shaft should be formed. The window should be so placed that there is a good side light on the range, and the position of the kitchen with relation to the other rooms should be carefully adjusted to avoid the penetration of sound or smell and yet allow of convenient service.



DRAWN BY EDWARD WALKER.

Bedrooms.

With regard to the bedrooms, it is perhaps hardly necessary to insist that their planning should merely be the outcome of ground-floor arrangements. While the plans are yet in their fluent sketch condition there will be many changes to bring the ground floor and first floor into harmony. In planning the bedrooms it must also be remembered that a bedroom is often a sick room, and so, for instance, it should be capable of being easily heated and should be so arranged that the bed can be placed preferably against an inside wall and in a position free from draughts. It is often possible to take the ceiling of the bedroom partly into the roof, and this arrangement adds interest to the room, while a beautiful room may be made by using a barrel-ceiling with intersecting bonnel-heads for the windows. If attic bedrooms are used it is desirable that the roofs should be boarded and felted. Such rooms may well be finished with fitments, which may be reasonably introduced under such conditions. In the ordinary bedrooms of rectangular plan fitments appear out of place. This incrustation of furniture suggests the influence of some centrifugal force which has flung all the ordinary movable articles of furniture against the walls and stuck them there.

Sanitary Fittings.

The sanitary fittings of the house will depend very much on what one is disposed to spend. On referring to our numerous catalogues one cannot but be impressed by the great amount of art displayed in the illustration of these sanitary articles, one feels that here indeed the commercial artist has realised the apotheosis of his genius, and one is led to wish that he would confine his entire attention to these matters and find his highest aspirations satisfied by the evolution of a scheme in three colours for a flush-down Simplicitas with cistern complete. Those who do not appreciate his efforts will, however, probably choose their sanitary wares for their practical advantages, and will prefer them in plain white ware. The position of the bathroom in the house should be fixed with due regard to simplicity and economy of plumbing, and in view of possible leakages it will be best to place it over that part of the ground-floor plan which will be least damaged by an overflow. The copper cylinder for the hot water may often be placed in the linen closet.

Staircase.

The staircase of the small house suggests many opportunities for treatment. It should of course be, like everything else, in scale with the house; and an artist with a feeling for the due limitations and capabilities of his materials will not probably wreath and ramp the handrail.

With regard to the position of the staircase, in the absence of a separate servants' staircase it should be so placed that it may be used by both family and servants without disturbing the privacy of the house; it should not, for instance, open off a hall which may be used as a sitting-room. In the treatment of newel posts and handrail my own particular preference is for close boarding instead of balusters, with some simple piercings, and quite a plain handrail as a capping, the newel posts being slightly tapered perhaps, or, when possible, run up to the ceiling. A finishing touch to such a scheme may be provided in the shape of carved brackets to the posts, and perhaps a piece of carved and pierced cresting to a level piece of handrail. In a little staircase to a house at Crowborough, in Sussex, such a scheme was carried out, the woodwork being stained green and each post having brackets to represent the branches, flowers and fruit of various trees, carved, gilded, and painted; and, without aiming at any mediæval effects, one gained something of the brightness and gaiety of their colour schemes. While speaking of staircases the curious significance of steps in design may be noted. A room at a low level with a few steps down to it gains an added cosiness for such an approach. It implies the primrose way. To step up to a room on a higher level gives one the impression of dignity—of approaching the presence. It is no empty symbolism which places the altars of our churches above the general floor level, and the dignity so gained is very real in its effect on the mind; and so in the cottage, even, it is well to remember this significance of steps, even though by so doing we thus provide occasional pitfalls for the stranger within our gates.

Windows.

With regard to windows, it may be taken as a good general working rule to have but one window in a room, and that one not too large. Those wise men who are responsible for the construction of modern building by-laws have invented curious and ingenious rules on this subject, but unfortunately no one is prevented from making their windows abnormally large, and every consideration is shown to that extraordinary superstition which impels the modern householder to demand large expanses of glass for the display of curtains, blinds and other dust-collecting furnishings. It should not be difficult for a reasonable man to understand that these large window spaces destroy altogether the comfort of a room, which becomes the more susceptible to every change in the external temperature, while the fact that the windows are generally shrouded in draperies shows that they are not required for light.

The windows proposed for the class of houses under consideration are casements opening outwards, with simple wooden mullions, the general proportions being long and low. The opening casements may be of wood and either cut out of the frame itself or form a separate frame. The frames need not be moulded, but an effective and comparatively economical window is made by moulding the mullions only and leaving the heads and sills plain. Iron casements of good sections are the most satisfactory in exposed positions, but are necessarily more expensive. Casement bars and fasteners will give an opportunity for some simple wrought ironwork by a local smith. If leaded glass is used it will be most practicable in fairly large squares, with ½in. leads; and here and there we may perhaps get a little bit of decorative work in colours. For furnishing, each window will require merely a serge curtain on a rod of brass or iron.

Height of Ceilings.

The height of the ceilings may well be considered as one of the root questions in designing a house. One generally finds that most architects realise the desirability and reasonableness of a low ceiling, while as to the general public one might almost construct a scale for measuring the intelligence and cultivation of a client based on his ideas on this subject. The man who loves a lofty ceiling is not a man of corresponding lofty intelligence. I am almost afraid, however, that I shall shock even you architects if I state without warning my own convictions as to the proper height for a ceiling.

If I were building a house for myself I should certainly not make the ceilings more than 7ft. 9in. high, and below this line would be the beams, perhaps 9in. by 6in. laid flat. And this ceiling-level thus happily fixed, all things will work together for good. The long low windows will finish, as they should do, at the ceiling-level without undue distortion and without a dark and dismal wall space above to deal with. The wall itself may be without picture rails or other devices for cutting it up horizontally, and so in its proportions it becomes at once a cottage wall, and not even an art wallpaper can quite obscure the cottage note.

And if the ceiling leads to such happy results inside, on the exterior also its influence may be noticed. Proportions become broad and low of themselves, and one is not prompted to introduce string courses and other features to palliate original defects in proportion. Economically the advantages of a low ceiling are too obvious to need more than passing notice here. For every foot of wall space given up one gains an increase in floor area, and not only is the actual size of our rooms so increased, but the room with a low ceiling always appears to be larger than it really is.

Doors.

The most satisfactory door for a small house is probably a ledged door with wrought-iron hinges and latch, and the ironwork will give plenty of scope for character and design. Panel doors present an endless variety of patterns and proportions, and the chief merit of the design adopted will depend on its harmony with its surroundings. Doors, like all other features of a house, cannot be satisfactorily designed as an independent composition. One has heard of the man who took round a brick as a sample of his house; he was perhaps wiser than we give him credit for, for every detail of a house should have its relations to the rest. It would perhaps be a good rule to remember that every door may mean a draught, and so to make as few doors as possible and place these so that at least the greater part of the rooms may be free from draught.

Fireplace Treatment.

The treatment of the fireplace is a subject which opens up a vista of possibilities, but for the sitting-rooms at least the great question will be whether to avoid risks and use the modern grate and put up with its mean and despicable appearance, or boldly adopt the open hearth with all the liberal and homely associations it suggests, and with the practical disadvantage of a possibility of smoke.

I have generally found a copper hood over an open grate to be the most satisfactory method, and with a little adjustment such a fire will not smoke. The fire then stands out on the hearth and is not tucked away in a hole in the wall, and the whole of the appearance of the fireside is infinitely more cheerful and inviting than the paltry modern grate, however prettily surrounded with tiles and mantels. For the bedrooms I have found the fire on the hearths the best, because a fire of this kind can be kept in all night if required without stoking.

Beams and Posts.

The importance and usefulness of the beam has been fully recognised in the small house. It should be cambered, and in most cases will look all the better for being roughly squared and chamfered with the adze. The use of the beam, however, naturally suggests the use of the post, and it seems a sound and reasonable thing that a beam of a long span should be supported by one or more intermediate posts, and these posts may well be arranged to come in such positions in a room that they will help rather than hinder the effect of its furnishing. The connection thus formed between floor and ceiling gives a distinct character to a room. It is no longer a rectangular box merely, and one derives an unconscious pleasure from the contemplation of the substantial and visible means of support thus afforded to the beams of our chambers. The little sketch before you (see centre plate) attempts to illustrate the effect of a post in a room, and incidentally shows the general character of a cottage interior.

The relation between a house and its site is a matter which requires careful consideration. It is well for the architect to pay no hurried visit to the ground he is about to make or mar, and a tour in the nighbourhood will help him to realise what is local and characteristic in the buildings. He will begin then to realise the genius of the country side, and his house when complete will not appear as an importation, but so far from being a blot on the landscape will seem to express its very spirit. As a practical example one may take the Windermere district, a district of slate and rough-cast walls. Bricks, half-timber, and tiled roofs, which fit so well into so many localities, stand out there as a glaring offence, and if one would propitiate the *genius loci* one must build with the slate of the district.

When one has realised this local quality and the possibilities of the local materials it is time to make a sketch plan and this should be kept in a simmering and fluent state for as long as possible. It should be modelled and remodelled till a satisfactory result has been attained.

When this is done one should not commit oneself to elevation but get inside the house at an early stage, making a section for instance showing the main broad facts of roof and floors; and then the rooms; drawing, say, to ¼in. scale, the elevation of their sides showing the position of the windows and fireplaces. Then we may follow with elevation, and there will probably be some give and take, some compromise between exterior and interior, but the true principle seems to me to design from the inside and let the exterior represent a record of the internal requirements. I have no sympathy with the system which obtains so widely nowadays of forcing the interior to fit the façade—and no imposing rows of columns will compensate for such obvious insincerity.

In making such drawings of the interiors I have found that the great pitfall for the designer lies in forgetting the point of view. In order to avoid mistakes which arise in this way, it is a good plan to draw an eye-line at a height of 5ft. and possibly another lower to represent the eye-line when seated; and besides this it is well to block out with charcoal on one's office wall the main features of the room so that one may realise the actual size and proportions of things. These precautions will save one from many unpleasant surprises.

To the man who would rather draw a thing than write about it the specification is necessarily rather a trial. It may be made much more interesting as well as useful if it is not considered so much a dry legal document as a real attempt on the architect's part to describe to the workman what he would have him do, and written entirely from this point of view we shall find it will more than fulfill the necessary legal qualifications.

With regard to materials, it has already been pointed out that they should be as far as possible local. It is perhaps still more important that they should weather well, for Nature will then help us to correct our mistakes. Bricks should not be chosen for their evenness of colour or smoothness of surface. They should present the characteristic surface of burnt clay, and each year under the influence of the weather they should gain an added beauty. Rough-cast on stone or brick is perhaps the most satisfactory material for the exterior of the small house. It helps to make a dry wall, and it may be finished with colour-wash, either white or cream or a deep yellow or terra-cotta shade. Half-timber one has become to regard as a weakness of one's early years which is still not without its charm. To use it constructionally, however, means considerable expense and difficulty, for it should be built up of solid oak beams with here and there a natural curve in their outline, and the windows moulded in the solid framing with mason stops and projecting pegs and rows of little mullions with leaded glass. All these things are very fascinating, and in the right district and surroundings a half-timbered house carried out with the right feeling is almost unequalled in its effect. But nowadays it is a luxury, and the builder of a small house will be better advised to be content with plain wall spaces.

In a stone district, too, it is equally to be desired that one should use thick stone walls with stone-mullioned window and a stone roof, and inside as far as possible to carry out the same logical idea; but here again one cannot always afford in the small house to indulge in one's artistic aspirations, and so we are content to rough-cast our stone walls and make the window frames of painted wood.

The best material for the roof-covering will depend much on local conditions, but tiles or green slates may generally be said to be the best for a small house. Thatch, in spite of certain disadvantages, forms a very satisfactory roof-covering; it should not, however, be used on a roof which has been designed for slates or tiles. To make the most of its picturesque qualities it is always desirable to plan the house for such a roof. Its distinguishing characteristic is that one may introduce curved surfaces and lines instead of straight ones into the roof, and this characteristic opens up whole visions of picturesque possibilities.

In the woodwork of the interior of the small house one must be content with deal, which may be either painted or stained. For the larger timbers and beams and other constructional woodwork, which it is our aim as far as possible to leave visible, it is not desirable to have too high a finish, and the adze and the chisel are better tools for these at least than the plane. And I may mention in passing that I should not be sorry to see the plane banished from our workshops. It represents the thin edge of the wedge, the substitute of the machine for the tool which reduces everything to that dead level of monotony which we are taught to admire as the perfection of workmanship.

In the plastering of the walls and ceiling of the house one is again reminded of the same

ideal, and on all sides one is surrounded by surfaces which are level and monotonous. One feels that plaster should have, like every other material, its characteristic surface, a surface which tells us something of the nature of the material and the workman's tools; or in many cases plaster may be omitted altogether and the wall itself either left visible or finished with whitewash.

Semi-detached Houses.

Referring to the plans illustrated (see centre plate) that of a semi-detached house was for a somewhat limited site. The frontage to the road is to the north and the application of the unalterable rule which has been well expressed in the happy phrase "Queen Anne in front and Mary Anne at the back" would naturally lead one to a bay window to the road, and to relegate the sunny side to back yards, ashpits and other squalid details.

In the plan I have ventured to bring Mary Anne round to the road and thus to get to each house a little garden with a sunny aspect for the sitting-rooms, and with a window looking north from the parlour for those who must needs observe the passers-by. I have always considered the semi-detached house a somewhat unsatisfactory arrangement. The name itself is misleading. It should be *semi-attached* and it is the semi-attachment which constitutes its weak point. To be wholly attached, to be one of a row, one of the crowd, almost eliminates the individuality of neighbours, but to the semi-attached one's only neighbour is not to be ignored. From the artistic point of view, however, the semi-attached house has its advantages, as one can secure with greater ease a long and low effect, as shown in sketch illustrated.

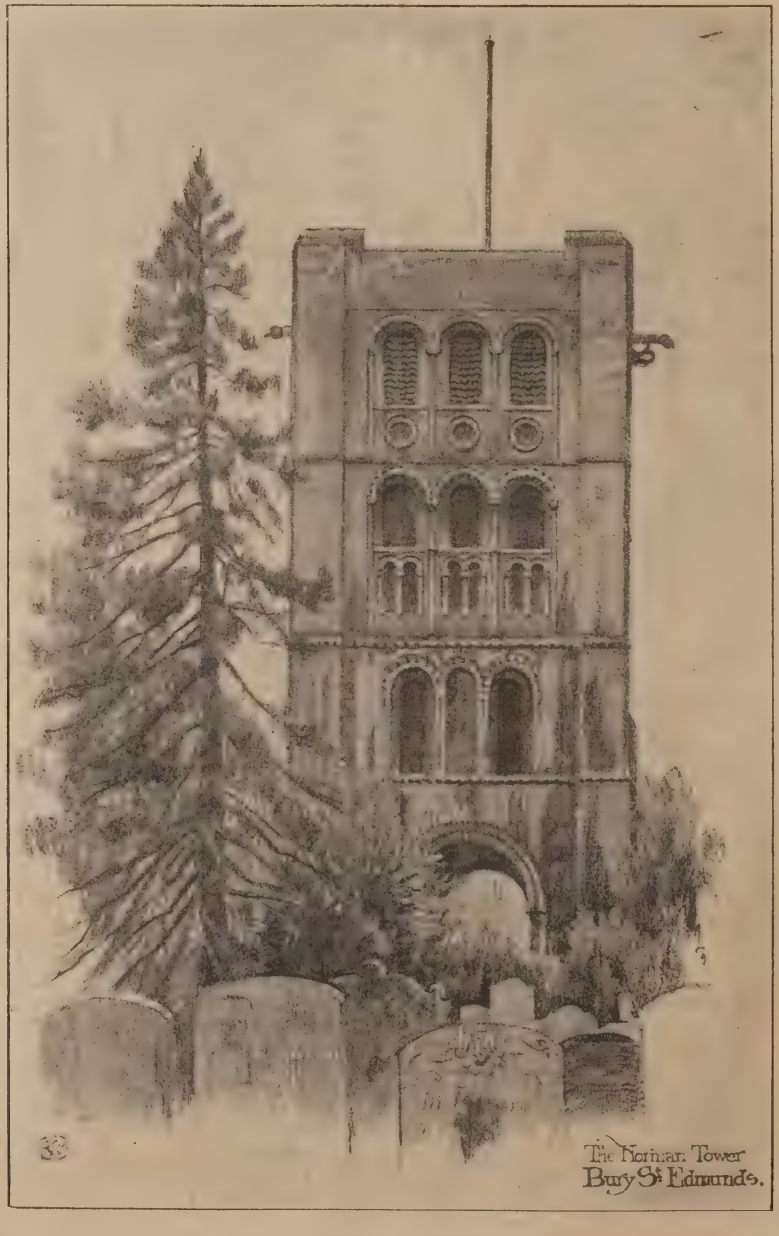
The house at Knutsford is practically a reproduction, with some slight alterations, of a plan which was illustrated and described in the January number of the "Studio" for 1895. These alterations chiefly consisted in a rearrangement of the kitchen premises and the introduction of a little secret staircase which, opening from a panel in the jamb of the drawing-room window, gave access to the music gallery and also formed a private stair to the bedroom over the dining-room. This house was carried out internally with furnishings of old oak panelling, old doors and staircase, and all heavy timbers were finished with the adze.

The architect's house is given as an illustration of some of the principles of planning suggested in this paper. The hall with "bower" and dining recess is a substitution for what would otherwise be three small sitting-rooms. It is of course a compromise to meet economical conditions both of cost of building and cost of maintenance, and a house which had these three sitting-rooms as well as the office accommodation shown would necessarily be costly to build and require a large staff of servants to work.

In the drawing of the hall of this house the ingle and dining recesses are shown.

I think it was William Morris who said that all furniture was either made of sticks or planks and that he preferred the latter. The illustration of this hall suggests a plank treatment. There are no sticks, and the cabinet shown is constructed on the humble model of the packing-case with external ledges which are decorated with a carved band. The interior of this cabinet is painted and the insides of the doors decorated with bright stencilled patterns.

The detail drawing of part of a staircase shows a carved and pierced cresting and carved brackets. The general woodwork is stained green. The stems and branches are all gilded, and the birds painted white on a blue ground. The roses are crimson and the leaves green.



DRAWN BY EDWARD WALKER.

Quarry Notes.

A Memorial to the late Lord Russell of Killowen is to be placed over the grave of the late Lord Chief Justice in Epsom Cemetery, and is to take the form of an elaborately-worked granite enclosure wall, to enclose a space of 27ft. by 20ft., and rising to an average height of about 6ft. At the corners, centre and sides of the gateway are to be large pillars, weighing about one ton each. They are to be wrought square, and tapered and pointed, and on each face there is to be an ornamental band of interlaced runic work. The panels between the pillars are to be built up of four crosses of stone work, and will form a series of small arches set on a tapered base course, this being capped by a rounded coping course having an ornamental band of running work raised in sunk panel on both sides. The whole of the work is to be finely chiselled, and designed with an old Irish character. The materials composing the memorial have been obtained from quarries near the village of Killowen, where Lord Russell was born, and will be executed by a Newry firm.

The new Cemetery at East Bournemouth has just had the Roman Catholic burial ground defined by the erection of a large Calvary. Like the old Calvaries of Brittany, it is composed wholly of granite; not of the almost black variety so common in Finisterre and throughout the opposite coast of North-western France, but of the light grey kind quarried amongst the tors of wild Dartmoor, and, perhaps, the hardest and most lasting of all the various kinds of British granites. The steps stand upon a cairn of rough granite, and upon these rests a monolith over twelve feet high. The upper part of the latter takes the form of a wheeled cross of Celtic character, and upon its front face, carved in the round in the solid granite, is a sculptured statue of the crucified Christ. It was designed by Sir Francis L. J. Barrow, Bart., architect, of Sunny Glen, Boscombe. It has been made in its entirety, and placed *in situ* by Messrs. Henry Hems and Sons, of Exeter. Messrs. Hems have also just erected a memorial close by, also designed by the same architect. It consists of a sculptured representation of Christ crucified, raised in high relief upon a plain white marble cross.

Maine Slate Quarries.—In the days of the early settlers in Piscataquis county, in the United States of America, slabs of slate were used as hearthstones for the cabins, while smaller pieces were split thin and smoothed with crude tools for school slates. The industry has now reached large proportions, and employment is furnished to a large number of men, although comparatively not so large as in other industries, since most of the slate quarrying work is done by machinery. The slate turned out of the Brownville quarries is used mostly for roofing, being particularly adapted to this purpose. The slate from these quarries is soft and dark coloured, and the veins average an uncommon thickness. The excavations vary from 150ft. to 200ft. The Maine quarries manufacture slate into very many different designs of flagging, mantels, sinks, toilet stands, &c. The blocks are sawn and are then put under an immense plane and smoothed. The edges are moulded in the same way as wood, only more powerful machinery is required. It is noticeable that slate seems to have been the first stone to be quarried to any extent in New England. In old churchyards and chapels the tablets are entirely of slate. In Maine quarries a large number of Swedes and Welshmen are employed.

THE PLANNING OF INEBRIATE REFORMATORIES.—I.

BY GEORGE H. BIBBY.

(INTRODUCTORY.)

UNDER the clauses of the Inebriates Act, 1898, it has been provided that where a person is convicted on indictment of an offence punishable with imprisonment or penal servitude, if the court is satisfied from the evidence that the offence was committed under the influence of drink or that drunkenness was a contributing cause of the offence, and the offender admits that he is, or is found by the jury to be, a habitual drunkard, the court may, in addition to, or in substitution for, any other sentence, order that he be detained for a term not exceeding three years in any *State Inebriate Reformatory* or in any *Certified Inebriate Reformatory* the managers of which may be willing to receive him.

It is provided by section 3 of the above Act that the Secretary of State may establish inebriate reformatories (in this Act described as State Inebriate Reformatories), and for that purpose may, with the approval of the Treasury, acquire any land, or erect or acquire any building, or appropriate the whole or any part of any building vested in him or under his control; and any expenses incurred under this section are to be paid out of moneys provided by Parliament.

But under section 5 the Secretary of State, on the application of the council of any county or borough, or of any persons desirous of establishing an inebriate reformatory, may, if satisfied as to the fitness of the reformatory and of the persons proposing to maintain it, certify it as an inebriate reformatory, and thereupon, while the certificate is in force, the reformatory would be constituted as a certified inebriate reformatory within the meaning of the Act.

The Inebriates Act, 1898, applies to Scotland, and the Lord-Lieutenant of Ireland may also establish State inebriate reformatories, and for that purpose may, with the approval of the Treasury, either authorise the Prisons Board to acquire any land, or to erect or acquire any building, or appropriate the whole or any part of any building vested in or under the control of the Prisons Board, the expense incurred being paid out of moneys provided by Parliament; the Act also applies to Scotland and Ireland as respects certified inebriate reformatories; but although it has been in operation since January 1st, 1899, the work of erecting buildings for the detention of inebriates appears to have progressed but very little, and complaints have been made by magistrates and others of the great want of reformatory accommodation throughout the country.

The provision of suitable inebriate reformatories is very considerably retarded by the initial difficulty that there are few architects whose previous training and experience qualifies them to deal with a class of building hitherto not demanded. An inebriate reformatory must not be planned wholly upon the lines of a workhouse, prison, lunatic asylum, or hospital; yet some features of all such institutions as these may be incorporated with advantage in the plans and general arrangements.

If planned too much on the usual basis of a workhouse there would not be sufficient means for preventing the escape of patients, neither would there be the requisite means for continued observation of the inmates; if arranged after the manner of a prison many of the chief objects for the detention of inebriates would remain unprovided for, and it must be remembered that there needs to be some accommodation in the form of apartments for recreation that would be out of place in a prison, but which would be necessary where inebriates are under detention.

Neither would all the arrangements of ordinary lunatic asylums afford adequate provision for the accommodation of inebriates; these would not give the means of safe custody of the inmates, and although the mental condition of some inebriates (especially during the first weeks of their detention) may render them at times worse than ordinary lunatics, yet the conditions under which they are to be detained vary so greatly that special arrangements of the buildings in which they are to be treated must be arranged for; a building which has been planned by an architect thoroughly conversant with the arrangements of asylums, hospitals, prisons and workhouses would, probably, be more likely to meet the requirements for inebriates than any erection by an architect without such experience.

Attention has been already directed to the fact that public authorities desirous of exercising their powers under the Inebriates Act, 1898, are contending with great difficulties while deciding as to the character of institutions calculated to meet the requirements of their districts. This is only to be expected, as the buildings required are quite without precedents, and there is little knowledge or experience available, and we are quite without the advantage of existing buildings which could serve the purpose of patterns to be followed or which, by long use, had proved suitable for the requirements of a house of detention for inebriates.

I have before me a recent plan for a reformatory for fifty male inebriates which has been issued from the Home Office, but with the explanation that it does not in any respect profess to be a model plan, or to be designed to supply every possible requirement, but that it was given merely as a suggestion, "to be modified or not according to desire or at the dictation of experience."

This plan is most unsatisfactory in almost every respect—the dormitories are much too small, the day-room and dining-room accommodation is badly arranged, and the floor areas are insufficient, the allowances being less per inmate than would be approved for prisons, asylums, hospitals or workhouses; the general kitchen and offices are absurdly small, and the mess-room for attendants is badly placed and could only be approached through the kitchen; there is very little space given for store-rooms, the passages are badly lighted, and the means of escape from the upper floors are such as would not be accepted by any public authority having competent officials to advise them. The mortuary is placed in a little closet on the ground floor below the hospital building and in such a position that it would be very difficult to push a coffin into it. A laundry is provided (21′ 0″ × 20′ 0″) which would be quite insufficient for an institution containing 50 male inmates and their officials; this "laundry" is without drying-closets, ironing-room, sorting-room or other necessary adjuncts, and as the buildings are for males only it would appear that the laundry should be in such a position that the laundry-women need not have to enter the internal court or buildings which should be occupied by male inmates only. The chapel and library are placed on an upper floor, and the latter could only be approached by passing the communion rails in the chapel, and the means of escape from this portion for the congregation in the event of fire or panic is by means of a badly-placed staircase of non-fire-resisting construction. The medical superintendent's residence is undesirably placed on the first and second floors of the front building, the apartments being all very small and inconveniently arranged and quite unsuitable for the occupation of a professional man charged with the duties and responsibilities of managing such an institution as is shown on the plans. Yet there is in the scheme an outlined suggestion of a *general arrangement* that could be worked out advantageously if the details were amended, and for this reason I have included this plan amongst the illustrations to be given with this series of articles.

Mr. R. W. Branthwaite, inspector of inebriate reformatories, has directed attention to the fact that safe custody is a subject of paramount importance, and that the Secretary of State will require evidence that due arrangements have been provided to prevent the escape of inmates. The majority of patients will undoubtedly be amenable to discipline, but a certain percentage will require the strictest supervision, at any rate for some considerable period; as it is impossible to discriminate at sight between these characters, it becomes absolutely necessary to treat every inmate as if he or she would escape at the first available opportunity until otherwise proved by study of each individual case.

In the Home Office plan the building is so arranged that its inner court for exercise is fenced in chiefly by the various erections—all external labour on the property being arranged for under proper supervision; by this means the expense of fencing in the whole of the property would be avoided.

The Home Office view appears to be that the fencing in of the entire property with an unclimable boundary would either result in an undue restriction of area, or, on the other hand, necessitate great expense; also that perfect supervision would be almost impossible in the case of patients roaming at will over large areas: if safe custody measures consisted solely of a wall round the whole property, the only means of effectually controlling persons known to be contemplating escape would be confinement within the building itself, with consequent irksome restraint and no possibility of anything like adequate outdoor exercise.

Inebriate reformatories should always be on rising ground, so as to afford, amongst other advantages, facility for adequate drainage. The Home Office requirement of land is one acre for every ten males or twenty females, but, especially in the case of the former, where land is obtainable at low rates, it will be found a distinct advantage to calculate acreage on a more liberal standard to afford ample scope for outdoor employment, exercise and recreation. A reformatory should always be situated at some distance from great centres of population, but within easy reach of railway communication with the district it is intended for. Where selection is possible, preference ought to be given to fairly elevated positions, whilst the advantage to inmates of bright and generally pleasant surroundings should not be disregarded. Finally, the site should be selected with the view to its suitability for agricultural or market-gardening operations, and should be of a healthy character, having, preferably, a gravelly, chalky or rocky substratum.

The Home Office estimates the cost for building an inebriate reformatory to be £6,000 if to provide for fifty patients, and it is suggested that £500 would be sufficient to provide the necessary furniture; but I regard these figures as being much too low for the purpose of providing a substantially-complete institution. The sum for the building is only at the rate of £120 per patient, while a county lunatic asylum has cost from £300 to £400 or more per patient (where from 1,000 to 2,000 patients are provided for). I fail to perceive why there should be so great a difference in the cost per patient. This can only be accounted for by supposing that the accommodation for inebriates would be greatly (and unnecessarily) inferior to that generally provided for the insane. Within certain bounds, the larger the number to be provided for the less should the cost be per head; one reason for this being a reduction in the proportionate cost of the administration buildings; this is particularly noteworthy in the case of asylums, workhouses and large infirmaries, especially in those instances where extensive wards have been added to existing institutions *without a corresponding enlargement of the original administrative buildings.*

With regard to cost it is difficult, in the absence of sufficient data, to estimate what amount should be expended per patient upon the building. There is so very little to guide us until proper institutions have been erected and paid for. Further than this it remains to be discovered what the full effect of inebriates reformatories will be upon the inmates; the more lengthy the detention of the inebriates the greater must be the number of new institutions to be provided under the Act. Mr. Branthwaite states: "Inebriates have no parallel with any other class for which institutions are required, and it would be well to bear in mind that the large majority of patients after about a month's residence will be in perfect *physical* condition and fit to undertake any ordinary occupation; from a curative point of view organisation of regular labour is essential, and such labour ought to bear financial value in the interests of both patient and institution." But unless convenient and well-appointed buildings be erected for inebriates, with

suitable workshops and means of employment provided therein, the Inebriates Act, 1898, will assuredly fail in its purpose. Such buildings must necessarily be costly. The land to be attached to a reformatory for 50 patients must have an area of at least five acres, which, at the Home Office estimate, may cost £500; add to this the low estimate before mentioned of £6,000 for the building and £500 for the furniture, and the total for the 50 patients will be £7,000. For the purposes of the Inebriates Act, 1898, it is believed that the Local Government Board would probably permit councils to borrow money for the purchase of land, repayable in 30 years; for buildings, repayable in 30 years; and furniture in 10 years, the loans being raised at 3 or 3½ per cent.

The site for an inebriates reformatory should not be near to any nuisances, such as steam engines, shafts of mines, noisy trades, or offensive manufactures; neither should it be intersected by public roads or footpaths; it should be elevated, as respects the surrounding country, undulating in its surface, cheerful in its position, and having a general fall to the south or south-west. It is of the utmost importance that there should be a *constant and ample supply of wholesome water*, of which a careful chemical and bacteriological analysis should be made, as well to ascertain its fitness for the purposes of drinking and washing as to determine the proper materials for pipes and cisterns.

(To be continued.)

Engineering Notes.

Messrs. R. Waygood and Company, Ltd., have posted the preference dividends for the six months ending January 15th.

Institution of Mechanical Engineers.—The annual report for 1900 shows a membership of 3,165 (a net gain of 243 over the previous year) and a balance to the good of about £36,000.

An International Tramway Congress is to be held in London in 1902. About 300 representative engineers, directors and managers of tramways and light railways on the Continent and elsewhere will attend.

Successful Municipal Water-Supply.—The Dover municipal water-supply yielded a profit of £4,337 last year, equal to a sixpenny rate. The water is supplied to houses of £20 rating at 10s. a year, and in proportion.

Electric Light for Portsmouth Dockyard.—After very mature consideration the Admiralty have decided to introduce the electric light in Portsmouth Dockyard. At present the place is wretchedly lighted with gas lamps of the early Victorian pattern.

Bridge Competition, Sydney, N.S.W.—Mr. E. Cruttwell, of London, has been awarded the premium of £1,000 in the competition for a bridge to connect Sydney with the North Shore. The Board of Examiners do not, however, recommend any of the plans for adoption.

Electric Light for Edmonton.—At a meeting of owners and ratepayers held last week the proposal of the Edmonton District Council to join with four surrounding parishes in promoting a Bill for electricity generating stations was upheld. The scheme is expected to cost £400,000.

Bermondsey Electric-Lighting Scheme.—The Bermondsey Borough Council have accepted a tender of Messrs. Crompton and Co., amounting to £2,595, for the supply and erection of cast-iron lamp columns, lamps and fittings, switches, &c., for that part of the electric-lighting system in course of completion in Bermondsey, London, S.E.

Electric Trams on Denmark Hill, London, S.E.—The London County Council, having decided to run a service of electric trams on Denmark Hill, have also deemed it necessary to widen that thoroughfare. They have accordingly approached the Lambeth Borough Council with a view to securing from that body one-third of the total cost of the improvement.

"Pure Water for London" is the title of a little book by Mr. R. P. Whellock A.R.I.B.A., recently published by Messrs. Simpkin, Marshall and Co. The author proposes that pure water for drinking purposes only should be procured by sinking wells into the chalk or greensand beds of the London Basin, and supplied for that purpose by separate mains. The estimated cost of construction is £3,000,000 sterling. With regard to this matter of the London water-supply, Mr. Shaw-Lefevre is of opinion that the Council's scheme for putting the water-supply under public control will, sooner or later, when all the devices of procrastination are exhausted, prove to be the only possible one, and will be approved by Parliament.

The Underground: a Lesson from Budapest.—Last week Sir W. H. Preece and two directors of the Metropolitan and the Metropolitan District Railways left England for Budapest to enquire into the working of the Ganz system of electric railway traction as employed there. The directors of the two companies have had under consideration at least nine tenders for converting their lines from steam to electrical propulsion. All the tenders are understood to have presented many points of excellence, and that of Messrs. Ganz and Co., although not accepted, has been selected for further investigation on account of its cheapness and the many novel features of the system. The most striking feature of the Ganz electric railway is the abolition of the locomotive and the use of what is known as the "multi-unit" method. Motors are distributed throughout the train at intervals, an arrangement which, it is claimed, results in a more equal distribution of weight and greater speed.

A Safe Lift.—Sir Frederick Bramwell will have his little joke. In a letter to the "Times" he describes a small hydraulic lift to carry one person which he designed ten or twelve years ago for use in his house at Hyde Park Gate. "It was guided up the well-hole of the ordinary staircase without anything surrounding it, and access was obtained by making a gateway in the handrails on each landing and by fitting to each opening a spring gate. The lift itself was fitted with a gate so that the occupant might not tumble out as he went up from floor to floor. I caused to be arranged (not as any matter of invention, but more as a common precaution) a simple device by which none of the spring gates could be opened unless the lift was opposite to the opening, and I also had another arrangement by which the doors of the lift itself could not be opened unless the lift was opposite to a spring gate. This thing has worked perfectly for the ten or twelve years it has been in existence; I came down by it this morning and I hope to go up by it to-night. It appears to me that if an arrangement of this kind, by which it would be rendered impossible to open any lift door, on any floor, unless the lift were there, were in general use it would prevent such an accident as that which you recorded."

Masters and Men.

Strike of Glasgow Joiners.—About 500 Glasgow joiners stopped work last week as a protest against an intimation of their employers that wages were to be reduced from 10d. to 9d. per hour. About 20 firms intimated the reduction on the proposal of the Master Wrights' Association.

Derbyshire Lime Trade Dispute.—There is no prospect of a settlement of a dispute in the lime and stone trade of the Buxton district, which extends over Peak Dale, Dove Holes, and Miller's Dale. All the quarries are deserted, and the men express themselves as determined not to sign an agreement binding themselves for a year, considering such is most unreasonable. They are nearly all members of the Trades Union.

The Lockout of St. Helens Joiners, which has lasted for the past six months, has come to an end. The joiners gave notice that on and after July 1st last year they would not fix any foreign-made joinery, this term being applied to all joiners' work made in shops where trade union conditions do not prevail. There were only two or three shops affected, but the St. Helens Master Builders' Association decided to lock out the whole of the members of the two trade unions of which the local joiners are members. The employers and employed have now had a conference, and decided that the lockout should come to an end, the question in dispute to be left over for future consideration. The men had also given notice of a demand for an increase of a halfpenny per hour in their wages and certain other alterations in their working rules, but they have withdrawn the notice.

Halifax Joiners' Dispute Settled.—Through the efforts of the Halifax Building Trade Federation, which resulted in a conference between the parties last week, the dispute between a number of Halifax operative joiners and their employers which has lasted 105 weeks, has ended. The employers will make an advance of a ¼d. per hour on their original offer, making it ½d. per hour, and will concede a rule asked for by the men with regard to the grinding of workmen's tools. On the other hand, Rules 3 and 4, which had for years been a source of friction between masters and men at Halifax, are to be framed as the employers desire. It has also been agreed that, with the object of avoiding disputes in the future, an annual October conference of masters and men shall be held, at which all trade questions shall be considered, and that no strike or lock-out shall take place until the decision of the joint committee in conference has been made known

Surveying and Sanitary Notes.

Three Women Sanitary Inspectors have been appointed by the Southwark Borough Council at salaries of £160, £130 and £120 per annum, and it has also been decided to engage two women as inspectors of infectious diseases at salaries of £110, rising to £160.

"How to become a Municipal Engineer" will be the title of a new book to be published shortly by the St. Bride's Press, 24 Bride Lane, London, E.C. The author is Mr. J. Freebairn Stow, member of the Association of Municipal and County Engineers, member of the Society of Engineers, and engineer and surveyor to the Uxbridge Rural District Council, previously having been in the employ of the Public Works Department, Cape Colony. The work will be on sale at 1s. nett.

The Upkeep of London Streets.—Landscape gardening in Fleet Street still proceeding, and likely to last well into next summer. Municipal Councils most active in the conduct of operations. Half of the labourers are hard at work leaning on the guard rail, and smoking pipes with the utmost vigour, whilst other half constantly engaged in meal of some description. Occasionally a small drainpipe is lowered into grave-like trench, but this is of infrequent occurrence.—"Punch."

Southwick to be Southwick-on-Wear.—There being seven or eight places in the United Kingdom bearing the name of Southwick, as well as another recently created urban district of that name, the Southwick Urban District Council, in the County of Durham, with the consent of the County Council, have decided to change its name to Southwick-on-Wear Urban District Council, and the name of the place to Southwick-on-Wear. The object is to prevent a continuance of the miscarriage and delay in delivery of letters, &c.

London's Street Refuse.—The Corporation have for some time past been considering the question of dealing with the dust and refuse from the City, and among other things the practicability of generating electricity from steam raised by burning the refuse. Acting on the reports of Mr. D. T. Ross, the City engineer, and Mr. A. A. Voysey, the electrical engineer of the City, the Streets Committee have advised the Corporation to barge the dust and refuse into the country, and to obtain some suitable site for the purpose.

R. I. B. A.

PRIZE AWARDS, 1901.

Difficulties in Producing Good Modern Architecture.

A MEETING of the Royal Institute of British Architects was held at 9 Conduit Street, W., on Monday evening last, when the President, Mr. William Emerson, occupied the chair. Mr. Alexander Graham announced with regret the death of Mr. John J. Burnet, of Glasgow, and it was decided that a letter of condolence should be sent to the relatives. Mr. Burnet was eighty-seven years of age, and was elected a Fellow of the Institute in 1876: his name ranks high among the architects of Scotland. The Secretary then announced the prize awards for 1901 as follows :—

Institute Silver Medal and Twenty-five Guineas (for an essay on "The Comparative Desirability of the Formal or Irregular Treatment of Street Architecture in Large Cities"): Prize, Arthur Maryon Watson, B.A. (London); certificate of hon. mention, William Curtis Green (London). Three essays were submitted.

Institute Silver Medal and Ten Guineas (for measured drawings of ancient buildings): Prize, Lawrence L. Bright (Nottingham), whose drawings were of Kirby Hall, Northants; medals and five guineas each to Wyatt Papworth (London) and Henry Francis Traylen (Stamford). Eight sets of drawings were submitted for this prize.

Soane Medallion and £100 (subject, a design for a club house in a large city): The Council regret they are unable to award this medallion. They, however, decided to award thirty guineas each to Matthew James Dawson (London), H. Munro Cautley (Westerfield, Ipswich) and J. B. Fulton (London). Twenty-two sets of drawings were submitted for this prize.

Owen Jones Studentship: Certificate and £100 (for travel, and study of colour): Prize, Hervey Rutherford (London); medals of merit each to Percy E. Nobbs (Edinburgh) and Ramsay Traquair (Edinburgh); certificate of hon. mention, E. Bennett. Six sets of drawings were submitted for this prize.

Pugin Studentship: Silver Medal and £40 (for travel in the United Kingdom): Prize, Henry William Cotman; medal of merit, J. Forbes-Smith; certificate of hon. mention, A. J. Pitcher. Nine sets of drawings were submitted for this prize.

Godwin Bursary: Silver Medal and £40 (for travel outside the United Kingdom): One strainer only was submitted, and the Council decided not to award this prize.

Tite Prize: Certificate and £30 (subject, a design for an entrance gateway to a public park): William Fairbairn (Edinburgh); award of ten guineas, Ralph Knott (Chelsea); certificate of hon. mention, William Arthur Mellon (Ashwell, Herts). Twenty-six designs were submitted for this prize.

Grissell Gold Medal and 10 *Guineas* (subject, a design for a timber footbridge across a stream): Prize, James Edwin Forbes (London).

Ashpitel Prize (books to the value of £10): Shirley Harrison (Leicester); extra prizes of £5 each to C. H. F. Comyn (London) and C. E. Varndell (London).

The Council approved the drawings received from James McLachlan (Pugin Student, 1900), Percy E. Nobbs (Tite Prizeman, 1900) and John Stewart (Owen Jones Student, 1899).

Mr. Stevenson's Paper.

After the above awards had been announced a paper was read by Mr. J. J. Stevenson, F.S.A., on "Difficulties and Hindrances in Producing Good Modern Architecture," Mr. Stevenson said that the difficulties besetting modern architects were due to the conditions of modern life as compared with those of former times. The hindrances were the laws and regulations which restrict practice and the natural development of building. Traditional architecture did not cease with the new life of the Renaissance, and though the mediæval styles lived on, the new architecture soon became a custom and tradition which every workman knew and could carry out without drawings from an architect. It is only in the last two or three generations that architecture has emancipated itself from tradition; that builders and architects, instead of conforming to established custom, have followed their own fancies and have done what was right in their own eyes, every man being a law to himself. Instead of the few whose force of genius broke through tradition and made an advance in the style, each architect and builder now thinks he must be original, and as original genius is scarce, so are good buildings. The best hope for new architecture is a thorough knowledge of the old, not a superficial acquaintance with many different styles. The style must be assimilated so that the architect can think in it and use it as he does in his native tongue.

It might be thought that competitions, with an architect of standing as assessor or as judge, would secure good architecture by criticism and selection of the best designs. But the result has not justified the hope, and there is now a tendency to abandon the system. In a competition the architect works in the dark; he has to guess what is wanted, and no information the assessor can give in his instructions to competitors can adequately supply it. Architects whose local standing might have entitled them to be appointed for the work, who possibly know more of the conditions and requirements than the assessor, hesitate to be judged by their drawings alone in competition with some young unknown architect from a distance, who, if he is unsuccessful, has no character to maintain in the district. Sometimes the assessor is one whom architects may fairly decline to be judged by. They may know that he does not understand their art, and his instructions may show that he is ignorant of the requirements. In these he takes a power of decision more absolute than judges in law cases ever claim; they decide only after hearing both sides of the case, and they give reasons for their judgment. But the assessor hears no pleadings and gives no reasons for his judgment. Might not his proceedings be in some degree assimilated to those customary in law cases? The competitors, having studied for months the problems involved, would be able to point out to him how far their plans had solved them, and where their opponents had failed. It is possible that, however fair and able, the assessor may have missed them. They should not be condemned unheard. As to the objection that the assessor would then know who the competitors were, and might be influenced to give the award to a favourite or a friend, such a suspicion amounts to a libel on the assessor's character. It would be more dignified for the assessor to declare himself incapable of such action by making the decision, knowing who the authors were. It might prevent his overlooking merits in the plans of architects whose character and reputation and the work they had done are a guarantee that they could be trusted to carry out the work. By refusing to know the competitors, the assessor neglects what is a far more important consideration in the selection of an architect than making competition drawings. The faculty of winning competitions is often not a gift of the best architects. The selection of the assessor is the most important factor for the fairness of a competition. Why should not the competitors appoint him by their votes? It would give a better guarantee that they could trust him to understand and appreciate their designs, and if the majority appointed one whom they thought unlikely to do so, they would be able to withdraw before wasting their time and risking their reputation. There would be a better chance of just decision if there were more than one judge, as in important cases in the Law Courts. Opinions vary as to what constitutes good architecture; different views of what designs are best may honestly be held. A judge may see fit to alter his opinion on the representations of his colleagues. As regards the labour and money risked by competitors, there should be a stipulation that architects invited to compete should each be paid a sum towards their outlay. Competitions, wisely conducted, might advance the art and produce good buildings. They should be made such that other architects than those who usually gain them would not hesitate to engage in them; that work done, as well as the accidents of competition drawings, should be an element in decision; that the judges should have the confidence of the competitors for their appreciation of art in architecture in the various developments now prevalent.

In considering the hindrances in producing good architecture the author referred to the modern rules and regulations by which the designs of buildings are hampered and restricted. These have generally been devised by doctors and sanitary experts for excellent and necessary objects. But instead of availing themselves of the knowledge and experience of architects they devise crude and often tyrannical rules without adequate knowledge of building construction, and without thought as to the architectural appearance or the cost of their requirements. The London Building Act would have been a far more effective measure had the County Council arranged with a body of architects, such as the Institute, the provisions for ensuring the necessary requirements, and the £20,000 Parliamentary expenses would have been saved. The Local Government Board's Model By-laws ignored local modes of building, and reduced houses all over the country to a uniform level of dulness The recent Police Act for Scotland, to ensure. ventilation, decreed that ground-floor ceilings should be 9ft. 6in. high, and bedrooms 9ft. But this did not ensure ventilation; it rather provided space for vitiated air to accumulate. Such regulations spoiled cottage architecture, made buildings needlessly costly—indeed prevented cottages being built. Equally foolish and costly is the regulation that every sleeping-room over 100ft. in area should have a fireplace and flue, though it would probably never have a fire in it and would most likely be stopped up with a smoke-board. Why forbid half-timber construction? It is a most charming development of old English architecture, and houses so built have lasted for hundreds of years. It gives beauty to landscape, and the risk of fire is insignificant in isolated cottages. The precautions against fire are needlessly oppressive for low or isolated houses. Carrying the party-walls above the roofs in ranges of low houses spoils their appearance, and is unnecessary if the slates are bedded on the walls.

In some rural by-laws the needlessly tyrannical provision that all woodwork should be kept back 4½in. from the face of the wall has been revived after it had been removed from the new London Act. Another needless regulation, showing ignorance of building construction, is that compelling footings to be put to walls besides concrete foundations, which are perfectly stable without them. In conclusion, the author urged the Institute to press upon the authorities the acceptance of by-laws ensuring sanitation, ventilation, fire prevention and stability, but drawn with common-sense and knowledge of building by-laws which would not hamper and ruin architecture and cause needless cost.

A discussion followed in which Messrs. William Woodward, Lacy W. Ridge, John Slater, Lewis Solomon, W. D. Caröe, Maurice B. Adams, E. W. Hudson, Aston Webb and William Emerson took part. Mr. William Emerson stated in the course of his remarks that the Council of the Institute had that afternoon decided to approach the Local Government Board again with regard to altering the too stringent by-laws in country districts and to remind the authorities of the promise made by the political head of the department under the late Government.

Baron Johann Faber, who was practically the founder of the celebrated lead-pencil factory carried on under his name, died last week in his eighty-first year. When as a young man he succeeded to his father's business, which turned out cheap pencils of an inferior sort, he employed twenty hands. At the time of his death upwards of 1,000 men worked at his different factories. By his energy and business aptitude Faber succeeded in driving English-manufactured pencils, at one time almost in universal use, out of Germany.

Bricks and Mortar.

APHORISM FOR THE WEEK.

Art is born of the observation and investigation of Nature.—CICERO.

Our Plates. PARTICULARS of the small country houses by Mr. Baillie Scott will be found in the article which begins on page 468 of the current issue.—Mr. C. F. A. Voysey's house, "The Orchard," Chorley Wood, Hertfordshire, is built of brick cement rough-cast, with Bath stone window dressings, iron casements and green American slates, not with wood frames and tiled roof, as shown in the perspective. The hall and kitchen offices are paved with Delabole slate slabs. Messrs. Wenham and Waters did all the casements, glazing, internal plumbing and hot-water supply. Hot water can be drawn at any time day or night. The contractors were Messrs. J. Bottrill and Son, of King's Road, Reading. The contract price was £1,800. The roof is boarded and felted, and the cellar walls are built with "Hygeian Rock" composition. Each room has its foul-air exhaust shaft. The doors are batten doors fitted with W. B. Reynolds' strap hinges and latches. The house stands in an old orchard of 2½ acres, and is beautifully situated.

Reconstruction of Royal Infirmary, Glasgow. A MEETING of the Executive Committee for the reconstruction of the Glasgow Royal Infirmary was held last week in the City Chambers, Lord Provost Chisholm presiding. Mr. James Miller, I.A., of Glasgow, whose plans have been accepted by the Committee, submitted a report as to the order and method for proceeding with the work. The chief points he had in view were:—(1) That a considerable portion of the permanent buildings should be erected before any part of the present structure is demolished, and so that the bed accommodation of the institution will at no time during the reconstruction be less than it is at present; (2) to incur as little inconvenience as possible to the patients and staff during the reconstruction; (3) to avoid as much as possible the necessity for temporary buildings. With these points in view he recommended that the reconstruction be proceeded with in the following manner:—(1) To erect the north wing or surgical block on the space between the present north block and St. Mungo's College. This block is 290ft. long, and contains thirteen large wards and twelve small wards, containing in all 224 beds. The block is six storeys high and will take about two years to build. (2) When the above block is ready to receive patients, those in the present south block would be transferred to that block. The present south block would then be demolished, and the building of what is called the Jubilee Block proceeded with. In order to hasten the early completion of the Jubilee Block, Mr. Miller suggested that the contracts for same should be got out, say, about twelve months before the completion of the north block. The work would then be placed in the contractors' hands and all the material could be prepared and made ready for erecting, so that immediately the north block was ready for occupation the south block would be demolished, and the erection of the Jubilee Block commenced. With the hewn work and all the materials ready, he sees no reason why this block should not be ready for the roof within eight months from the time it is begun. The Jubilee Block contains 239 beds, which, with the north block, will give a total of 463 beds. (3) On the completion of the Jubilee Block the next portion of the buildings to be erected would be the main central block, which runs north and south and forms the connecting link between the north and the Jubilee blocks. The erection of this block would complete the whole of the main buildings. Mr. Miller thoroughly approves of the suggestion made by the sub-committee that it would be an advantage to erect a temporary kitchen and stores in a more central position than the present kitchen, which is at the extreme end of the site. The minutes incorporating the above report were unanimously approved.

A little more Criticism. WE are glad to see that the "North British Daily Mail" adopts the same attitude as ourselves (see page 449 of last week's issue) in regard to the above committee's action in putting aside the assessor's award. The following are extracts from its criticism: "What was the use of appointing a high architectural authority like Dr. Rowland Anderson to examine the plans and select the best of them if his decision was to be subject to rejection by a body of gentlemen whose architectural education has not been begun? Take their leader for instance. He may be a magnificent hammerman, but his dearest friends would never dream of him as an architect. It is really absurd that the deliberate award of a duly-appointed architectural expert should be flouted by men who know nothing of architecture, and it is most improper that favouritism should be shown by going outside the short leet for a plan and an architect. Sir David Richmond said that the sub-committee had exercised their best judgment, but their 'best judgment' on a subject of which they are ignorant is simply ridiculous when opposed to the judgment of a master of the subject. And what sort of judgment do they show by plunging into an enterprise which will cost nearly three times the amount of money which they have at their command? We would all like to see a better building for the Royal Infirmary, but the project has not been gone about in such a way as to enlist the support of the public. It was not the citizens who decided that this should be the form in which they would commemorate the Queen's Jubilee. Sir David Richmond, then Lord Provost, took it upon himself to launch the scheme. That one-man mismanagement of a public matter was exceedingly tactless, and it was resented at the time, yet the same sort of thing seems still to dominate all the arrangements. It is much to be regretted that the proceedings show a high-handedness and recklessness which repel public confidence."

Haddington Abbey: "Restoration" Again. THE latest building of importance which is threatened with "restoration" is Haddington Abbey. It was handed over to the Board of Works by the heritors on the understanding that it should be maintained. Some well-meaning people have, however, been filled with the misguided desire to restore it, though Mr. Thackeray Turner, the secretary of the Society for the Protection of Ancient Buildings, states that this is against the wish of the leading men of the neighbourhood. "Unfortunately," says Mr. Turner, "we learn that an anonymous donor has offered to bear the cost of 'restoration.' Our fear is that this generous and well-meant offer may make it difficult for the Office of Works to do what we feel sure would be its wish and to refuse the offer, but the building is such a priceless and unspoilt work of art (as its well-known name, 'The Lamp of Lothian,' goes far to show) that its loss to us by 'restoration' cannot be borne with an even mind. The society is most anxious that it should be maintained, but 'restoration' is not maintenance. Would it be unreasonable to suggest to the anonymous donor that, as a place of worship is really needed, he would be conferring a far greater good if he would bear the cost of a new and really suitable church, leaving Haddington Abbey alone?"

Elementary Art Education. A COURSE of four Cantor lectures on "Elementary Art Education" was begun last week at the Society of Arts by Mr. J. Liberty Tadd, director of the Public School of Industrial Art, Philadelphia, U.S.A. The lecture was concerned with art and manual training in general education, and Mr. Tadd discussed the methods and results of the system introduced by Mr. C. G. Leland into Philadelphia twenty-two years ago. At first the work was experimental, but now that its advocates had the grown-up product to prove the success of the methods pursued it was spreading as rapidly as teachers could be trained, and they were glad to publish their results. The system was entirely different from that carried out in other schools, and its aim was the development of the whole organism—hand, eye and mind—by the acquisition of conscious control, to be followed by automatic control. Various exercises had been tried at different times, but they had now settled down to four—drawing, designing, clay modelling and wood carving. The desire was to give the pupils facility of hand, sense of balance, size and proportion, &c., and to make these qualities automatic. Teachers of the system claimed to be able to teach every possible physical co-ordination if only they got the child at the proper period of growth and development. Young children of five or six would be set to draw, for example, large circles on a blackboard—first with one hand, then with the other, then with both together, in the same direction and in either direction; and this was alternated with drawing on paper, in soft clay, and in tough wood—all to gain facility. Then the children were given some unit such as a spiral or leaf form and required to make designs from it, in order to develop sense of balance, proportion, &c. The copying of nature forms followed, and in course of time, by repetition of experiences, drawing became to them a mode of thought expression. Except in late stages, where specialisation was beginning, instruments of precision, such as measures, compass or ruler, were never allowed, nor was rubbing-out permitted; the results in consequence showed a swing and freedom not otherwise attainable.

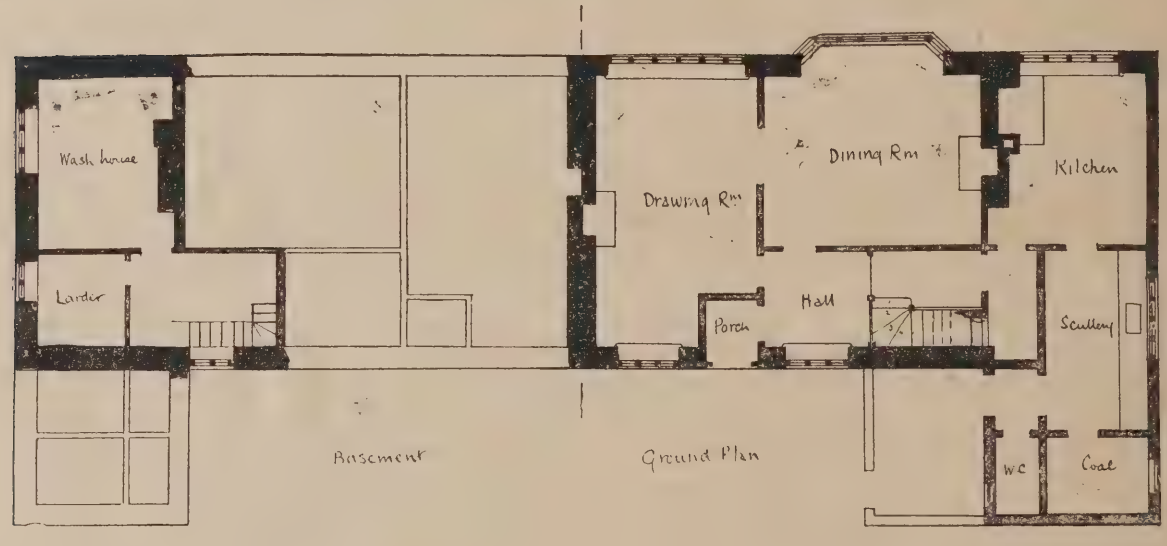
Old Inns. IT is gratifying to observe how many zealous friends our cathedrals and churches are nowadays endowed with, but while we turn our attention to the preservation of these architectural glories we must not neglect the fascinating old hostelries which recall to our mind many a scene in our Fielding, our Dickens, or our Scott. "Unfortunately," says a correspondent of the "Morning Post," "the Red Lion and the King's Head ofttimes fall a victim to the aspirations of a latter-day host whose artistic eye has a predilection for stucco and slates rather than for the richly-tinted tiles and solid timber which have stood through centuries of stress and storm. Can nothing be done, we ask, to preserve these quaint and picturesque relics of olden days? The growing necessity for larger and more convenient premises may be urged in exculpation of the alteration and destruction of the old coaching inns; but surely the matter might be entrusted to the superintendence of a committee of architects who could determine how to remedy the inconveniences and yet retain the ancient character of the building. Tewkesbury, that delightful old abbey town of Gloucestershire, is a worthy example of what can be done in the way of judicial restoration, and it is indeed a pleasure to see the black and white oak-beamed hostels so lovingly handed down to posterity. Truly has it been said that 'England is one vast museum,' but the richest storehouses cannot withstand such frequent depredations, and it behoves us to look around ere it be too late and endeavour to save the old inns which are so eminently characteristic of our country, and which have been the wonder and envy of our Continental friends throughout mediæval times."

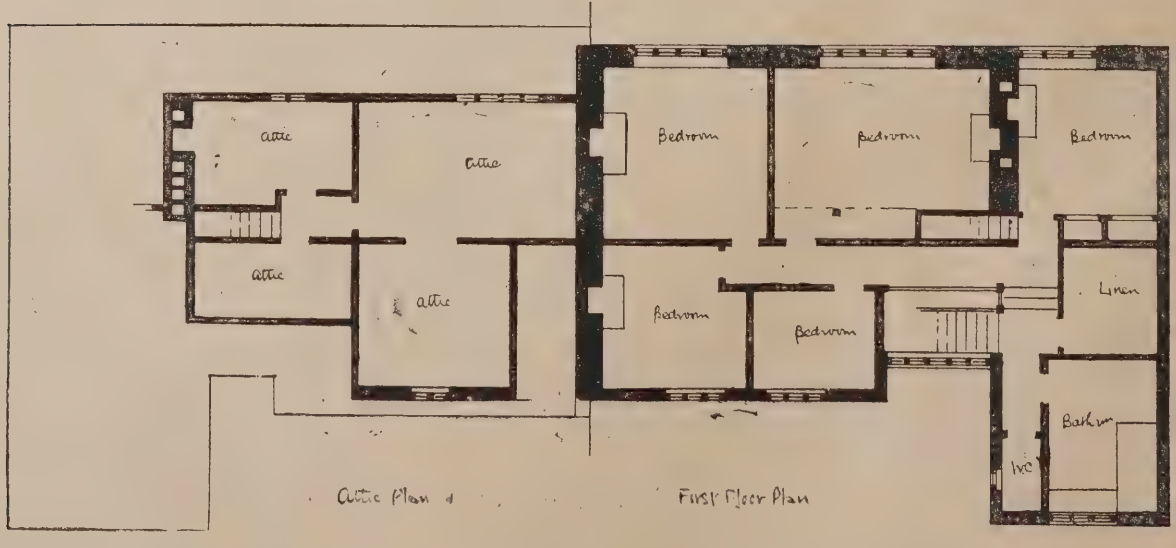
A Judge's Opinion. A WRITER remarks in the "Croydon Advertiser and Surrey County Reporter": "One of your daily contemporaries, I see, refers to an outbreak of builders' cases in the Lambeth County Court circuit, in consequence, so it is said, of the retirement of Judge Lushington. I do not think that Judge Lushington had anything to do with the Lambeth County Court, and therefore his retirement cannot have much to do with it. The article referred to ascribes to the judge the dictum 'that the whole building trade is corrupt throughout, from architect to hod man,' and I don't think they are going too far in thus describing his Honour's views." If this is so, Judge Lushington is exceedingly ignorant of the facts. There are of course black sheep in every flock, but to say that the whole building trade is corrupt is nonsense.

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VIEW FROM N.W.



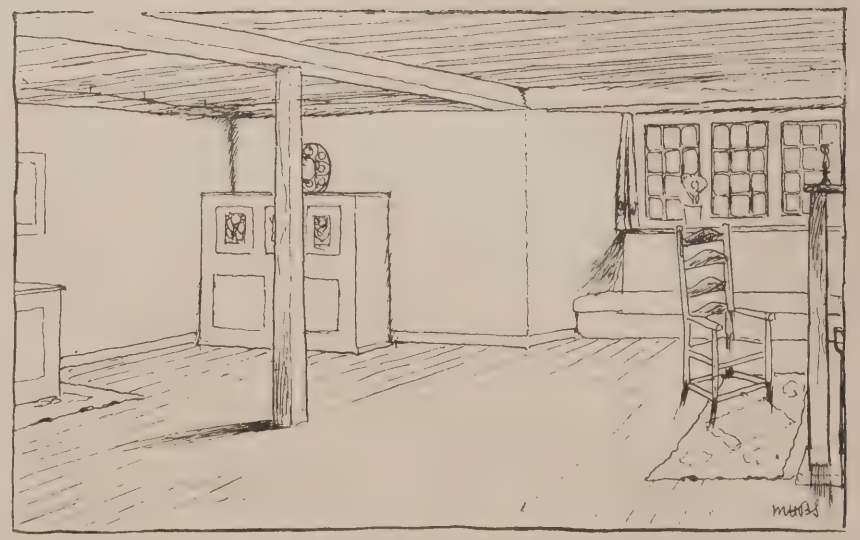


SEMI-DETACHED HOUSES AT DOUGLAS, I.M. M. H. BAILLIE SCOTT, Architect.

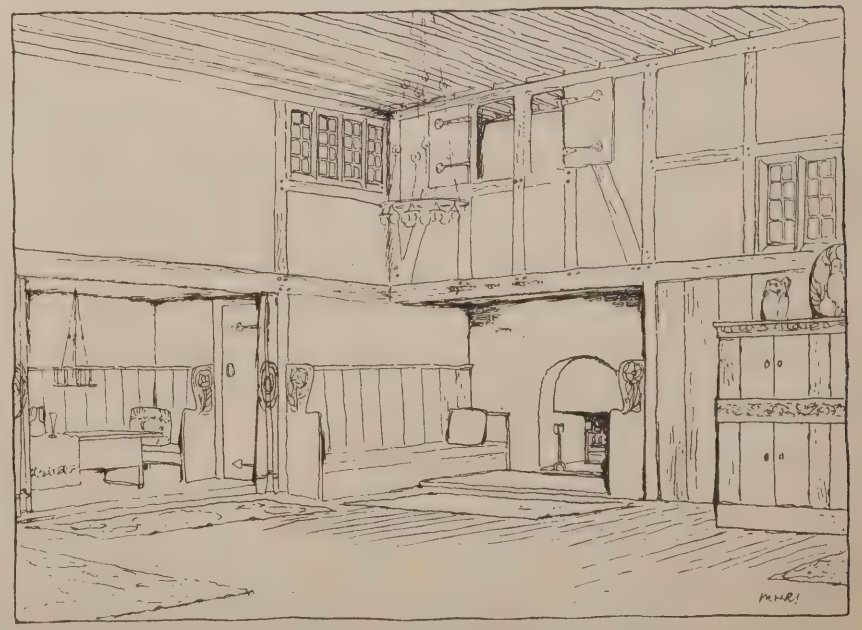
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DETAIL OF STAIRCASE, SHOWING CARVED AND PAINTED CRESTING AND BRACKETS.

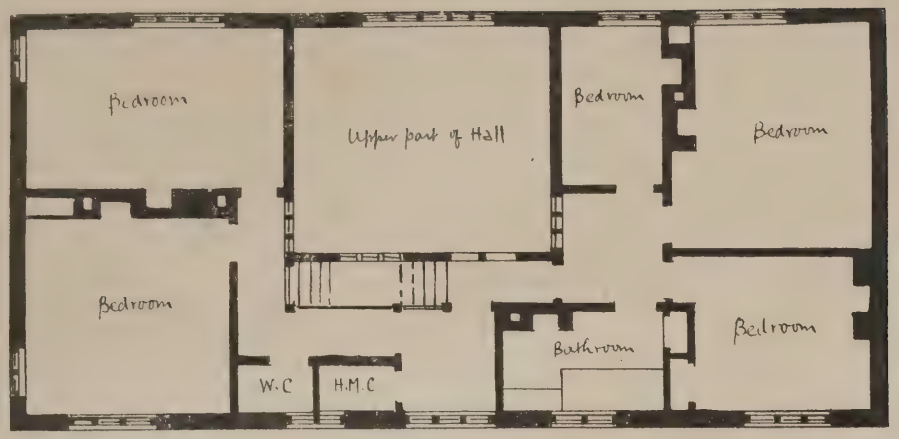


COTTAGE INTERIOR, SHOWING USE OF BEAMS AND POST.

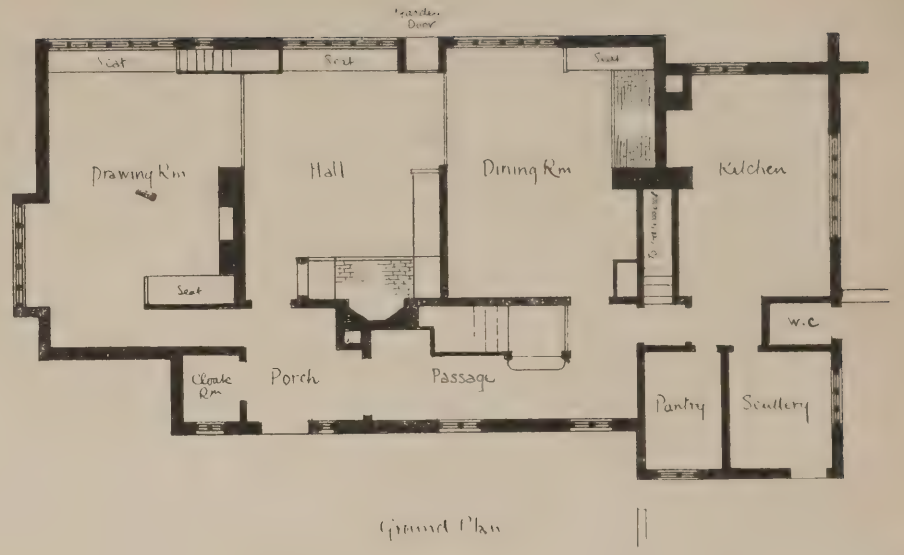


HALL IN ARCHITECT'S HOUSE.

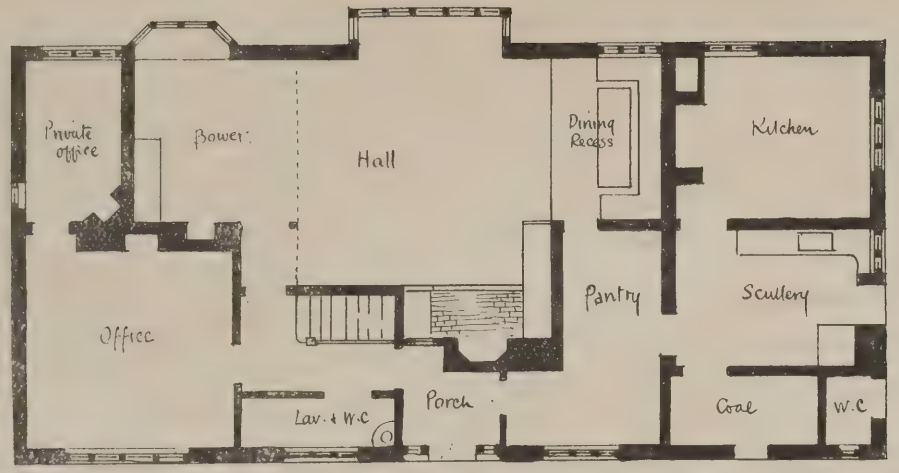
M. H. BAILLIE SCOTT, Architect.



First Floor Plan.



Ground Plan



Ground-Floor Plan.

PLANS OF AN ARCHITECT'S HOUSE.



First Floor Plan

PLANS OF A HOUSE AT KNUTSFORD.

M. H. BAILLIE SCOTT, Architect.

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W. LEE CLARKE, Architect.



C. F. A. VOYSEY, Architect.

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Enquiries Answered.

The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional, or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

The Grecian Ionic Volute.

MORECAMBE.—P. H. E. writes: "What is the method for setting out the volute of the Grecian Ionic column? Also, what are the proper proportions of the column and entablature?"

How the Greeks developed the Ionic volute is not known. Several methods have been invented—mostly based on the Vitruvian—by which a spiral is struck in segments or quarters from a number of centres. Perhaps the most satisfactory is that given in Pennethorne's "Geometry and Optics of Ancient Architecture"; it was invented by Mr. John Robinson, architect, and is said to produce the Greek curves almost exactly. Mr. Penrose, however, thinks it likely that the curves of the Greek volute were not produced by a geometric, but rather by a mechanical, process, namely, the continued motion of unfolding a cord from a helix cut in the form of an Archimedean spiral, and fixed temporarily in the eye of the volute. The curves thus produced are said to possess a refined continuity lacking by the other methods, and more in harmony with the best Greek examples.

The deep circular sinking so often seen in the *oculus* or eye of the Greek volute would seem to support the theory of a temporary fixture as a guide to the workman in describing the curves; but this sinking is not found in all instances, and there is evidence to show that sometimes it was not cut until after the completion of the volutes. Some unfinished caps in the British Museum, from the later temple at Ephesus, form an interesting series in this connection, showing, as they do, the eye of the volute in three stages of completion. In the first stage the eye is a plain projecting disc, with faint traces of "setting out" lines inscribed on its surface. In the second stage the sinking has been commenced by cutting a deep groove all round, just within the outer edge of the disc, preparatory to cutting out the whole of the interior, and leaving a projecting ring, as we see it in the third or final stage. In other respects the volutes are finished. It is probable that the "eyes" of, at least, the outer range of columns were filled in with gilded pateræ of bronze, and the finished example in the Museum has two holes bored through the rim which may have served to facilitate the fixing of some metal enrichment. More often a separate plug of marble was inserted; but why this was not worked on the same stone as the cap we cannot say. Some of these are still remaining in the caps from the Mausoleum, and in an angle volute from Phigaelia; on one side of this volute the plug has dropped out, and the marks of a small borer by which the sinking was made are clearly visible.

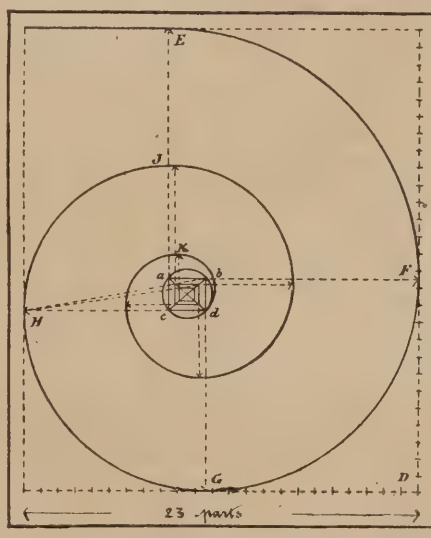
We give, in case it may be useful, a method invented by Mr. Joseph Gwilt "of inscribing a volute in a parallelogram." Multiply the height by the breadth, divide the product by the sum of the height and breadth, subtract the quotient from the height, and the remainder is the radius of the first quarter revolution of the spiral, set from *a* to E and F. F D gives the radius for the second quarter, set from *b* to F and G, and so on, using as centres *d* and *c*, until the fourth quarter is reached terminating at J.

Draw diagonals in the small parallelogram *a b c d*, and draw b H cutting the diagonal *a d*: then this will give a point for another parallelogram, whose angles will be the centres for the radii of the second revolution from J to K, and by repeating the process the spiral may be finished. It may be noted that as the height and breadth of the enclosing parallelogram approach equality the number of revolutions increases, and, of course, when the height and breadth are equal, the spiral vanishes and a circle is inscribed. In the best Greek examples the spiral encloses the "eye" more completely than in the diagram, and the enlargement of the outer convolution, from E to F, is more rapid. Another method will be found in Peter Nicholson's "Principles of Architecture."

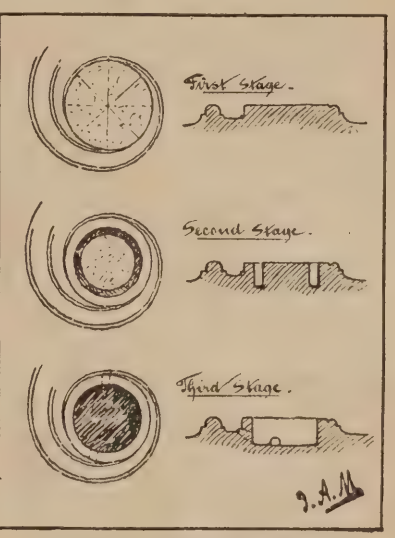
As to the proportions of the Ionic "order,' the Greeks do not seem to have been guided by any hard and fast rule. Taking the lower diameter of the column as a standard of measurement, and dividing it into 60 parts, the following is the result when applied to the Erectheion: *North portico.*—Diameter of columns, 2ft. 9in.; height, including cap and base, 9 diameters; architrave, 49 parts; frieze, 47 parts; corona, 20 parts; cymatium missing. *East portico.*—Diameter of columns, 2ft. 3in.; height, including cap and base, 9⅓ diameters; architrave, 55 parts; frieze, 53 parts; corona, 23 parts; cymatium missing. A reference to the plan of this building will show that the columns of the east portico are closely set, and this may account for their somewhat slender proportions; whereas the columns of the north portico are very widely spaced, and this, on æsthetic grounds, required a column of stouter proportions.

The entablatures, it will be noticed, do not bear the same relative proportions to the diameters of the columns; in fact they are almost uniform in depth throughout the building; that of the north portico is, however, a trifle deeper than the rest—a variation demanded by the wide intercolumniations and the great extent of the stone ceiling.

The proportions of a small temple which once stood near the river Ilissus at Athens may also be given: Diameter of columns, 1ft. 9in.; height, including cap and base, 8¼ diameters; architrave, 55 parts; frieze, 49 parts; corona, 14 parts; cymatium missing. J. A. M.



GWILT'S METHOD OF DRAWING A VOLUTE.



VOLUTES FROM EPHESUS.

Chimney Shafts.

BRIGHTON.—PACKRACKS writes: "I should be glad of any information in regard to chimney shafts (for Cornish boilers) formed of material other than brick. Are they made of steel? How are they fixed? To what height can they be carried? Are they more economical than brick shafts, and, if so, is the saving considerable? Is there any firm who specially manufactures them?"

The writer has used wrought-iron chimney shafts 3ft. in diameter and 30ft. high for a range of six Cornish boilers, each 16ft. by 4ft. 9in. They were made in rings about 6ft. long, each ring being composed of two ¼in. plates. The top ring bell-mouthed about 1ft. deep, and the bottom length tapered to 3ft. 9in. diameter, and finished with a 3×3×⅜ angle. The riveting was ½in. diameter, 3½in. pitch, and 1¾in. lap. Three guys of ¼in. round iron were led from the top of each and made fast at the lower end. At the present time such shafts would be made of mild steel. They are permanent erections but do not last more than about ten years. They are not so economical in the long run as brick shafts, though, under certain circumstances, they are desirable. Any firm of boilermakers will undertake their manufacture. The foundations may be of brickwork, and it is then easy to connect the flues.

HENRY ADAMS.

R.I.B.A. Examinations.

BIRMINGHAM.—A. G. writes: "How far in algebra, mechanics, and physics is it advisable to be grounded in for the various subjects required in the Intermediate Examination of the R.I.B.A.? Would quadratics and progressions be far enough in algebra?"

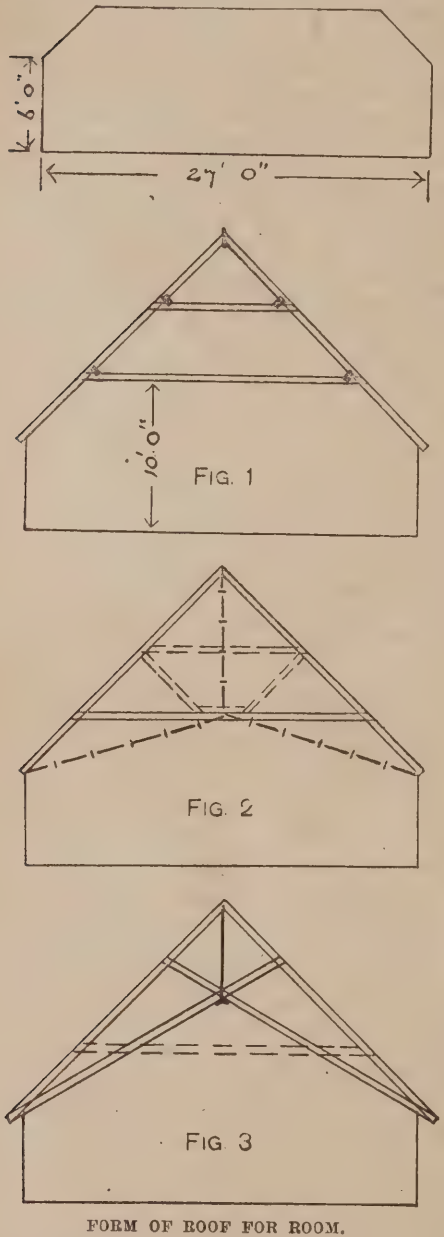
Quadratic equations and progressions should be sufficient to pass, but as the examination is only preliminary to the work of an architect a student should be well equipped, and should know at least the application of the Binomial Theorem, Permutations and Combinations, and Logarithms, which will be found of the greatest value in applied mechanics and physics. For these last-named subjects the resolution and composition of forces, centre of gravity, &c., should be known. Trigonometry is, in our opinion, indispensable to an efficient training. The following books are suitable for study:—Hall and Knight's "Elementary Algebra" (Macmillan and Co., 4s. 6d.), Briggs' and Bryan's "Elementary Text-book of Mechanics" (Clive and Co., Booksellers' Row, Strand, W.C., 3s. 6d.), Lock's "Elementary Trigonometry" (Macmillan and Co., 4s. 6d.), and Balfour Stewart's "Elementary Physics" (Macmillan and Co., 4s. 6d.). When studying these subjects it is a great help to personally carry out the experiments described, and, if possible, to attend experimental classes in the subjects.

Roof for Room.

STUDENT writes: "Which is the best form of roof for a room of internal section similar to that shown herewith, and what would be the scantlings of the timbers?"

For an ordinary roof of 27ft. span, the most usual form of truss to adopt would be a king-post, and the scantlings would be somewhat as follows: Tie-beam, 10in. by 4in., principal rafters, 6in. by 4in; king-post, 5in. by 4in.; struts, 4in. by 3in.; purlins, 8in. by 4in.; common rafters, 5in. by 2in.; wall-plates, 5in. by 3in. These figures will give "Student" an idea of the proper scantlings for a special roof-truss to fulfill the peculiar requirements of his case. Assuming that the dimensions given are those between two outer walls, one of the methods shown in the accompanying sketches may be adopted. In any case these roofs should have good wall- and pole-plates, and be well and securely tied in on the end walls and at any cross-wall there may be. Fig. 1 is a not.

unusual form of construction in such a case, and shows two rows of collar-ties which would be spiked on every third rafter (there are no "trusses"). The whole roof consists of 5in. by 3in. wall-plates, 5in. by 3in. rafters, 5in. by 2in. ties, 5in. by 4in. purlins, and 7in. by 1½in. ridge. Fig. 2 shows a form of truss consisting of 9in. by 4in. tie-beam, with 6-in. by 4in. principal rafters, the whole braced together by ¾in. or ⅞in. iron tie-rods and king-rod, as shown in chain-dotted lines. If desired, a pair of 4in. by 3in. struts and a 4in. by 3in. (or 5in. by 2in.) tie may be added to this truss. Their position is shown in the sketch by double-dotted lines. If the use of tie-rods is objected to, a wooden truss, as shown at Fig. 3, may be employed. This consists of 6in. by 4in. prin-



FORM OF ROOF FOR ROOM.

cipals with a pair of long ties, 5in. by 3in., and a king-bolt to ridge furnished with shoes at top and bottom. A horizontal tie may be added as shown in dotted lines, just above ceiling level. "Student" will find a high-pitched roof of somewhat this same character in the drawings of Llandaff Cathedral published in THE BUILDERS' JOURNAL for December 26th, 1900.

G. S. M.

Tramway Conduits.

LONDON, W.—J. D. W. writes:—"Can you kindly give a sketch of a conduit tram (electric) system? I want to see just how the conduit is constructed."

We are always willing to help correspondents in all matters properly within the scope of this journal, and readers who desire answers to enquiries should bear this in mind. "J. D. W." does not recognise this. There are plenty of public libraries in London where books on electrical tramways can be seen. Our correspondent had better visit one of them; or write to one of the electrical papers. Another reader asks whether we can supply him with the name and address of a firm that makes "special cycle wheels for hand barrows and mail carts." No further comment is needed.

Charges for Overtime.

HASTINGS.—W. W. writes: "I should be glad to know whether architects' assistants can enforce payment for overtime if asked to work late."

In the absence of any definite agreement on either side, the principal is not bound to pay for work done after the usual office hours, nor is the assistant obliged to do such work. When there is a great pressure of work on hand it is usual however for the assistant to stay later than he otherwise would in order to expedite matters, but such extra work should certainly be recognised by the principal, either by allowing his assistant a little more holiday at another time or by paying him something extra for the additional work. But neither can force the other where no agreement in regard to overtime exists.

Builders' Notes.

The Employees of Messrs. Young and Marten, Ltd., held their second annual stock-taking dinner at the Town Hall, West Ham, E., recently.

Nottingham Master Builders' Association held its annual meeting last week, when the following officers for the coming year were elected:—President, Mr. Henry Vickers; vice-president, Mr. Frederick Fish; treasurer, Mr. J. W. Woodsend; hon. secretary, Mr. James Wright. The annual dinner was fixed for Friday, February 1st.

The Dublin Master Builders' Association held its annual general meeting recently, when the following officers were elected for the ensuing year:—President, James Beckett; hon. secretary, John Good, 55 Great Brunswick Street, Dublin; hon. treasurer, James Kiernan; committee, R. Denne Bolton, Thomas Connolly, Richard Collen, Thomas Mackey, William Meade, James Martin, Henry Pemberton, Kevin Toole, B. W. Whyte. A resolution was passed regretting the death of R. F. Lidwell, Esq., J.P., an old member of the association.

Mr. Francis Christie, builder, of Cluny, Scotland, died last week at the age of 81. Some considerable time ago he went to Aberdeen to reside with his son, Mr. Francis Christie, senior partner of the firm of Messrs. Christie, Greig and Co., granite manufacturers, and the death took place at his residence there. The son of a mason, Mr. Christie was born at Banff in 1820, where his father was then employed in the building of the harbour at that port. At the age of twelve he commenced to serve his apprenticeship with his father, who was at that time contractor for the mason work of Cluny Castle. On the completion of his "time" he worked as a journeyman in different parts the country, acquiring experience which afterwards fitted him for the position of master, to which he subsequently attained. His greatest work was the construction of Dunecht Chapel, library, grand staircase, and wing designed by the late G. E. Street, the workmanship of which may be classed as of the very finest ever executed in granite.

Fire Prevention at the Building Trades Exhibition.—In further reference to the special "Fireproofing" Section at the Building Trades' Exhibition which is being organised under the auspices of the British Fire Prevention Committee, the executive of that body, at a recent meeting, presided over by Mr. Edwin O. Sachs, decided to invite numerous representatives of the municipal, technical, insurance and industrial interests concerned to visit this elaborate demonstration of means and ways for reducing the modern fire risk. Among those to whom invitations are being issued are the provincial chairmen of Works Committees, engineers of the large dock and railway companies, principals and masters of the technical colleges and polytechnics, &c. Special arrangements are being made by which the visitors will have every facility for studying the subject, and the committee will no doubt also entertain at their new Testing Station at Westbourne Park. A sub-committee has been appointed to take charge of matters relating to the section, comprising Mr. F. Hammond (chairman), Mr. Max Clarke, Mr. Frederic R. Farrow, Mr. Chas. E. Goad, Mr. Ellis Marsland and Mr. Edwin O. Sachs, with Mr. H. G. Montgomery as business manager. Particulars of the general arrangements are obtainable from the committee's offices at No. 1 Waterloo Place, Pall Mall, S.W.

Fire Tests.—We have received copies of Nos. 51 and 56 of the British Fire Prevention Committee's publications. The former deals with a test made with two "Williams" fire blinds installed by Messrs. G. A. Williams and Son, of London, the object being to record the protection they afforded to a door and a window. The area of the door was 20ft. super. and of the window 16ft. super., and the seat of the fire was within 3ft. of the face of the blinds. It was found that the blinds (which are made of asbestos cloth) remained in position after a test lasting half an hour, no fire having come through. The second report is of a test made with a floor and ceiling erected by the Mural and Decorations Syndicate, Ltd., of London, the test lasting an hour and a quarter. The floor was 10ft. by 10ft. and was loaded with 1½ cwt. per sq. ft. distributed; six weeks (summer) were allowed for construction and drying. In five minutes most of the setting coat of plaster had fallen off. Various cracks developed in the plaster of the ceiling during the test, but no portion of the rendering fell. On the application of water the plaster fell off where struck by the jet, exposing the terra-cotta lathing, which, however, remained intact. After the test was concluded it was decided to replaster the ceiling and renew the test on another day. This was done, with practically the same results as those already stated.

The Tees-side and District Master Builders' Association held its annual meeting and dinner at Stockton last week. Mr. T. Dickinson, of Middlesbrough, presided at the meeting. Mr. W. C. Creasor presented the fourth annual report, which stated that the past year had been an extremely busy one. As a result of an advance of wages granted to the joiners in 1899 by the Stockton Association, several conferences were held with a view of arranging one set of rules to apply to the whole district, the wages being 9d. per hour all round. This was successfully accomplished, and was regarded as one of the best pieces of work done by the Association, inasmuch as when any demands are now made by the joiners they must be to all the towns alike and at one time, and must be dealt with by the Tees-side Executive Committee. During the year the bricklayers applied for and obtained, after an eight weeks' strike, an advance of a penny per hour at Stockton. The secretary then referred to the lock-out of the bricklayers in the Northern counties. In addition the dispute had been put before the Yorkshire, Lancashire, and Cheshire Federations, who had decided, failing a settlement, to lock out the bricklayers on February 2nd in support of their Federation. The report was adopted, and the following officers were elected for the ensuing year: President, Mr. T. Wilkinson, Middlesbrough; vice-presidents, Councillor T. E. Atterby, Stockton; Councillor Proud, West Hartlepool; and Mr. W. Bastiman, Middlesbrough; and secretary and treasurer, Mr. W. C. Creasor, Stockton. At the dinner, in reply to a toast given by Mr. A. Harrison, the President, Mr. T. Wilkinson, stated they had proposed arbitration in the present dispute with the bricklayers, and this they were prepared to keep to. Mr. T. Dickinson also replied. Councillor W. G. Roberts, of Middlesbrough, proposed "The Northern Counties Federation of Building Trade Employers," which was replied to by Alderman Ranken, President of the Federation, and Mr. J. W. White, President of the Sunderland Association.

ARCHITECTURAL ASSOCIATION:

FLATS.

By EDWIN T. HALL, F.R.I.B.A.

A MEETING of the Architectural Association was held at No. 9 Conduit Street, W., on Friday evening last, Mr. W. H. Seth-Smith, President, in the chair. The minutes having been read and confirmed, Messrs. H. Cayley, S. A. Hall, and A. S. Tanner were elected members. Mr. Edwin T. Hall then read a paper on "Flats," of which the following is a summary:—

A house of one story we call a bungalow, but "flat" is the name we give to a self-contained residence on one floor of a many-storied house. It is not euphonious, and it is not descriptive. The name betokens a lack of imagination, and it seems to me inept to adopt such a word to describe the abode of a large and increasing number of people. We do not often use the word for workmen's dwellings, but generally only for those of the richer class. We might as appropriately call an ordinary town house a "vertical." However, such as it is, the term is now accepted in England, or at all events in the south. In Paris *appartement* appears to be the accepted designation of such a residence as distinct from *pièce d'un appartement*, which designates a room in a set of apartments. In Germany there appears to be no word to distinguish a "flat" from a house proper, *Wohnung* or *Wohnhaus* are applied to both. I suppose it is not more than forty years ago when flats on any large scale were

Introduced into London.

Among the first, I think, were those stuccoed buildings in Victoria Street, and I can remember how some of them remained for years unfinished, so little or so slowly did the idea take on. This is surprising, because they had long been established in—for example—Paris and Edinburgh. In the provinces to this day there are many cities and towns where no flat is known, as, for example, in go-ahead places like Leeds, Liverpool, Manchester, and Cardiff, to cite places wide apart where there is plenty of energy and activity; and in two or three of these there are not any many-storeyed buildings for the working classes.

As illustrating the feeling that prevailed until the decade 1880–90, hardly any insurance company would invest in ground rents secured on flats or lend money on mortgage of such buildings. From about 1880, however, flats began to move—as the phrase goes—and the projects for

Their Erection Steadily Increased

year by year until we have now a very large number of such buildings in all parts of London and in many of the suburbs. Many people of the well-to-do classes who formerly only hired a house for the season now take a flat by the year in lieu of a town house, to which they can come when they please. With a town house absence means at least caretakers and structural maintenance, whereas a flat may be locked up and the keys left with the porter on the assurance that all will be safe during the tenant's absence.

It may be interesting for a moment to make a slight digression by noting that the period which has seen the birth, growth and acceptance of the flat as a residential unit has coincided with the immense development of hotel life in London. I can just remember the completion of the Langham Hotel. I heard people say that it was a mistake to build an hotel of that size, that it would never pay, &c. That was the pioneer of the modern hotels. It was followed by Charing Cross and Cannon Street, Holborn Viaduct, the Grand, the Métropole, the Midland, the Victoria, the Fifth Avenue, the Grand Central, the Russell, and others further afield. The restaurant, too, was of the same period. The Holborn Restaurant was the first of any size, I believe, to astonish the Londoner with its comparative luxury, cleanliness, and good cooking. This was soon followed, and now there are as many restaurants in London probably as in Paris, although not quite on the same lines.

Accepting, then, the fact that flats as a distinct class of property have taken firm hold of London and consequently afford an extensive field of operations for the architect, let us consider what are the problems to be solved when one has to design a building of this class. First,

Locality

will have something to say. If the site be in a main West-End thoroughfare where shops are the essentially lucrative part of the property and have to form the ground-floor or possibly two floors, it will not, as a rule, be found to be remunerative to put family residences above, but bachelor suites generally with one sitting-room, one bedroom, and a bathroom will be found to meet a considerable demand. In the side streets of clubland similar suites, sometimes with a manservant's room attached, will realise high rents. In Bayswater, Kensington, Chelsea, Westminster, &c, flats over shops will as a rule only be taken by the lower middle class, but in blocks which are exclusively residential and of good style there will be a considerable demand from well-to-do people of all sorts who do not wish for the trouble of a large house, the expense of a garden, &c., and who periodically shut up their flat and go away. In Hampstead probably as high rents can be obtained as in Kensington, but in Battersea Park, and still more in places like Brixton and such suburbs the style and the rents must be simpler and cheaper respectively. The locality, therefore, and consequently the class of tenant will exercise an influence on the whole design.

Family Residences.

I have noted that as a rule family residences for well-to-do people will not be readily taken if over shops and in the heart of London. It is strange that this objection does not hold in Vienna and Paris, where family suites in the heart of the cities are the rule, and are sometimes sumptuous. I suppose the difference lies in the temperament of the peoples. In England the mistress of the house and the family generally like to have the opportunity of being quiet. In France and Vienna the people are for bustle, vivacity, stir and movement. To some natures quiet is appalling and abhorrent. A recent book of new buildings in Paris—apartment houses—shows, of a total of fifty depicted, thirty-four are in main streets and have shops on the ground floor.

The Principal Staircase.

Another difference to be noted is that in Paris the rule is to make a service staircase in addition to the principal staircase; in Vienna and London this is not usual, although of course there are many instances to the contrary. In a building with only one principal staircase the service staircase is a great protection in the event of fire, and where the floors are extensive I think should be made compulsory, but it should be at a distance from the other, and should be next an external wall with windows in it to enable the smoke to escape. In some modern and handsome Parisian buildings there are stately principal staircases which are lighted by glazed partitions, or, as we call them "borrowed lights," from the service staircase which itself has windows. This is bad. If a fire occurred, and the flames went up one staircase, the other would be rendered useless for escape by the breaking of the glass partitions between. When there are two or more principal staircases this fire exit can be made by carrying both or all up to the roof, forming there a fire-resisting passage from one to the other.

In St. Ermin's Hotel and Mansions at Westminster, designed by me, where the buildings cover a site of about an acre, and there are about 660 rooms, I have six staircases with such intercommunication. It is strange that in Vienna very large blocks have sometimes only one staircase with a comparatively narrow passage leading to it from the street through the main block. In London the reason for excluding service staircases is generally the desire to keep tradesmen's boys out of the house, and to avoid the uncontrollable "back door." Very frequently goods are transmitted from the ground floor by small hand-service lifts passing outside the kitchen window or service hutch, and very useful and speedy lifts can be made by using bicycle wheels at top and bottom with ball bearings, wire ropes, and two balanced covered cages or buckets. Apparently in Vienna in many buildings all goods come up the one staircase to the front door.

Kitchens.

A further point to observe is the very small kitchens and offices of the Paris and Viennese flats; 13ft. by 10ft. appears to be considered ample, and many are much less. There is no scullery, but sometimes a small pantry with sink is attached. This, however, is by no means general, and a larder is still more rare. I am told that, small as the kitchens not infrequently are in Vienna, it is by no means unusual to find them very handsomely fitted, the walls tiled and decorated with handsome ware. My informant says sometimes £300 is spent in such a way, and the mistress takes her friends to see the kitchen.

Servants' Bedrooms.

Yet another point of dissimilarity from our practice is the fact that in Paris frequently there is apparently no bedroom for the servants within the suite. In some cases the servants' bedrooms for the whole building are on the top floor, although there are many separate suites in the building. I should think a good deal of inter-family gossip is thus exchanged. In Vienna generally one small bedroom for a servant is provided, sometimes opening only from the kitchen.

There is on one of the drawings exhibited at this meeting one handsome suite of rooms, with such a bedroom about 45ft. in area, in another 70ft. in area. These are not healthy. Certainly 100 sq. ft. should be a minimum. Of course, I do not know that other rooms may not sometimes be allocated to servants, but having regard to the few bedrooms and the size of the sitting-rooms this does not appear to be probable.

In London it is usual to house the servants within the flat, but here, as well as in Vienna, the vice of making a bedroom open out of the kitchen is still practised, and when one reflects that slops have to be carried through the kitchen in times of sickness and of health, it will be seen how insanitary such an arrangement is.

Sanitary Matters.

Our friends abroad are not always so particular as we are in other sanitary matters, and you will note some bath-rooms with no light and not against external walls, larders similarly situated, even behind water-closets, and the evil practice which obtained in England, even within the last half-century, is still maintained abroad, of lighting and ventilating water-closets from staircases and passages. Here that is no longer possible, thanks to our sanitary laws, and I feel sure that our friends abroad now realise the evil of such arrangements, and will not be offended at my mentioning the defects should any of them honour me by reading my paper.

Soil Pipes and Internal Staircases.

I have yet another little sanitary point to mention, and that is the danger of taking soil pipes of flats down inside the building against external and even internal walls in chases. Such chases afford channels for carrying infectious diseases from one suite to another; they are passages for vermin and for sound, to say nothing of the danger if the pipe leaks. Our laws have practically banished this evil from London, although I well remember to have seen it practised in some of our pioneer flats.

Internal staircases, however handsome they may be, with only top light and ventilation, are also to be deprecated in confined areas where there are many storeys of flats. Such staircases, in the event of fire, become furnace shafts, and at least get full of smoke, choking those trying to escape. The odours of the lower part of the house ascend to the top, and again illness is conveyed by them from one part to the other.

While many will realise the last-mentioned evil, it is not all who pay attention to the point I am about to mention, and that is the necessity for a current of air through small internal areas or courts extending from the ground to the sky. These small courts are frequently and not inaptly called "well holes." Now every one knows that the air at the bottom of a well is often so bad that a candle will not burn in it. A "well hole" area without through ventilation is in a lesser degree bad in the same way; and when, as is generally the case, there are gullies at the bottom giving off foul gases from fermenting deposits, it can be realised that windows opening into such areas are merely inlets for poison. All such areas should be ventilated by means of an inlet of large capacity at the bottom from some road or considerable open space where there is always movement of air going on. Fourteen or fifteen years ago I realised the evil and practised the remedy, and we obtained its insertion in the London Building Act of 1894. I was much pleased to see the necessity for this bottom inlet to small areas urged in a recent letter from M. Poupinel, of Paris, when he was kindly forwarding some of the drawings now exhibited, and it will be seen that he has inlets to his small courts in the houses Nos. 8 and 10 Rue Descamps. M. Poupinel has also taken fresh-air flues from the exterior to every fireplace in his building, and he has outlet ventilators in his kitchens. We, in London, are accustomed to outlet ventilators from not only kitchens, but reception rooms and bedrooms, but they are uncommon abroad, and the atmosphere of a stove-heated and unventilated room on the Continent is something to be remembered by those accustomed to fresh air.

There is only one further point to mention before leaving this hygienic branch of my subject, and that is the desirability in cities of having large windows in our rooms and keeping the tops of them reasonably near to the ceiling.

Floors.

A subject that may profitably engage our attention is the construction of the floors. In all high buildings for many families the floor should be of fire-resisting material. Some years ago Mr. Evans patented a floor which was composed of ordinary wooden joists laid close together and well spiked, thus making a solid wood floor. I do not know what has become of the system, but its tests showed it to be practically impervious to fire, and from its fibrous character it was claimed to be sound-proof. Another mode of constructing a floor is to fix rolled steel joists and build 4½in. thick brick arches between. This used to be the most common method of construction in London, and it is still much used in Vienna. Above the brickwork were wood joists and an ordinary floor. The most common because cheapest method used in England is, however, to place rolled steel joists at regular intervals, generally 2ft. apart, and to fill the space solid with concrete made of cement and coke breeze, bringing the soffit of the concrete an inch or two below the joists to protect the steel from the direct action of the fire. Frequently small fillets of wood were, and sometimes still are, laid on the concrete, and the boards nailed to the fillets; without ventilation, however, if the floor is covered with linoleum, such fillets and the boards over them may decay from dry rot, and the same remark applies to linoleum laid on boards nailed direct to concrete. One objection to the solid concrete floor is that it is not impervious to sound. The only way to remedy the evil is to get an air cushion beneath the floor itself, and to suspend the ceiling. There are several ways of doing this.

To get over the difficulty regarding wood floors where these are intended to be covered, I have in many recent buildings dispensed with boards, trowelled the floor with cement, and covered this with linoleum, either plain or ornamental. At once a furnished appearance is given to the floor, and rugs and carpets look well on it. The material is pleasant to the tread, it is not so resonant as wood, and there are no joints in which vermin may harbour.

I much fear that so much detail is wearisome, and yet it is valuable, and for the most part essential to an architect to know it all before he can start to make a good design with the hope of getting a successful result.

The Block Plan.

Turning now to the æsthetic side of the subject, let us consider the block plan. First of all, do not crowd too much building on your land. Doubtless a site that is crowded will show a large rent-roll on paper, but the building will not in the end be so popular as an open and more airy and consequently more healthy block, and the rents of the former will have to be reduced.

Of course the shape and extent of the site will largely determine the block plan, but or our purpose we will assume a considerable ar ea to be at our disposal. It may be laid out with a large carriage quadrangle in the centre, with the entrances from the courtyards.

In Mr. C. J. Pawley's St. James's Court, Westminster, we get one large courtyard with a narrow roadway on each side leading to it behind and through the front block. Another type is where the main entrances are from the roadways. There is a third method, as at St. Ermin's, Westminster, where the buildings are U-shaped, the large central quadrangle being open to the south or main front. This open quad may, however, be at the back if the aspect is more suitable at that side. This third method is shown in Mr. Paul Hoffmann's recent buildings, 171-5 Queen's Gate. The enclosed quadrangles permit of more land being covered than where the fourth side is left open, but the latter scheme has many other advantages. Even, however, on a comparatively small site a very pretty effect may be obtained by having a central circular carriage court, partially glass roofed, over the ground floor, the area above being open for lighting and ventilating the staircase and rooms.

Internal Planning.

Coming to a consideration of the internal planning of the buildings I think a good public entrance hall on the ground floor is a *sine quâ non*. The porch and vestibule should be simple, and may be plain. The hall should be spacious; not a mere passage, but a good room, well lighted, the walls panelled in wood to a considerable height, having a large, hospitable fire, and a panelled ceiling. Personally I do not like the "gorgonzola" and other marble wall effects which are so frequently seen in modern blocks. They are not, I think, in harmony with essentially domestic buildings, and I prefer the more cosy effect of a good hall in a country house. Of course columns may enter into the composition with great advantage, and any scheme of colour.

The Position of the Staircase

must of course be governed by the shape of the site, but if it can be made a part of the hall scheme so much the better, as it produces an effect of spaciousness which is valuable. I would draw attention to the very general feature abroad of staircases planned as semicircles, ellipses, or on other curved lines. The result is very pleasing, and contrasts favourably with the straight flights of stairs in a rectangular space so frequently seen. I do not like curved flights of stairs to extend without any intermediate landing, from floor to floor. These appear to me rather monotonous, as well as tiring and dangerous. They are, however, common in Paris. I thing the best planning, internally, is where on each floor there is but one flat off a main staircase. Such a flat is more private, and gives an idea of not being limited by its neighbour. There may, of course, even with this arrangement, be several staircases within the building itself, and several flats on a floor. Of course "the one staircase one flat" idea would only be practicable when the flats were of considerable size. When there are family suites, each of but five or six rooms, one staircase may reasonably serve two suites on each floor. This gives a certain elasticity to the place, as two small suites may then be combined and let as one large one. In high buildings I think it is not desirable to have a greater number of flats on a floor to one staircase. Mr. Hoffmann, at Queen's Gate, has his centre block with one flat to a staircase, and the wings with two flats to a staircase. The plan is an excellent example of how to lay out a large site.

Hall or Antechamber.

The planning of a flat itself is an interesting problem, one requiring great thought. First, there should be a good and well-lighted hall, or antechamber. The reception-rooms should be readily accessible from this, the bedrooms more retired, and the offices out of sight, but handy for service to the principal rooms and to trade access.

Efforts should be made to get away from a mere narrow passage hall, and to adopt some more compact plan. An octagon or a circle, a hexagon or an ellipse will form pleasing forms, and all admit of decorative treatments. The rooms, too, even in rectangular sites, need not all be square or rectangular.

Height of Rooms.

As to height of rooms, it appears to be very general to adopt about 10ft. to 11ft. in clear in all three capitals. I think this ample for moderate-sized rooms; a greater height makes them appear smaller in area. Windows should be ample, especially in a city, and I would draw your attention to the large size of doorways in the Parisian examples. Passages should be light, and the more direct the better. Do not forget to provide ample cupboards. Baths, sinks, water-closets, &c., should not be all over the place, but, within reason, grouped near together.

On the subject of planning, I would sum up shortly by saying, make your plans interesting, bright, and above all study to make them simple—the simpler the better. You may be sure if you see an intricate plan it is ill-digested, inconvenient, and generally not so well lighted or ventilated as it should be.

Small Sites.

We have hitherto considered only large sites, but there are a greater number of small sites which have to be treated, and I would refer you to Baron Max Ferstel's design of a house in the Stammgasse, Vienna. It is six storeys in height, the top floor containing studios. The other floors contain each a flat with five rooms, in addition to a kitchen with servant's bedroom attached and a larder. Here the two nurseries are placed at the rear, with separate service from the kitchen. There is also an access from the living-room to these children's rooms, so that the mother has a ready control. The bath-room and water-closet are ventilated into a small area, but the bath-room is only apparently accessible from the living-room, which appears to me to be an undesirable feature.

In London, Mr. John Slater's corner of Mortimer Street is convenient and well lighted. In Palace Chambers, Buckingham Gate, Messrs. Martin and Purchase have an angle site which appears to have required considerable thought to evolve a plan to give good light to all the apartments. Perhaps it may be permissible to mention one of my own buildings with a rather awkward site. It is a quadrant on plan at the corner of Sloane Gardens

Among the plans of bachelor suites we have one of Mr. John Slater's for a very shallow site in Well Street. He puts two suites to a floor off each staircase, and also, in addition to a parlour or sitting-room, two bedrooms, and a bath-room with water-closet in it, gives a small kitchen. The whole forms a very small self-contained residence, to be let at a low rent. Mr. Paul Hoffman, in Harewood Place and Hanover Square, has one staircase, a corridor common to several suites, each containing an entrance-lobby, a sitting-room, bedroom, bath-room, and water-closet, but the two end suites can be combined to make a family suite.

External Design.

It is undesirable to give a further detailed description of planning, and I will conclude by some observations on external design. Manifestly, the accessibility of material will have an important influence on design if the architect intends to display his building material. In Paris stone is practically always used. In London red brick, with or without stone, is generally used. In Vienna the construction is very largely of brick, but the facing is of stucco

or cement, and so are most of the columns and architectural detail, even in some of the largest buildings.

Owing to the commercial requirement that every floor of flats must be equally well lighted and to the structural desirability in high buildings of getting voids over voids, which together very generally result in windows being made of the same width on each floor, a Classic treatment is nearly out of the question.

Gothic, except in its latest English style, has not been attended with great success, and practically everywhere some branch or phase of Renaissance has become more or less the accepted basis of design. I have used the word Renaissance in a wide sense because, while some have introduced the normal Italian features, others have broken quite away from them. We know how, more in sorrow than in anger, one of our own Classic masters laments the depravity of a truant architrave or frieze in an entablature, and I can quite imagine the similar sensations of some of his Austrian colleagues at what is, I understand, there called the Secession style.

In Paris the architecture of the apartment house has generally its characteristically native treatment, shows great refinement, and, in my view, adapts itself admirably to the purpose of the buildings.

In London the most conspicuous block is on the Embankment—Whitehall Court, by Messrs. Archer and Green—a stone building, as to design based on French Renaissance. Most of the other flats in London are of red brick and stone combined. They are well known and accessible to all of you. Doubtless in some, and may be in all, there are features which, whether admirable or not, are suggestive, and from which you may derive an inspiration of great value.

My endeavour has been to recite first the practical and hygienic considerations regarding safety from fire, exits, ventilation, and sanitation, which form the very bed-rock on which to base a design; then on this basis to consider the æsthetic side, to suggest principles governing the laying-out of various sites, the internal planning and lighting of the buildings and their exterior treatment.

A WELSH CROMLECH.

By S. N.

AMONG the so-called Druidical remains of which Wales possesses so many, perhaps the most distinctive and interesting are the cromlechs. There appears to be much speculation as to the origin of the name. It is said it first appeared as "gromlech" in a work about 1600, but it may mean *grymlech*, stone of strength; *cæremluach*, devoted stone; *avegrymlech*, augurial stone; *Crom* or *crym-lech*, a stone that inclines or bends downwards. The capstone, many of which are of great weight, rests on two or more upright stones. In some instances, however, the cap or table stone has one end upon the ground. These cromlechs are termed *earthfast*. Occasionally the sides are closed up and an opening left for entrance or exit, while some, called *standing cromlechs*, are open and bear no evidence of ever having been covered.

It has been stated by some authorities that cromlechs were used as sacrificial altars, but the generally-accepted opinion is that they were merely raised for purposes of sepulture, except the open ones, which were probably associated with worship, and the *earthfast* ones, which are considered non-sepulchral. It is noteworthy that these erections, both in Wales and elsewhere, are so often found near the coast. In referring to a cromlech at Newport, Pembrokeshire, near to the Penbont stepping-stones, where the River Nevern meets the sea, Mr. E. Laws, in his "History of Little England," offers the following theory as to how such heavy stones were lifted up to their present positions. "Generally, but not invariably, these sepulchres are erected near to the rocks from which the stones were originally detached. Newport Cromlech is built on an alluvial flat. It seems scarcely credible that the large stones of which it is formed could have been floated thither on rafts, but the idea has crossed my mind. The method used in cromlech building would seem to be somewhat as follows:—First, the legs or uprights were erected, then these were buried in soil, and then the capstone was run up the inclined plane of this soil on rollers and carefully adjusted on the legs. Afterwards the soil was excavated from beneath the capstone."

In the parish of Nevern, adjoining, there are two cromlechs, one on a farm called Glasdir and the other at Pentre Evan. In the former the capstone is rounder than usual and of great weight, being supported on three upright stones nearly equidistant from each other, which probably suggested its name, "Llech-y-Drybedd" (Tripod Stone). The one at Pentre Evan, shown in the accompanying illustration, is probably the largest in Britain and is reputed to be one of the finest in the world. Old George Owen of Henllys, the historian, wrote of it two centuries ago: "The stones whereon this is layd are soe high that a man on horseback may well ryde under it without stowping.—There are seven stones that do stand circle-wise, like in form to the new moon, under the south end of the great stone.—I thinke that the true etymologie is *Grymlech*, that is, the stone of strength." Since that time, however, some of these stones have disappeared and the circle of stones which



surrounded it at that time can only now be partially traced. "The present remains are probably a portion of the chamber of a burial place so that there must have been at least one more covering stone, if not two. In the adjoining field may still be seen numerous immense masses, all of which must have formed part of the structure, which probably consisted of a square chamber approached by a gallery, formed in the same manner as the chamber, but perhaps of less height. It was also, there is little doubt, covered with soil, long since removed by man and time; and, as is so frequently the case, it is placed in a conspicuous position, commanding a view of the sea. It is curious that Arthur's name is associated with it, but that it was the burial place of some distinguished chieftain or warrior is most likely."

The future preservation of this monument is considered a matter of such great importance that it has been enclosed with a wire fence and is now under the protection of H.M. Commissioners of Woods and Forests.

A new Workhouse Infirmary at Skipton has been opened. The infirmary is a substantial building, devoid of elaboration, and has been erected from the designs of Mr. James Hartley, of Skipton and Morecambe. There are four wards, each capable of accommodating twelve patients, and the total cost, it is anticipated, will work out at £90 per bed.

Law Cases.

A Quarry Case.—At Newport (Mon.) Police Court Messrs. Howell Watkins and Thomas Christophers, quarry masters, trading under the name of the Machen Stone and Lime Company, were each fined £1 and costs recently for not enforcing the use of ropes by men employed on narrow and dangerous ledges in their Machen quarry. The proceedings were taken by Mr. J. S. Martin, H.M. Inspector of Mines, in consequence of a fatal accident which occurred at the quarry to a workman named Trew by his falling over the ledge on to which he was stepping down with a view to resuming work, *i.e.*, boring holes for blasting.

Architect's Claim for Fees.—At the Wolverhampton County Court on January 14th Albert Thomas Butler, architect, of Birmingham, sought to recover £79 1s. from Mr. A. B. Bantock, of Wolverhampton, alleged to be owing as fees for preparing plans for several houses. The plaintiff said he prepared the plans and obtained tenders for the erection of the houses, but owing to the price of materials going up the buildings were not erected. The defendant said his agreement was to pay Mr. Butler two or three guineas if the houses were not built, and five per cent. on the outlay if the work was proceeded with.—A verdict was given for the plaintiff for the full amount, with costs.

A Negligent Architect.—At the Shire Hall, Stafford, an Under-Sheriff's Court was recently held to assess damages in an action brought by Messrs. G. Boys and Son, timber merchants, of Walsall, against Mr. P. Adshead, architect, also of Walsall, to recover damages by reason of the alleged negligence of the defendant. It appeared that in September, 1899, plaintiffs desired to have a workshop erected on their premises. Defendant was engaged as architect and clerk of the works, his remuneration to be 4 per cent. on the total cost. It was contended that no sooner had the work commenced than defendant began to neglect his duties, until plaintiffs were eventually compelled to place the carrying out of the work in the hands of another architect.—The jury assessed the damages at £52 16s. 6d., the amount claimed.

Jerry Building.—At the Rotherham West Riding Police Court on January 14th a Nottingham builder named George Bell was summoned for having erected a certain dwelling-house at Tinsley which was not properly bonded in accordance with the by-laws of the Rotherham Rural District Council. Mr. B. Godfrey, the surveyor, prosecuted, and called George Brocklesby, an official of the Council, who stated that he visited the place where the defendant was building twenty-four cottages for the Tinsley Park Colliery Company, Ltd. The work was

extremely bad, and he could see distinctly through one of the walls. He called the foreman's attention to the work, and the architect had condemned a portion of it. A sample brick was produced for the magistrate's inspection, and it was evidently of inferior quality. Mr. F. C. Jenkinson proved that twenty-one courses and one angle had not been properly bonded. Defendant expressed his willingness to comply with the requirements. The Chairman said he was of opinion the case was a bad one, and fined the defendant 40s. and costs.

Apportioned Cost of Paving Works.—The case of *Fulham Vestry* v. *Minter*, heard last Wednesday in the Queen's Bench Division of the High Court of Justice before Mr. Justice Bruce and Mr. Justice Phillimore, raised the important question whether an open space vested in a vestry and dedicated to the purposes of a public park is liable to contribute to the expense of paving a new street. It was a special case, stated by Mr. John Rose, a metropolitan magistrate. The respondent Minter was summoned for refusing to pay the sum of £228 as owner of certain houses or lands forming or abutting upon a new street known as Bishop's Park Road, which houses had been set out for paving works. Mr. Rose came to the conclusion that the apportionment was invalid because the owners of the open space were not included as contributories to the expense of paving the new street. The Court dismissed the appeal. Mr. Justice Bruce said that, in his opinion, the decision of the magistrate was right. The principle to be derived from the cases which had been cited was that, where land or houses abutted upon a new street, then the person who received the rent or who would do so, if it were payable, was the person who was liable to contribute to the expenses of making up the roadway. Mr. Justice Phillimore gave judgment to the same effect.

London County Council Building Regulations.—At the Surveyors' Institution, Westminster, last week, the Tribunal of Appeal, consisting of Mr. Arthur Cates (chairman), Mr. J. W. Penfold and Mr. A. A. Hudson, heard an appeal by Messrs. Pink, Fryer and Co. Mr. Freeman, in opening the case, said the appeal was against the refusal of the County Council to pass the plans of the appellants for a site at the corner of West End Lane and Thorney Road, South Hampstead. He contended that the building which they proposed to erect was not in Thorney Road, but in West End Lane, and was a continuation of the buildings already being built there. He quoted the case of *Barlow* v. *Vestry of St. Mary Abbott's, Kensington*, where the House of Lords had decided that the premises at De Vere Gardens were in Kensington Road, and not in De Vere Gardens, and the premises were allowed to project about 7ft. beyond the building line of De Vere Gardens. Mr. Wallace said that by section 22 of the London Building Act the superintending architect of the County Council was to have the sole decision as to the building line of any street; and he contended that the premises of the appellants were really in Thorney Road, where the building line must be the line of the existing houses. The chairman said, as the point in question was important, they thought it desirable to consider their judgment.

The Sale of Building Plots.—In the Queen's Bench Division of the High Court of Justice on January 12th the case of *Maloney* v. *Mallet* was heard. The plaintiff was the owner of a building estate at Fambridge, in Essex, and at a sale by auction on August 8th last the defendant purchased certain of the plots of this estate from the plaintiff at the price of £271 10s. After the auction the defendant signed the memorandum of agreement of purchase, but did not pay any deposit. The plaintiff now sought to recover the whole of the purchase-money; and though in effect it was an action for specific performance which ought to be brought in the Chancery Division, yet owing to the special conditions contained in the memorandum of agreement the plaintiff was entitled to recover the money in the Queen's Bench Division. Counsel referred to the special condition and stated that it had been specially drawn to enable the purchase price to be recovered otherwise than by an action for specific performance. The defendant had signed the stipulation that he wished to have a free conveyance and to pay the balance of his purchase-money by instalments on the terms of the conditions in the said memorandum of agreement and so came within one of the conditions (No. 10). Mr. Justice Bruce said that strictly the plaintiff was entitled to judgment for the whole amount of his claim; but he suggested a settlement as the defendant was in rather a hard position. Mr. Montague Shearman said the plaintiff had only brought the action to give the defendant a lesson, for all the expenses of the auction had been thrown away. The plaintiff did not desire to press the case and would be satisfied by the rescission of the contract and the defendant paying in cash his taxed costs. The defendant, who appeared in person, agreed to the offer. Mr. Justice Bruce then gave judgment for the plaintiff for £50; the contract to be rescinded.

Concerning the Increased Cost of Materials.—At the Loughborough County Court recently, John Perkins, a plumber, sued Arthur Faulks, a builder and contractor, for £40 6s. 8d., balance of account for work done and materials supplied at the Falcon Works, Loughborough. The sum of £13 5s. 4d. had been paid into court in respect of items in the account admitted by defendant, and the balance in dispute was £27 1s. 4d. The circumstances under which the action was brought were as follows:—Defendant was contractor for works for the Brush Electric Engineering Co., and plaintiff was a sub-contractor for the lead work. Plaintiff told defendant that owing to the unsettled state of the lead market it was necessary that he should know how long the work would take, and defendant told him it would be a nine or ten months' job. Plaintiff then obtained a contract for the supply of lead for a period of twelve months to cover the period named. He commenced work in June, 1898, and continued till December of that year, and then he was stopped because defendant was going on with other works. This job was not resumed till January, 1900, and then plaintiff pointed out that the price of lead had increased by £4 a ton, and he could not go on with the contract on the prices originally scheduled. Defendant told him the architects would make that right, and he went on with the work. The scheduled price was 17s. per cwt., and plaintiff had to pay 21s. for the lead used in completing his work after the resumption of this particular job, and he claimed to recover only what the lead had actually cost him after the expiration of the time fixed by defendant.—After some discussion his Honour amended the particulars of the claim, making it an action for damages, consequent on defendant preventing plaintiff completing the contract on the terms originally agreed upon.—Defendant's solicitor submitted that as plaintiff elected to resume the execution of the contract after the delay, he did so on the terms originally agreed upon. Defendant said that when he was negotiating with plaintiff no time was mentioned for the completion of contract No. 1. When the work on that was stopped, plaintiff was given work to the amount of about £1,500 on other works.—His Honour expressed surprise that such a case should have been brought into court, and still more that the parties had not agreed to refer it to someone for settlement. It was unreasonable for the defendant to hold plaintiff to the price he quoted at first, having regard to the fact that defendant had to put off completing the work to suit the convenience of the building-owner. Plaintiff was, therefore, entitled to damages, and though he might have saved some of the loss by getting a larger quantity, it was not possible for him to avoid some loss. Judgment would be for £17, and the £13 5s. 4d. paid into court.

Definition of "A Public Building."—The case of *Moses* v. *Marsland* was heard last Thursday in the Queen's Bench Division of the High Court of Justice. This was an appeal from the decision of a metropolitan magistrate making an order against the appellant ordering him to comply with a notice served on him by the respondent, who is the district surveyor for Camberwell, under the London Building Act, 1894, requiring him to do certain things under the provisions of that Act whilst carrying out alterations for the managers of the Metropolitan Asylums District at No. 16 Elmgrove, Peckham. This building had been an ordinary detached dwelling-house of two floors, with one room and a basement below, and had been purchased by the managers; and they had instructed the appellant under the supervision of the Board's architect to so alter the building as to make it suitable for the accommodation of 12 to 14 imbecile children and a matron, cook and housemaid. The total cubical capacity of the dwelling-house was under 50,000 cubic feet. The question before the magistrate was whether the building in the above circumstances was a "public building" within the London Building Act, 1894, sections 5 (27), 68 and 79. The magistrate held that the building was, in the hands of the managers of the Metropolitan Asylums District, used, or constructed, or adapted to be used for a public purpose, and made the order asked for by the respondent in regard to the staircase, height of rooms, &c. The Court allowed the appeal. Mr. Justice Bruce said that he was of opinion that the building in question was not a public building within section 5 (27) of the London Building Act, 1894. He did not agree with the contention that the building was a hospital. No doubt the word hospital originally had a very wide meaning and meant any place of lodging; but in modern times it was used to signify a place for the treatment of the sick or infirm. The building in question could not be considered as a hospital in that sense. Nor was the building within the section on the ground that it was a building used for "any other public purpose." The substance of the decision in *Josolyne* v. *Meeson* was that the phrase "public purpose" indicated, not a place in which the public had an interest, but one where they could gain admission. Apart from that, a building used "for any other public purpose" must be one used for a purpose *ejusdem generis* with those of the enumerated buildings, and would not include a house used for the purpose described in the case. The building did not come within the term "home" because it had not a cubical capacity of 250,000 cubic feet or sleeping accommodation for 100 persons. The magistrate therefore came to a wrong conclusion, and the appeal must be allowed. Mr. Justice Phillimore said that in his opinion the building was not a hospital in the modern sense of a place for treating physical ailments. The Local Government Board and the Metropolitan Asylums Board had anticipated the provision of the Elementary Education (Defective and Epileptic Children) Act, 1899, and had provided houses for the reception of children who were incapable of being associated for the purposes of education with ordinary children as an adjunct to schools where special arrangements were made for the education of such children. The children placed in these houses were there for the purposes of education, and not for treatment. The houses were therefore in no sense hospitals. He was also of opinion that the building did not come within the words "building used, &c., for any other public purpose." These were not perhaps the best words to have used. But they were the words which were used in the former Act dealing with the subject, and as they had received judicial interpretation in *Josolyne* v. *Meeson* they were introduced into the Act under consideration. The words did not include every building used in the public interest, but only buildings used for purposes which involved the admission of the public, as, for instance, a public lecture-hall, where every member of the public who paid the entrance money was admitted. He was therefore of opinion that the building in question did not fall within the terms of the section, and that the magistrate's decision was wrong.

The new Military Hospital which is to be built on the southern slopes of Portsdown Hill, Portsmouth, is to be named the "Alexandra," after the Princess of Wales, who, it is expected, will lay the foundation-stone. The building is intended to replace the station hospital at Portsea.

Correspondence.

Use of Centrolinead for Perspectives.

To the Editor of THE BUILDERS' JOURNAL.

SIR,—While writing my reply referred to by Mr. Ramm (see page 438 of issue for January 9th) I had Mr. R. Phené Spiers' description before me, but did not refer to it because he recommended setting the centrolinead by trial, whereas I wanted a direct method without any guessing. Mr. T. H. Griffiths' method seems to be correct and the best that has yet appeared, requiring only a little neat drawing to obtain the angles for setting the instrument without calculation.

Your correspondent R. W. Sampson must be a very careless reader. In his previous criticism of my first letter he made a misstatement as to its contents, and now he makes another misstatement when he says "according to Professor Adams' first answer Mr. Nicholson was indebted to Mr. Bryan for an explanation of how to use his (Mr. Nicholson's) instrument." No such statement was made by me, and it is highly probable that Mr. Nicholson died before Mr. Bryan was born. Your correspondent does not give one the impression that he received as much profit as he should have done from his early opportunities. He finds fault with Mr. Griffiths for not stating "how the positions of the pins or studs on which the arms work are determined." Now there is so much range possible in these positions that they require no determination beyond what is stated by Mr. Griffiths, and may be from 12in. to 18in. apart with equal accuracy; and whether the vanishing point is 20ft. off the board or any other distance, Mr. Griffiths' method is equally applicable. But, after all, what does R. W. Sampson want? He *knows how to set the instrument and fix the pins with the simple aid of a set-square*, but does not "feel at liberty to divulge" the secret. Then why ask how to do it? It reminds one of the recent controversy on the Maskelyne box trick, and a continuation of the correspondence would be as little profitable to those now concerned.—Yours truly,

HENRY ADAMS.

[This correspondence is now closed.—ED. B. J.]

Professional Practice.

Enniskillen.—The new Town Hall was opened recently. It is situated on the Diamond, an elevated portion of the island on which the town is principally built, and the cost of its erection amounted to a sum of about £11,000. The building is erected in the Renaissance style, freely treated, and the area which it covers is 9,070 sq. ft. Limestone from the local quarries has been used in the construction of the walls, together with a supply of brick, and the exterior is faced with punched stone, from the Carra-Creagh quarries, which are situated on the shores of Lough Erne. This stone, after careful examination and comparison, was selected on account of its enduring qualities, and it has been worked out in a solid and substantial style. Dungannon chiselled sandstone has been used in the mouldings, pilasters, columns and cornices. The main entrance from Townhall Street is flanked by pilasters and columns supporting an ornamental balcony, which is reached from the corridor on the first-floor level, and surmounting the building is a tower containing four angled turrets terminating in a dome with finials, &c. The interior of the building is well fitted up. On the basement floor there are caretaker's apartments, and advantage has been taken of an inclination in the site to arrange them principally overground. Provision has been made for cooking for public banquets, and there are also a store-room and an engine-room containing all the fire brigade appliances. On the ground floor there are two entrances, the main one being in Townhall Street, and a side one in Water Street. The latter is intended for use on occasions when there is a likelihood of a big crowd desirous of obtaining ingress or egress. The main entrance is flanked by the Town Clerk's office and the chairman's parlour on one side, and by a reading-room and a book store on the other. From the clerk's office on the left of the entrance there is a flight of stone stairs leading to the strong room in the basement of the tower, and there is communication through the chairman's parlour with the Council Chamber. A minor hall, 35ft. by 31ft. occupies a portion of the structure facing Water Street, and is fitted with a movable platform. Off this hall there is a large committee-room divided by movable partitions. Over the suite of municipal offices there is the Assembly Hall, which is reached from the ground floor by a staircase of ample width. This room has a floor area of 2,925ft., is 29ft. high, and is entered by four doors running along the corridor. Where possible fire-proof materials have been used. Messrs. Anthony Scott and Sons, of Drogheda, Navan, and London, were the architects, their plans having been selected in open competition, and placed first by the assessor, Sir Thomas Drew, P.R.H.A., P.R.I.A.I. The general contractor was Mr. James Harvey, Enniskillen. Messrs. Musgrave and Co., Belfast, supplied the heating apparatus. The stone carving was executed by Mr. Harte, of Brookeborough. The designs for the building were illustrated in our issue for October 12, 1898.

London.—A Roman Catholic Church has been built entirely by pauper labour in the Marylebone Workhouse. The little chapel was found too small for the congregation, and the guardians resolved to provide a larger one. Two of the principal wards in the same block as the old chapel were set apart for the purpose, and pauper labour set to work upon it about three months ago. The two wards were knocked into one, the erection of the high altar, the making of the pedestals for the statues of SS. Joseph and Mary, the altar rails, the placing of the brasswork, the framing and hanging of the Stations of the Cross, the whole of the decorative work around the walls, and even the fixing of a stained-glass window at the rear of the altar, representing the "Descent from the Cross" and scenes at the Crucifixion, were all done by indoor poor.

Plymouth.—New buildings have been added to the Plymouth Institution. They consist of a reading-room, library, and other rooms. The additional buildings are lighted on to the Crescent. While there are separate entrances, the new portion may be approached direct by a staircase leading from the museum of the Institution. The new buildings have been designed by Mr. A. S. Parker, A.R.I.B.A., George Street, Plymouth. Competitive plans were invited from architects, and Mr. Parker's were selected from a large number. The front is treated in the Grecian style of architecture, in continuation of the style of the original building, which was designed by Mr. Fulston, architect, of Plymouth, in the early part of the past century. The front of the reading-room has a curved circular bay up to the cornice level, and contains three large windows in the lower part, and a peristyle of dwarf Doric pillars in the upper part, with six small windows between to light and ventilate the upper part of the room within. The entrance is adorned with fluted Doric columns on either side of a recessed portico. The entrance doors are wide, with bevelled-edged square plate panels. They lead into a spacious, well-lighted entrance hall, 18ft. square, the staircase hall and alcoves for the display of antiquities branching therefrom. The hall floor is on a level with the museum gallery, and there is a circular junction with the old buildings at the north-west corner. The reading-room is 30ft. by 24ft., and 18ft. 6in. high, fitted with electric lamps on wrought-iron brackets and drops. The new library, 33ft. 6in. long, by 24ft. 6in. wide, and 24ft. high, has a stained open roof, with lantern. The room is fitted with book-cases in characteristic style. The fittings of the room are most appropriate. A council room leads from the hall and library. Opposite the entrances the main staircase leads to the ground floor of the museum, this forming the main connection between the new and the original buildings. Ladies' and gentlemen's cloak rooms and a photographic dark room complete the accommodation of the extension. The building and fittings have been carried out by Mr. G. P. Turpin, contractor, of Plymouth, and the heating apparatus, both for the old and the new buildings, have been fitted by Mr. W. T. Hocking, while the electric-lighting has been carried out by Mr. W. E. Heath, both of Plymouth.

New Patents.

These patents are open to opposition until February 28th.

1899.—Cable Conduits.—25,216. G. E. HEYLDIA, 55 Market Street, Manchester. The conduit consists of a composition of india-rubber and pitch moulded, drawn or pressed into the required shape and length. The advantages are that the conduit will readily follow a bend in the ground, is waterproof, and avoids the numerous joints now required with earthenware.

1900.—Fireproof Floors.—2,740. A. W. GREEN, The Glen, 35 Gorst Road, Wandsworth Common, London, S.W. The floor consists of terra-cotta lintels supported between the girders or joists, the upper side being filled in with concrete and the lower surface plastered. Longitudinal dovetail grooves are formed on both sides of the lintel in order to afford a good "key."

Humidifiers and Ventilators.—3,227. G. B. PYE, 63 Dewhurst Street, Blackburn. The object of this invention is to supply air warm or cold, humid or dry. The device consists of a series of troughs filled with water, which, by capillary attraction, is distributed over a fabric through which the air is drawn by means of a fan, being afterwards deflected by plates or distributed by pipes as desired. The troughs are provided with steam pipes so that the water may be heated and the humid air consequently warmed.

Calculating Device for Girders, &c.—5,142. W. DOHM, Bielefeld, Prussia. This invention relates to an apparatus for calculating the size of joists or columns to support certain loads. It consists of a semicircular piece of brass or other material marked on one side with concentric load scales for certain safe limits of stress; a base part with scales for lengths of structure and distances of loads; and a lever pivoted on the base part and having on its front side scales for sizes, moments of inertia, &c. Means are provided for holding the semicircular part and the lever in any position. A sliding rule is also employed.

Cutting Wood on the Twist.—9,314. E. H. HOPTON, Union Works, Market Harborough, Leicestershire. By means of an arrangement of ropes or chains, the saw table is made to oscillate and to draw the wood towards and away from the band saw. The wood is carried on a radial arm set to the required radius, each piece being sawn to the desired sweep without any template or marking being necessary.

Hand Street-Sweepers.—12,816. W. H. H. MILLER, Williamsport, Lycoming, Pennsylvania, U.S.A. The machine consists of a large rotary brush at the back, two small wheels at the front, and a movable apron between adapted to direct sweepings into a pan. The whole arrangement resembles a lawn mower.

Concrete Piles.—18,950. O. HOFF and C. F. HAGLIN, both of Lumber Exchange, Minneapolis, Minnesota, U.S.A. The pile is made of concrete, and has a metal core extending longitudinally through it, with a number of binding braces. Hollow metal pipes are also provided, running the whole length of the pile, to supply water to the lower end during sinking operations; or the centre core may be arranged in this manner, thus serving a double purpose. It is claimed that these piles are very strong and easily driven.

Jointing Sanitary Ware and Metal.—20,921. M. J. ADAMS, Park Lane Sanitary Works, Leeds. An indent is formed on the body of the article (say, a closet) to be jointed, near the end, and around it is wound some wire, or a metal band

is fixed. The socket of the pipe can then be attached to this wrapping with solder.

The following specifications were published on Saturday last, and are open to opposition until March 7th. A summary of the more important of them will be given next week. The names in italics within parentheses are those of communicators of inventions.

1900.—33, MEHRTENS, manufacture of hollow grate-bars. 286, SPENCE, travelling cranes. 2,063, SUGG, apparatus for incandescent gas lighting. 2,482, FRY, inking devices of stencilling apparatus. 2,513, DICKINSON, DUFFIELD, AND SCARLETT, picks and combinations of other tools therewith. 2,938, CLIFTON, saw-sharpening machines. 3,584, BRIGGS, method for utilising the waste heat from brick and other kilns. 3,699, BARR, hydrant and similar valves. 3,717, LITTLE, traps for water-closets and drains. 3,745, MESSER, acetylene gas generators. 3,868, BRUCE, stench and other syphon traps. 4,063, MACKENZIE, gripping devices of overhead, travelling and other cranes. 4,076, POCHIN AND POCHIN, crushing and grinding machinery. 10,333, WILLMORE, pavement lights. 13,626, FEIG AND DAMME, staircase steps. 15,395, STOTT, apparatus for heating a large quantity of water, such as for swimming baths. 15,396, STOTT, appliances for valves of water-heaters. 17,025, PREDMERSZKY AND PREDMERSZKY, acetylene gas generator. 18,286, FAUCK AND FAUCK, rig for boring wells. 19,016, RAILSBACK, acetylene gas generator. 19,935, LAKE (*The W. & E. T. Fitch Co.*), window-sash fasteners. 20,683, KNOWLES, BARKER AND DEAN, expansion pulleys. 20,970, JORDAN, crushing machines. 21,209, DAVEY, PAXMAN AND CO., LTD., AND KING, pumps. 21,458, MILLS (*Bondi & Chinn*), water-closets. 21,574, DAVIES, pick. 21,889, SCHMALTZ, saw-sharpening machines.

Keystones.

An Astronomical Observatory in Dundee is proposed to be erected.

New Baths at Kentish Town are being erected in Prince of Wales Road, and will be opened at the end of next June.

The Priory Park Board Schools, St. Albans, are being warmed and ventilated by means of Shorland's patent Manchester grates, supplied by Messrs. E. H. Shorland and Brother, of Manchester.

Mr. John Burnet, F.R.I.B.A., I.A., architect, of Glasgow, died last week at the age of 87 years. He was head of the firm of John Burnet and Son, St. Vincent Street, and was an architect of distinction; he designed many important buildings in Glasgow and the West. Associated with him in the business was his son, Mr. John James Burnet, A.R.S.A.

The Hospital of St. John and Elizabeth at St. John's Wood has been rebuilt and enlarged from designs by Mr. E. Goldie, of Upper Phillimore Place, Kensington. A noteworthy part of the scheme has been the transference and re-erection, stone by stone, of the church built by Sir George Bowyer in Great Ormond Street as a central and conspicuous feature of the new building. The hospital is capable of accommodating 100 patients, male and female. The price paid for the site was £13,000, and the estimated cost of the new building is £45,000. The building was illustrated in our issue for December 14th, 1898.

Fitzgeorge Avenue, West Kensington, was formally opened by the Lord Mayor of London last week. The new street has been designed by Mr. Delissa Joseph, F.R.I.B.A., and built by Mr. Henry Lovatt. The avenue is 50ft. wide and about a quarter of a mile long. It is to be lined on both sides with blocks of residential flats, most of which are completed. The blocks differ from each other both in plan and in design, and have large entrance courtyards. The designs are based upon Classic forms and the monotony of continuous rows of buildings has been avoided. The materials used are red brick and stone.

A Memorial Window to the memory of Principal Caird has been erected in the Bute Hall of Glasgow University.

A new Board School, erected by the School Board for London in Invicta Road, Westcombe Park, has been opened. The school holds over 900 children.

A Marble Bust of Hogarth is to be given by Mr. Passmore Edwards to the new Chiswick Town Hall, which is in the district where he lived and worked.

The Wolverhampton Exhibition.—It is probable that Russia will be represented at the Wolverhampton Exhibition of 1902 by exhibits illustrating her natural resources and industrial development.

New Public Baths for Chelsea.—The Chelsea Borough Council have decided to pull down the present public baths, and to utilise the existing and adjoining sites for the erection of new baths, which will cost, roughly, £70,000.

"Architectural Reviews" Wanted.—In exchange for a copy of the "Architectural Review" for December, 1898, the publisher will be glad to send the "Builders' Journal" post free for eight weeks, or a copy of the current issue of the "Review."

Messrs. Briggs and Wolstenholme, architects, of Blackburn, who, with another firm, were successful in the Liverpool Dock Board Offices scheme, are amongst the four selected in the preliminary competition to provide plans of the new Bluecoat School at Wavertee.

A new Church for St. John's, Hopwood, is proposed to be built at a cost of £2,300. The architect is Mr. Oakley whose plans show the church consisting of a nave, a chancel, and one aisle, with accommodation for about 200 people. An extra aisle to seat 200 people could be added when funds permit.

A new Edinburgh Asylum.—The Commissioners of Lunacy have had before them the plans by Mr. Hippolyte J. Blanc of the new asylum at Bangour. On several points they found fault with the plans, particularly in respect of the expense that was being lavished upon them. In the case of the doctor's house, which was set down at an estimated cost of £7,500, they insisted that a reduction must be made. Some of the architectural adornments of the building, too, were found fault with as causing unnecessary expense.

Metropolitan Asylums Board.—At last week's meeting the tender of Messrs. Dawson and Co., Ltd., of Stalybridge, amounting to £4,416, for carrying out the necessary wiring works in connection with the electric-light installation at the Tooting Bec Asylum (in accordance with the plans and specification prepared by the consulting engineers, Messrs. Handcock and Dykes) was accepted. The following recommendation of the Works Committee was also agreed to:—"That, subject to the sanction of the Local Government Board, the amended tender of Messrs. Veale and Carter, of Mill Lane, Brixton Hill, for alterations and other works to be carried out at Rochester House, Little Ealing, in accordance with the plans and revised specification prepared by the surveyor to the Board, at the sum of £2,999 0s. 8d. net, be accepted, and that the seal of the Board be affixed to the contract."

The Boadicea Group, to be placed on the Embankment at the west end of Westminster Bridge shortly, is generally believed to be the work of Mr. W. Hamo Thorneycroft, R.A. This is a mistake; the sculptor of the Boadicea is Mr. Hamo Thorneycroft's father, Mr. Thomas Thorneycroft, an artist whose strongest bent was towards mechanical engineering. His work in sculpture—which included the equestrian statue of the Queen at the 1851 Exhibition, Charles the First in Westminster Hall, and the equestrian statues of the Prince Consort at Liverpool and Wolverhampton—was much less in bulk than that of his wife, herself the daughter of a sculptor, John Francis, who brought her up to his own profession. Mary Thorneycroft executed a long series of busts and statues, chiefly of the Royal children, for the Queen, who always regarded her work with affectionate admiration.

The Portsmouth Technical Institute Competition.—Mr. Cross, of London, the assessor has awarded the £100 premium to Mr. C. E. Smith, of Victoria Road North, Swansea, the £75 premium to Messrs. Rake and Cogswell, of Prudential Buildings, Langport, and £50 to Mr. W. C. Bevis, of Elm Grove, Southsea. The other competitors were Messrs. A. E. Guy, of Albert Road, Swansea; C. Ball, of Kent Road, Southsea; and J. W. Walmsley, of King's Terrace, Southsea.

Proposed Baths for Swinton.—The Building and Sanitary Committee of the Swinton and Pendlebury Urban District Council had six competitive plans before them last week for the proposed baths to be erected for the district off Pendlebury Road, Swinton. The Council have offered a prize of £50 to the architect submitting the approved plans. Sub-committees were appointed to report on the six plans submitted to the Council. It is hoped that building operations will be commenced during the spring of the present year.

The Competition at Bridlington for the extension of the Royal Prince's Parade has been decided in favour of Messrs. Mangnall and Littlewood, architects, of Manchester, who have obtained the 35 guineas first premium. Mr. J. Freebairn Stow, Corn Exchange, Uxbridge, was placed second. The premiated plans provide for the extension of the parade and the construction of an iron pier and promenade, with a pavilion to accommodate 3,000 persons, the estimated cost being about £28,000.

The Royal Institute of Architects of Ireland held a meeting last week, when it was decided to form an organisation in Ulster for the promotion of union and integrity amongst its members, with constitution and by-laws subject to the approval of the Institute, to which it will be affiliated. Messrs. Vincent Craig, F.R.I.B.A., J. J. M'Donnell, J.P., Frederick H. Tulloch, A.R.I.B.A., William J. Gilliland, John C. Dewhurst, A.R.I.B.A., with Nicholas Fitzsimons, A.R.I.B.A., as secretary and convener, were appointed a provisional committee to prepare a scheme for the new society and to report to a general meeting of the Institute.

The Glasgow Exhibition Buildings.—About 70 students of the Glasgow High School Building Construction Classes, under Mr. D. Bennet Dobson, recently visited the buildings of the Glasgow International Exhibition, 1901. The party were conducted through the various buildings by Mr. White, clerk of works. Commencing at the Industrial Hall, the Indian and Burmese Sections were first visited. The exit close by gave a demonstration of the automatic arrangement of the revolving shutters. The main roof of the Industrial Hall has a span of 103ft., and it is designed on the three-hinged principle, so as to counteract any evil effects that might be caused by expansion and contraction of the metal. The feet of the trusses are supported by steel pins, fixed to bed plates, which are securely bolted to the concrete foundations, the other pin being at the centre of the truss near the ridge. The party then visited the dome, which is 80ft. in diameter and 190ft. high. Instead of being supported by the steel piers which were originally intended to carry it, steel being so difficult to obtain at the time, timber was adopted for the construction of the four massive L-shaped piers. The company then passed down the Grand Avenue, which is 1,000ft. long by 75ft. broad, and curved on plan. The roof, rising to a height of 40ft., is formed of semi-circular laminated ribs, 15ft. centre to centre. The central portion of the ribs is in three thicknesses of timber, while the ends are in five thicknesses. The bridge across the Dumbarton Road is on the cantilever principle, the cantilevers being supported on cast-iron columns, and the necessary back-weight obtained by large concrete blocks. The Machinery Hall, next visited, covers a large area, and is roofed by five roofs, a central span of 108ft. being bridged by elliptical-shaped trusses, supported at intervals of 8ft. by double columns, and the space between these again spanned by curved lattice girders. Two roofs of timber construction flank either side.

The Excavations in the Roman Forum have just revealed the fact that the Christian basilica recently unearthed on the Palatine was the residence of the Popes in the eighth century.

New Municipal Offices at Keighley were opened yesterday in Bow Street. Mr. John Haggas has prepared the external and Messrs. J. B. Bailey and Son the internal plans, and the cost has been £10,000.

The Leeds Art Pottery and Tile Company, Limited.—We learn that this company, which recently liquidated, is now the same in name only. The concern has been re-registered, with a new Board of Directors, and is being carried on with every prospect of sound and successful business. The former managing director is no longer connected with the company in any way, but the directors are thoroughly practical and experienced men, whose commercial experience and financial standing are guarantees for the future of the company. The lack of sufficient capital no doubt led to the embarrassments of the old company, but there will be no such drawback with the new one. The architectural work recently executed includes the offices of the National Telephone Company on the Embankment, the District Provident Society, Manchester; Hotel Metropole, Leeds; Sheffield Banking Company, Sheffield; and many other buildings in various parts of the country. The company is also carrying on with energy and care the department of pedestals and vases, upon which the reputation of the old company was largely founded. The retention of the services of Mr. R. C. Browne ensures a continuity of style and quality of material.

COMING EVENTS.

Wednesday, January 23.

RUSKIN SOCIETY OF BIRMINGHAM.—Mr. Lionel Cust, M.A., on "Portraits as Historical Documents," 8 p.m.

GEOLOGICAL SOCIETY OF LONDON.—Meeting at 8 p.m.

NORTHERN ARCHITECTURAL ASSOCIATION. — Mr. James Bruce on "Recent Data concerning Concrete Beams and Concrete Floors," 7.30 p.m.

SOCIETY OF ARTS.—Mr. F. B. Behr on "The Proposed High-speed Electrical 'Monorail' between Liverpool and Manchester," 8 p.m.

INSTITUTION OF ELECTRICAL ENGINEERS (BIRMINGHAM LOCAL SECTION).—Inaugural meeting at University Buildings. Address by Dr. Oliver Lodge, 8 p.m.

Thursday, January 24.

INSTITUTION OF ELECTRICAL ENGINEERS. — Adjourned discussion on Mr. W. M. Mordey's paper on "Capacity in Alternate Current Working," 8 p.m.

SOCIETY OF ANTIQUARIES OF LONDON.—Meeting at 8.30 p.m.

SOCIETY OF ARCHITECTS.—Mr. Raymond Unwin on "The Art of Designing Small Houses and Cottages," 8 p.m.

Friday, January 25.

INSTITUTION OF JUNIOR ENGINEERS. —Mr. Alexander Ross, M.I.C.E., on "Railway Construction," 8 p.m.

PHYSICAL SOCIETY.—Meeting at 5 p.m.

BIRMINGHAM ARCHITECTURAL ASSOCIATION. — Mr. E. W. M. Wonnacott on "Paris Exhibition," 6.45 p.m.

ARCHITECTURAL ASSOCIATION (Discussion Section). Mr. W. E. Davis on "The Management of House Property," 7 p.m.

GLASGOW AND WEST OF SCOTLAND TECHNICAL COLLEGE ARCHITECTURAL CRAFTSMEN'S SOCIETY.—Mr. John M. Arthur on "Legal Points Relative to Building," 8 p.m.

INSTITUTION OF CIVIL ENGINEERS (Students' Meeting).—Mr. C. Johnston on "Sewage Treatment," 8 p.m.

ARCHITECTURAL ASSOCIATION OF IRELAND.—Mr. T. Baird on "Drainage." Technical demonstration at No. 12 Lower Abbey Street, Dublin, 4.30 p.m.

Saturday, January 26.

INSTITUTION OF JUNIOR ENGINEERS. — Sixteenth Anniversary Dinner, Westminster Palace Hotel, 6.30 p.m.

DUNDEE INSTITUTE OF ARCHITECTURE.—Visit to St. Luke's Church, &c., West Ferry, 1.45 p.m.

Monday, January 28.

PHILOSOPHICAL SOCIETY OF GLASGOW: ARCHITECTURAL SECTION.—Mr. Isaac Low, jun., on "Acetelene," 8 p.m.

SURVEYORS' INSTITUTION.—Ordinary General Meeting at 8 p.m.

LONDON INSTITUTION.—Mr. H. Elliott Malden, M.A., on "Earthworks and Castles of Early England," 5 p.m.

GLASGOW INSTITUTE OF ARCHITECTS. — Council Meeting at 2 p.m.

SOCIETY OF ARTS (Cantor Lecture).—Mr. J. Liberty Todd, on "Elementary Art Education," III.

Tuesday, January 29.

ROYAL INSTITUTION.—Professor J. A. Ewing, M.A., F.R.S., M.I.C.E., on "Practical Mechanics," III., 3 p.m.

SOCIETY OF ARTS (APPLIED ART SECTION).—Meeting at 8 p.m.

Wednesday, January 30.

NORTHERN ARCHITECTURAL ASSOCIATION. — Mr. Allan Greenwell, F.G.S., A.M.I.C.E., on "Bitumen: Its Application in Architecture and Engineering," 7.30 p.m.

SOCIETY OF ARTS.—Mr. Percy T. Macquoid on "Evolution of Form in English Silver Plate," 8 p.m.

CITY OF LONDON COLLEGE SCIENCE SOCIETY.—Mr. Hal Williams, A.M.I.M.E., A.M.I.E.E., on "Refrigeration," 7.30 p.m.

BRITISH ARCHÆOLOGICAL ASSOCIATION.—Meeting at 8 p.m.

TENDERS.

EXETER.—For the formation of cricket ground, including draining, road works, fencing, &c. Messrs. Ellis, Son & Bowden, surveyors, Exter. Quantities by surveyors:—

A. N. Coles	£7,916	Grounds & Newton	£5,627
R. H. B. Neal	6,999	Lapthorn & Co.	5,540
Pomeroy	6,788	G. Setter	5,338
S. Saunders	5,820	E. Mudge	4,921
W. Gibson	5,760	E. Harris, Clysthidon, Exeter *	4,600
Wakeham Bros.	5,732		

* Accepted.

HANWELL, W.—For the erection of Schools for 1,230 children, Board's offices and caretaker's house at Springfield Road Hanwell, W. Mr. William Pywell, A.R.I.B.A., architect 88 Brent Hill, Hanwell, W. Quantities by Mr. Max. Clarke:—

Leslie & Co., Kensington, W.	£28,129
J. S. Kimberley, Banbury	25,647
J. Appleby, Aquinas Street, S.E.	25,500
R. Tonge, Watford	25,293
C. Gray Hill, Coventry	24,100
A. & B. Hanson, Southall	24,045
Stephens, Bastow & Co., Bristol	23,949
W. Wisdom, Isleworth	23,500
W. Blackburn, Chiswick	23,068
Johnson & Son, Leicester	23,000
Coulson & Lofts, Cambridge	22,770
T. J. Messom & Sons, Twickenham	22,327
Hunt & Son, High Wickham	21,991
Kingerlee & Sons,* Oxford	21,457

* Provisionally accepted.

HARROW.—For the erection of a house at Kenton Road, for Mrs. Enderby. Messrs. Clarke & Charles, architects, Peterborough Road, Harrow:—

F. T. Chinchen	£2,140	J. & J. Bailey	£1,900
Roome & Co.	2,100	Webster & Cannon	1,898
J. S. Kimberley	2,015	C. Simmons, Willesden*	1,820
Thomas Turner, Ltd.	1,987		

* Accepted.

HARROW.—For the erection of a house at Lyon Road, for Mr. H. R. Matthews. Messrs. Clarke & Charles, architects, Peterborough Road, Harrow:—

G. & J. Waterman	£3,884	J. S. Kimberley	£3,780
Roome & Co.	3,805	T. Turner, Ltd.*	3,570

* Provisionally accepted.

KINSON, Dorset.—For the erection of schools and additions, Kinson Heath, for the School Board. Mr. Walter Andrew, architect, Alton Office, Parkstone. Quantities by Messrs. Jennings & Goater, Bournemouth:—

Jones & Leward	£3,067 0 0	J. Challis	£2,710 5 9
Jenkins & Son	2,983 0 0	Baker & Pearcey	2,670 7 9
Whitaker	2,938 0 0	T. C. Rigler	2,592 18 2
A. & F. Wilson	2,913 2 1	Huxtable, Bournemouth *	2,278 10 0
G. Crabb	2,783 14 9		
W. J. Cross	2,780 18 2		

* Accepted.

LITHERLAND, Lancs.—For sewer and roadmaking, Field Lane, for the Urban District Council. Mr. W. B. Garton, C.E., 25 Sefton Road, Litherland:—

W. F. Chadwick	£3,559 11 1
Thomas Rowlands	3,114 4 0
Joseph Joynson, Walton, Liverpool *	2,855 7 0
Peter Tyson	2,849 6 2

* Accepted.

LONDON.—For artisans' dwellings, Phœnix Street, St Pancras, N.W., for the directors of Hampden House, Limited. Messrs. Salter, Issott & Salter, architects, Phœnix Street, N.W. Quantities by Mr. A. R. Henderson, surveyor, 47 Pall Mall, S.W.:—

Marchant & Hirst	£2,489	Patman & Fotheringham	£2,180
Vears & Co.	2,359	T. E. Mitchel	2,138
W. Wallis	2,308	T. G. Sharpington	2,119
W. S. Beaton	2,300	Brown & Son, Wellingboro'*	2,100
Wilkinson Bros.	2,215		

* Accepted.

NORTHAMPTON.—For the rebuilding of No. 5 Mercer's Row, for Messrs. Lankester and Wells, wine and spirit merchants. Mr. Herbert Norman, architect, 14 Market Square, Northampton:—

H. Martin	£1,880	R. Cosford	£1,741
A. P. Hawtin	1,872	E. Sharman	1,700
E. Archer	1,855	W. Heap,*	1,634

[All of Northampton.] * Accepted.

WALTHAMSTOW.—For the erection of a villa residence at Walthamstow, for Mr. W. Bach. Mr. F. Towl, architect, Walthamstow:—

Barton	£1,241	Carter	£1,100
Goodhall	1,198	Reed, Walthamstow*	1,095
Rawlins	1,190		

* Accepted.

WALTON-ON-NAZE.—For main sewerage and sewage disposal work for the Walton Urban District Council. Messrs. Beesley, Son & Nichols, engineers, 11 Victoria Street, Westminster:—

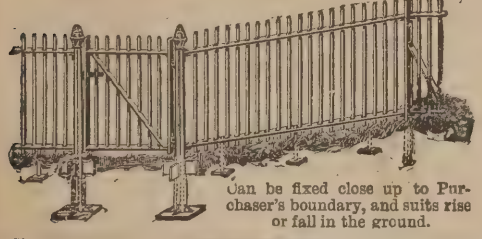
G. Double	£14,763 5 0	Cooke & Co.	£10,329 0 0
J. W. Ransome	12,980 0 0	J. Young	10,180 0 0
Johnson & Co.	12,700 0 0	Burgoyne & Sons	9,614 8 6
Johnson Bros.	12,200 0 0	Mackenzie & Sons	9,410 0 0
C. J. Ford	11,981 0 0	E. West	9,300 0 0
G. Bell	11,090 0 0	Parry & Co.	9,270 0 0
J. Jackson	10,770 0 0	J. Moran & Son, Harwich*	8,950 0 0
Wilkinson Bros.	10,720 0 0		

* Accepted.

WOOLSTON, Southampton.—For new Liberal Club, Victoria Road, Woolston. Mr. John H. Blizard, architect (Lemon & Blizard):—

Bagshaw & Son	£1,587	Hinton Bros., Woolston*	£1,250
F. Chalk	1,540		
C. Daysh	1,389		

* Accepted.



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Castor Oil, French ..	per cwt.	1	12	8		—	
Colza Oil, English ..	do.	1	10	6		—	
Copperas	per ton	2	0	0		—	
Lard Oil	per cwt.	2	0	6		—	
Lead, white, ground, carbonate	do.	1	4	10		—	
Do. red	do.	1	0	4½		—	
Linseed Oil, barrels ..	do.	1	10	3		—	
Petroleum, American ..	per gal.	0	0	6½	0	0	6¾
Do. Russian ..	do.	0	0	5½	0	0	6¼
Pitch	per barrel	0	7	6	0	8	0
Shellac, orange	per cwt.	2	19	0		—	
Soda, crystals	per ton	3	2	6	3	5	0
Tallow, Home Melt ..	per cwt.	1	5	6		—	
Tar, Stockholm	per barrel	1	8	6		—	
Turpentine	per cwt.	1	9	0		—	
METALS.							
Copper, sheet, strong ..	per ton	88	0	0		—	
Iron, Staffs., bar	do.	7	0	0	9	0	0
Do Galvanised Corrugated sheet ..	do.	12	0	0		—	
Lead, pig, Spanish ..	do.	16	0	0	16	1	3
Do. do. English common brands	do.	16	10	0		—	
Do. sheet, English, 3lb. per sq. ft. and upwards	do.	21	0	0	22	0	0
Do. pipe	do.	23	0	0		—	
Nails, cut clasp, 3in. to 6in.	do.	12	0	0	13	0	0
Do., floor brads	do.	11	15	0	12	15	0
Steel, Staffs., Girders and Angles	do.	7	0	0	7	10	0
Do. Mild Bars	do.	7	10	0	8	0	0
Tin, Foreign	do.	120	5	0	120	15	0
Do. English ingots ..	do.	125	0	0	125	10	0
Zinc, sheets, Silesian ..	do.	22	10	0		—	
Do. do. Vieille Montaigne	do.	23	2	6		—	
Do. Spelter	do.	18	12	6	19	5	0
TIMBER.							
SOFT WOODS.							
Fir, Dantzic and Memel ..	per load	3	0	0	4	0	0
Pine, Quebec Yellow ..	do.	4	7	6	6	0	0
Do. Pitch	do.	2	15	0	3	13	0
Laths, log, Dantzic ..	per fath.	4	10	0	5	10	0
Do. Petersburg ..	per bundle	0	0	9	0	0	10½
Deals, Archangel 2nd & 1st	per P. Std.	16	15	0	18	0	0
Do. do. 4th & 3rd	do.	9	5	0	14	15	0
Do. do. unsorted	do.		—			—	
Do. Riga	do.	6	15	0	8	10	0
Do. Petersburg 1st Yellow	do.	14	15	0	15	5	0
Do. do. 2nd „	do.	8	15	0	14	15	0
Do. do. Unsorted „	do.	5	5	0	13	0	0
Do. do. White	do.	9	10	0	11	5	0
Do. Swedish	do.	8	10	0	13	10	0
Do. White Sea ..	do.	10	0	0	16	15	0
Do. Quebec Pine, 1st ..	do.	20	10	0	27	0	0
Do. do. 2nd	per P. Std.	18	15	0		—	
Do. do. 3rd &c.	do.	9	0	0	9	15	0
Do. Canadian Spruce, 1st	do.	16	15	0		—	
Do. do. 3rd & 2nd	do.	7	5	0	12	15	0
Do. New Brunswick ..	do.	7	5	0	8	0	0
Battens, all kinds ..	do.	7	10	0	11	5	0
Flooring Boards, 1in. prepared, 1st ..	per square	0	9	9	0	13	3
Do. 2nd ..	do.	0	9	6	0	11	3
Do. 3rd &c. ..	do.	0	8	9	0	11	9

CONTRACTS OPEN.

ST. GEORGE'S (Hanover Square) UNION, London.

The Guardians are prepared to receive TENDERS for the ERECTION of a CHILDREN'S HOME in Milman Street, Chelsea, to be erected from the designs of Mr. Edwin T. Hall, F.R.I.B.A., Architect, of No. 57 Moorgate Street, E.C. Builders desirous of Tendering can obtain bills of quantities, conditions of contract, form of Tender, &c., from the Architect, upon paying a deposit of Three Guineas, which deposit will be returned on receipt of a bonâ-fide Tender. Copies of the drawings may be inspected at the Architect's offices after the quantities are sent out.

Tenders to be delivered to the undersigned not later than MONDAY, the 11th day of FEBRUARY next. The Guardians do not bind themselves to accept the lowest or any Tender.

THOMAS WORLOCK,
Clerk to the Guardians.

DARLINGTON SCHOOL BOARD.
TO BUILDERS AND OTHERS.

Persons desirous of TENDERING for the whole or any portion of the various works required to be done in the ERECTION and FINISHING of a MIXED SCHOOL for 420 children, also an INFANTS' SCHOOL for 270 children, including boundary walls, wrought-iron pallisading, gates, fencing, &c., at Rise Car, Darlington, may inspect the drawings, specifications, and conditions of contract, and obtain bills of quantities and forms of Tender at the Offices of the Architect, Mr. G. GORDON HOSKINS, F.R.I.B.A., Court Chambers, Darlington, from WEDNESDAY, JANUARY 23rd, until MONDAY, FEBRUARY 4th, both dates inclusive.

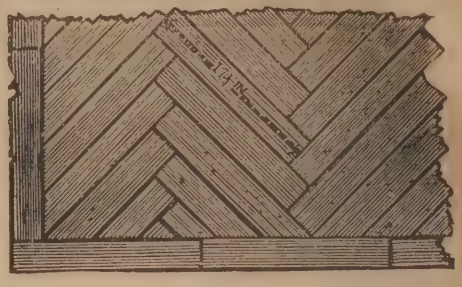
Tenders, endorsed "Tender for Rise Carr Schools," to be addressed to me, and delivered at my Offices before ELEVEN a.m. on TUESDAY, FEBRUARY 5th, 1901.

N.B.—No pledge is given to accept the lowest or any Tender.

By order,
F. RAYMOND STEAVENSON,
Clerk to the Board.

School Board Offices,
Houndgate, Darlington,
January 1901.

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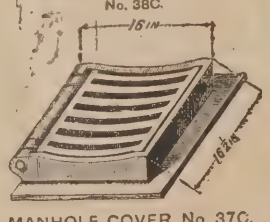
CAST IRON COLUMN.

No 35C.

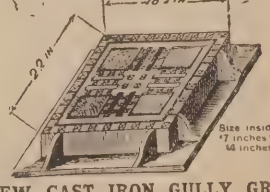


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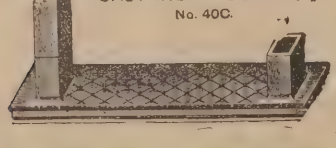
MANHOLE COVER, No. 37C, WITH WOOD BLOCKS, COMPLETE.



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Borough Engineer.

Town Hall,
Barrow-in-Furness,
January 16th, 1901.

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COMPLETE LIST OF CONTRACTS OPEN.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
	BUILDING.		
Jan. 25	Glasgow—Hospital	Parish Council	Thomson and Sandilands, 241 West George Street, Glasgow.
„ 25	Branksome, Dorset—Repairing, &c., Police Station	Standing Joint Committee	County Surveyor, County Council Offices, Sherborne.
„ 25	Dungeness, Kent—Coastguard Buildings	Admiralty	Coastguard Watch Room, No. 2 Battery, Dungeness.
„ 25	Coventry—Post Office	H.M. Commissioners of Works, &c.	Postmaster, Coventry.
„ 25	Bexhill, Sussex—Sessions Court	East Sussex County Council	F. J. Wood, County Surveyor, County Hall, Lewes.
„ 25	Gortlettera, Mohill, Co. Leitrim—Alteration to Church	Very Rev. J. Maguire, P.P.	Hague and M'Namara, 50 Dawson Street, Dublin.
„ 25	St. Mawes, near Falmouth—Coastguard Buildings	Admiralty	Director of Works Department, 21 Northumberland Avenue, W.C.
„ 25	Barrowford, Lancs.—Wall	Urban District Council	Council Offices, Barrowford.
„ 25	Preston, Lancs.—Classroom		T. Nevett and Sons, 41 Fishergate, Preston.
„ 25	Shillelagh, Ireland—Dwellings	Rural District Council	Council Offices, Workhouse, Shillelagh.
„ 25	Whicham, near Silecroft—Church Restoration		Austin and Paley, Architects, Lancaster
„ 26	Castleford—Premises	E. Binks	Garside and Pennington, Architects, Pontefract.
„ 26	Falkirk—Extension		D. Ronald, Burgh Surveyor, Burgh Chambers, Falkirk.
„ 26	St. David's, Pembrokeshire—School Buildings	St. David's County School	D. E. Thomas, Architect, Haverfordwest.
„ 26	Briton Ferry—Public Library and Council Offices	Urban District Council	H. A. Clarke, Council Offices, Briton Ferry.
„ 28	Erith, Kent—Board Offices and Cookery Centre	School Board	Ford, Son and Burrows, 21 Aldermanbury, E.C.
„ 28	Dublin—Artisans' Dwellings	Corporation	C. J. M'Carthy, Architect, Municipal Buildings, Cork Hill, Dublin.
„ 28	Penarth—Bandstand, Shelters, &c.	Urban District Council	E. J. Evans, Surveyor, Council Offices, Penarth.
„ 29	Croydon—Engine-house	Town Council	Deputy Borough Engineer's Office, Town Hall, Croydon.
„ 29	Middlesbrough—Pulling down	Yorkshire Banking Company	Bedford and Kitson, Greek Street Chambers, Leeds.
„ 29	Sheffield—Destructor Buildings		C. F. Dike, City Surveyor, Town Hall, Sheffield.
„ 29	Dartford—Fire Station and Cottage	Urban District Council	W. Harston, Surveyor, High Street, Dartford.
„ 30	Swanley, Kent—School for Children	Metropolitan Asylums Board	Newman and Newman, 31 Tooley Street, London Bridge, S.E.
„ 30	Tredegar, Mon.—Chapel, &c.	Primitive Methodist Church	W. S. Williams, Elmwood, Tredegar.
„ 30	Southwick—Additions to Schools	School Board	Clayton and Black, 152 North Street, Brighton.
„ 30	Pudsey—Five Houses		C. S. Nelson, Architect, Sun Buildings, 15 Park Row, Leeds.
„ 31	Bracebridge—School	School Board	W. Watkins and Son, Bank Street, Lincoln.
„ 31	Insch—Church Hall		J. Duncan and Son, architects, Turriff.
„ 31	Kingsbridge—Board Schools	School Board	T. W. Latham, Architect, Kingsbridge.
„ 31	Llandudno—Hotel Alterations		T. B. Farrington, Trinity Square, Llandudno.
„ 31	Sandgate, Kent—Stores, &c.	Urban District Council	A. R. Bowles, Borough Surveyor, Sandgate.
Feb. 1	Huntingdon—Mortuary	Corporation	Borough Surveyor, High Street, Huntingdon.
„ 4	Burgess Hill, Sussex—Isolation Hospital	Cuckfield Rural District Council	G. T. Hine, 35 Parliament Street, Westminster, W
„ 4	Eastbourne—Electric Lighting Station	Electric Light Committee	Borough Engineer, Town Hall, Eastbourne.
„ 5	Darlington—Mixed School	School Board	G. G. Hoskins, Architect, Court Chambers, Darlington.
	ENGINEERING.		
Jan. 25	London, S.W.—Locomotives, &c.	Delhi, Umballa, Kalka Railway Co., Ltd.	Company's Offices, 17 Victoria Street, S.W.
„ 26	Littlehampton—Waterworks	Urban District Council	H. Howard, Town Offices, Littlehampton.
„ 26	Carisbrooke, Isle of Wight—Waterworks	Corporation of Newport	H. R. Hooper, 16 Quay Street, Newport, I.W.
„ 28	Chorley, Lancs.—Water Mains	Rural District Council	A. Jolly, 9 High Street, Chorley.
„ 28	London, S.W.—Artesian Well	Wandsworth Borough Council	H. G. Hills, Town Clerk, Council House, Wandsworth.
„ 28	Brighton—Electric Tramway		F. T. Tillstone, Town Clerk, Town Hall, Brighton.
„ 29	Wath-upon-Dearne, Yorks.—Acetylene Gaslight	Hospital Board	W. S. Campsall, 19 Figtree Lane, Sheffield.
„ 29	Oldham—Engines, &c.	Corporation Electricity Committee	A. Andrew, Gas Offices, Oldham.
„ 29	Croydon—Gas Engines and Pump	County Council	Deputy Borough Engineers, Town Hall, Croydon.
„ 30	Canterbury—Electricity Plant	Lighting Committee	R. Hammond, 64 Victoria Street, S.W.
„ 31	Cuninghame, Scotland—Heating System	Cuninghame Combination Poor House	W. Gray, 60 Princes Street, Ardrossan.
„ 31	Cardenas Bay, Isle of Cuba—Dredging		United States Consulate, London.
„ 31	Tynemouth—Dynamo	Corporation	Lacey, Clirehugh and Sillar, 2 Queen Anne's Gate, Westminster.
Feb. 1	Sunderland—Electricity Plant, &c.	Corporation	J. F. C. Snell, Engineer, Dunning Street, Sunderland.
„ 1	London, S.W.—Electricity Meters	Battersea Borough Council	Town Clerk, Municipal Buildings, Lavender Hill, S.W.
„ 2	Bradford—Electrical Equipment	Tramways Committee	City Surveyor, Town Hall, Bradford.
„ 4	London, S.W.—Machines, &c.	Middlesex County Council	H. T. Wakelam, County Engineer, Guildhall, Westminster.
„ 4	Glasgow—Railway	Glasgow and South-Western Railway Co.	Engineer's Office, St. Enoch Station, Glasgow.
„ 4	Basford, Notts—Extension of Mains	Rural District Council	G. and F. W. Hodsen, Bank Chambers, Loughborough.
„ 5	Great Yarmouth—Boilers, &c.	Corporation	Preece and Cardew, 13 Queen Anne's Gate, Westminster.
„ 5	Goole—Repair of River Pumps	Urban District Council	G. England, Clerk to the Council, Goole.
„ 6	Brotherton, Yorks—Bridge	North-Eastern Railway	W. J. Cudworth, Engineer, N.E.R. Co., York.
	IRON AND STEEL.		
Jan. 26	Littlehampton—Pipes	Urban District Council	H. Howard, Town Offices, Littlehampton.
„ 28	Chorley, Lancs.—Pipes	Rural District Council	A. Jolly, 9 High Street, Chorley.
„ 28	Northwich Railing	Urban and Rural District Councils	H. Bancroft and Son, 88 Mosley Street, Manchester.
„ 31	Darlington—Fencing		Borough Surveyor, Town Hall, Darlington.
Feb. 1	Dublin—Rails, &c.	Great Northern Railway Co. (Ireland)	T. Morrison, Secretary, Amiens Street Terminus, Dublin.
„ 6	Great Yarmouth—Rails	Town Council	J. W. Cockrill, Borough Surveyor, Town Hall, Great Yarmouth.
„ 6	Leeds—Poles, &c.	Tramways Committee	City Engineer's Office, Municipal Buildings, Leeds.
	PAINTING AND PLUMBING.		
Feb. 4	Manchester—Painting	Lancashire and Yorkshire Railway	Engineer's Office, Hunt's Bank, Manchester.
	ROADS AND CARTAGE.		
Jan. 25	Dartford, Kent—Reconstructing Carriage Drive		City Surveyor, Guildhall, E.C.
„ 23	Birmingham—Materials, &c.	Public Works Committee	City Surveyor, Council House, Birmingham.
„ 28	Leigh-on-Sea, Essex—Street Works	Urban District Council	F. E. Smee, 12 West Smithfield, E.C.
„ 28	Stanley, Durham—Carriageway	Urban District Council	J. Routledge, Surveyor to the Council, Stanley.
„ 30	Culham, Abingdon—Stone	Rural District Council	B. Challenor, 59 Stert Street, Abingdon.
„ 30	Kingston-on-Thames—Roadmaking	Corporation	Borough Surveyor, Clattern House, Kingston-on-Thames.
„ 30	Witton, near Birmingham—Roads, &c.		James and Lister Lea and Sons, 19 Cannon Street, Birmingham.
„ 30	London, S.W.—Materials and Works	Chelsea Borough Council	T. W. E. Higgens, Surveyor, Town Hall, King's Road, Chelsea, S.W.
Feb. 1	Aylesbury—Granite	Highways Committee	R. J. Thomas, County Surveyor, County Hall, Aylesbury.
„ 2	Haslemere, Surrey—Making-up Roads	Rural District Council	E. L. Lunn, 36 High Street, Guildford.
„ 2	Norwich—Granite	County Council	T. H. B. Heslop, County Surveyor, Norwich.
„ 2	Sleaford, Lincs.—Granite	Urban District Council	E. Clements, Urban Council Office, Sleaford.
„ 6	Balby-with-Hexthorpe, Yorks.—Street Works	Urban District Council	R. A. H. Tovey, Clerk, Council Offices, Balby.
	SANITARY.		
Jan. 25	Aston Manor, Birmingham—Sewer, &c.	Urban District Council	Surveyor's Offices, Council House, Aston Manor.
„ 26	Godstone—Sewage Disposal	Rural District Council	Fairbank and Son, 13 Lendal, York.
„ 28	Birkenhead—Removal of Nightsoil	Corporation	Chief Inspector of Nuisances, Town Hall, Hamilton Sq., Birkenhead.
„ 28	Dartford—Stoneware and Iron Sewers	Rural District Council	G. H. Tait, Engineer to Council, Lowfield Street, Dartford.
„ 28	Dartford—Pipe Sewers and Pumping Station	Rural District Council	G. H. Tait, Engineer to Council, Lowfield Street, Dartford.
„ 28	Henfield, Sussex—Drainage	Steyning West Rural District Council	E. Cripps, Council Offices, Hams Road, New Shoreham.
„ 28	Hastings—Sewer	Corporation	P. H. Palmer, Town Hall, Hastings.
„ 28	Leigh on-Sea, Essex—Sewers	Urban District Council	Bailey-Denton, Son and Lawford, 9 Bridge Street, Westminster.
„ 29	Dartford—Pipe Sewers, &c.	Rural District Council	W. Harston, Surveyor, Sessions House, Dartford.
„ 31	Wanstead, Essex—Scavenging, &c.	Urban District Council	Clerk's Department, Council Offices, Wanstead.
Feb. 4	Abridge, Essex—Drainage Works	Ongar Rural District Council	W. N. Jarvis, Surveyor to the Council, Ongar.

COMPETITIONS OPEN.

DATE OF DELIVERY.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	BY WHOM ADVERTISED.
Jan. 18	Hindley—Public Offices	£50, £25, £10	A. Holden, Surveyor, Hindley.
„ 28	Tanfield, Tantobie—3- and 4-roomed Workmen's Cottages	£10, £5	R. Heslop, Surveyor to Urban District Council, Dean View, Burnopfield.
Feb. 13	Bristol—Alterations, &c., to Petty Sessional Court	£100, £50	P. Addie, City Valuer, Market Chambers, Bristol.
„ 14	Ballarat, Australia—Statue		J. W. Nedwell, Hon. Sec., Soldiers' Statue Fund, Ballarat, Australia.
March 25	Basford—Sewerage Scheme		C. J. Spencer, Clerk, Public Offices, Basford.

THE BUILDERS' JOURNAL & ARCHITECTURAL RECORD

JANUARY 30, 1901.
No. CCCXII

EFFINGHAM HOUSE,
ARUNDEL STREET,
STRAND, W.C.

In Memoriam.

A SILENT figure crossed the portal of the Hall of Many Monarchs and stood on the girdle of the earth. An expectant world was hushed to hear his voice. "The Queen is dead," he cried, and the winds took up his cry and carried it o'er mountains and hills, o'er rivers and valleys, to the uttermost ends of the land; whilst lightnings flashed the sad news from sea to sea. The sky was darkened, and amid the thunders of celestial drums, which beat out their mournful music with resistless melancholy, the people lay benumbed with grief. For Victoria the Well-Beloved was the greatest of great queens, a wise and sympathetic ruler, a gracious sovereign, a good mother and a pious woman. Her Court was free from those associations and habits which debase a Court, and her Ministers' actions were strongly influenced by the nobility of her character. But the most beautiful feature in her great and illustrious career was perhaps the manner of her private life: no royal scorn here for the simple and the humble, no feverish straining after petty pleasures, but an ever-ready hand to help the needy, and a heart in tune with the desires of her people—hers was the individuality of a good woman. Now the feeble spark of life is passed beyond the pale of earthly things, across the Mystic Border-line betwixt Humanity and the Great Hereafter. All homes throughout the length and breadth of the land are darkened by a great cloud of sadness, and a nation awaits with silent reverence the mighty pageant of Victoria's funeral: that day shall be historic when the dead monarch shall be slowly borne away from the shore of her little sunny isle, borne between the symbols of her wondrous puissance, walled in on either side by the mighty leviathans of many Powers: then to Britain's capital, where the silent people shall view, bareheaded, the corse and cortège pass: and finally to the royal resting-place, where the great Queen shall be laid in peace, beside the Consort she loved so well. To quote those well-known lines of Tennyson:

> Her court was pure; her life serene;
> God gave her peace; her land reposed;
> A thousand claims to reverence closed
> In her as Mother, Wife and Queen.
>
> And statesmen at her council met
> Who knew the seasons when to take
> Occasion by the hand, and make
> The bounds of freedom wider yet.
>
> By shaping some august decree,
> Which kept her throne unshaken still,
> Broad-based upon her people's will,
> And compass'd by the inviolate sea.

The book is closed and the last page is stained with a people's tears. Now a new book opens, one bright with hope and illumed by the traditions of a glorious past. May Edward VII. tread the royal path that lies before him with as firm a purpose as his illustrious mother; may he emulate her virtues, carry on her great work, and wield the sceptre of government with an equal wisdom, ever keeping before his eyes those principles of truth and duty which made the reign of Victoria the Well-Beloved so glorious and so honourable.



The Royal Mausoleum.

THE mausoleum at Frogmore was built by Her Majesty in 1862 as a fitting shrine for "Albert the Good." It stands in Windsor Park, well within sight from the South Terrace of the Castle, but it is never open to the public. Only on December 14th, the anniversary of the Prince Consort's death, after the memorial service for the Royal Family had been held, was it the custom of the Queen to permit the families of the Royal tradesmen at Windsor, and a few other privileged persons, to view the interior. The general appearance of the building, and its beautiful surroundings of forest trees and deciduous shrubs, may be gathered from our illustration. It is built of Portland stone and Aberdeen granite, its superstructure based on a massive foundation of brick vaulting, especially designed, with numerous air-holes to ensure ventilation and to avoid damp. The mausoleum is constantly warmed, but the site is an exceedingly damp one, and not all the lavish care bestowed upon the building has served to prevent some injury, owing to the moist nature of the ground. The building, which on plan is like a Greek cross, was designed by Mr. Humber and Professor Grüner, names which carry no meaning to the majority of persons nowadays, and the contractors were Messrs. Dines and Co., of Pimlico. From first to last a sum amounting almost to a quarter of a million sterling has been expended here in the building and its decoration. The octagonal tower, springing from the centre of the cross, is conspicuous in winter time from the Long Walk, its copper roof turned to a brilliant green by the action of the weather. Its height is 83ft., the whole of the building 70ft. square. Mounting the steps, and reaching the terrace on which it stands, the entrance is gained through a triple arcade, supported on columns of Cornish granite. Immediately in front, over the doorway, is a bronze tablet with an inscription in Latin to the effect that this sepulchre was erected to Prince Albert by "his mourning widow." Elaborate brass gates conduct to the eastern arm of the cross, and open up a view of a great central blue dome, spangled with golden stars, beneath whose canopy light comes through the windows in each of the eight faces of the tower. Directly under the dome, resting on an inlaid floor of polished marble and a black marble plinth, stands the great Aberdeen granite sarcophagus, containing the body of Prince Albert. At each corner kneels the bronze figure of an angel, with clasped hands and outstretched wings, designed by Baron Marochetti, while on the lid of the tomb lies, at full length, the effigy of the Prince, sculptured in white marble, and representing him in the uniform of a Field Marshal, with the mantle of the Order of the Garter draped around. This fine work was the last ever executed by Marochetti. It was on December 17th, 1862, a year after Prince Albert's death, that the mausoleum was consecrated. On the following day the body was removed from St. George's Chapel, where for twelve months it had been resting; but it was not until 1868 that it was placed in the sarcophagus, which, half-filled all these years, has since been awaiting the present sorrowful eventuality. A vacant space on the lid, beside the effigy, also remains. No other tomb is placed in the mausoleum, the Duke of Albany and the Duke of Clarence and Avondale lying in the Albert Memorial Chapel in Windsor Castle. Here, on Saturday next, the remains of the Queen will be interred with that ceremony which befits a sovereign of our Empire.

SKYLINE.*

BY HASTWELL GRAYSON, B.A.

MANY many years ago Sir Walter Scott's poetic fancy led him to advise intending visitors to Melrose Abbey to "go visit it by the pale moonlight." There is a tradition that he did not practise what he preached, for on the only occasion when he went to "view fair Melrose aright" a passing cloud obscured the moon altogether. But however that may be the idea in the poet's mind seems to have been that in a strong light the abbey lost some of its charm. Stripped and ruined, roofless and ivy-clad, the architecture had perished and little remained except sentiment and a skyline. The buildings which we build to-day are not likely to have much sentimental value in our lifetime, but nearly all can have a skyline from the commencement. Scott is right—a skyline, like sentiment, has greatest power in a pale light. Defects arising from poor detail, meaningless features, and the poverty of materials, are gradually lost as the light fades, but the outline becomes more manifest. So true is this that Ruskin advises the young architect to try and conceive his buildings "as the dawn lights them and the dusk leaves them."

Except indirectly, the ordinary text-books hardly allude to the importance of skyline, and I cannot find that anyone has ever tried to analyse the why and the wherefore of an effective silhouette. I propose after tracing the influence of the earlier and greater styles of architecture in outline to venture on a few theories for which I cannot quote any authority.

Mr. Ingress Bell has pointed out that the ancients for various reasons paid little attention to skyline. The earlier Egyptians were content with mass, and were satisfied if their buildings were impregnable to time. Later they devoted much thought to colour, while still chiefly relying on mass. The Greeks, perhaps consciously, kept their outlines exceedingly simple in order that nothing might detract from the sculpture and detail. The pediment was their sole concession to outline. The Romans went a stage further; they invented the circular plan, which soon led them to build domes. But they designed them to suit the interior without caring apparently how clumsy the exterior might appear. The first really conscious efforts to obtain good skyline are found in Constantinople, but whether this is the work of Romans or Turks I cannot say. The flèche appears to be part of Hadrian's design; yet, on the other hand, the minarets adjoining the church look like later additions. These additions give much finish to the composition, and the height of the minarets counteracts the heaviness of the domes and semi-domes. This combination was perfected by the Turks in Cairo, where the minarets were made part of the church itself, and not merely adjuncts.

The Christian architects of the Middle Ages worked on entirely original lines. They made a belfry (or rather a bell-tower) an integral portion of their design, secondly, they allowed the exigencies of their construction to become manifest against the sky, and thirdly, they provided their buildings with roofs that were distinct from the vaulting. Perhaps the most important point is the second one: to counteract the thrust of the vault they built pinnacles and parapets, which gradually became the dominant features in the outline. In the later days of Gothic art the roof was entirely lost to view and the skyline resolved itself into rows of small pinnacles, above which soared the spire, itself but a pinnacle, of a larger and more elaborate character.

The Renaissance brought another change. As Mr. Bell says, "the Cathedral of Florence and its unrivalled campanile are amongst the most lavishly ornate buildings in the world, but their enclosing lines are simple and severe. Only on the summit of the vast dome does the almost universal instinct assert itself in a delicately designed lanthorn as *finish*."

At this period architecture completely changed its character. Throughout the Middle Ages it had been the handmaid of religion; it now became the servant of the people. The labour, the genius and the energy which had been lavishedly devoted to the service of God, and to those who proudly claimed to be His earthly representatives, were diverted and made to minister to human wants and comforts. A new feature, infinitely more influencial than the pinnacle, became universal. How the ancients warmed themselves, or indeed whether they ever were warm in winter, is a mystery to-day. We know that they had vast kitchen fires, we also know that, except where smelting works existed, the forests supplied fuel enough for the wants of the people. From the sixteenth century the use of the flue gradually spread downwards from the king's palace until to-day almost every room that is built is signalled above the roof by chimney and pot. In the course of centuries the architectural genius of the world has practically conquered the difficulties of grouping flues and ornamenting the stack containing them. Future ages have but one task left—that the crowning one—the chimney-pot.

First let me deal with the old adage, "a spire for a plain and a tower for a hill." It is an excellent piece of advice, but, like the old copy-book maxims, it does not go far enough and leaves the half untold. I should like to expand it thus: All buildings—and especially churches, which are generally isolated—are affected by their environment, and a contrast with their natural (and in a less degree with their artificial) surroundings is most likely to prove successful. Let me cite two instances. Have you ever rowed across one of the English lakes and noticed the old cottages and farmhouses that here and there border the banks? They are very squat and square, have no bay windows, the roofs are covered with large stone slates laid to a flat pitch, there is very little light and shade about them; and yet they look very well. Again, have you ever walked down Princes Street, Edinburgh, and noticed the happy effect of the National Gallery with its long low flat roof? In each case the success is due to contrast. The fells that cluster round the lake and the little promontories and tiny bays that make the shore provide a feast of varied beauty in which the farmhouses, through no effort of their own, are included. If their builders had had a little more ambition they would have tried to compete with Nature, and failed. Ruskin, who as a young man loved to lay down the law with many superlatives and much alliteration, ventures to assert that "a single villa will often mar a whole landscape and dethrone a dynasty of hills." In the second example mentioned the long roof of the gallery helps to emphasise the rugged grandeur of the castle and, on the other side, the height and gracefulness of the Scott Monument.

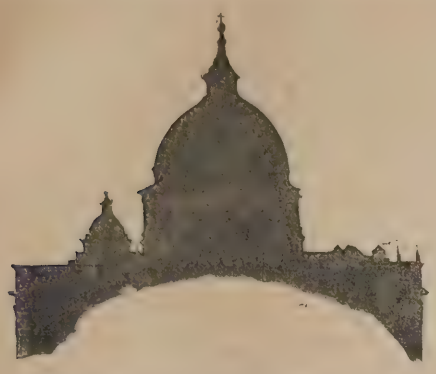
A tower, because it has a simpler outline than a spire, shows to greater advantage where Nature is bolder. A spire looks best standing by itself in a plain high above the tree tops



GODSTOW OLD BRIDGE, OXFORD.

Emphasis at Intersection: Subordination of the Vertical.

* A paper read before the Manchester Society of Architects on December 13th, 1900, and before the Liverpool Architectural Society on December 17th, 1900.



ST. PETER'S, ROME, FROM THE VATICAN GARDENS.

and the roofs. As a general rule, the eye in a flat country is grateful for every kind of landmark, towers and spires, windmills and trees. In Liverpool we have an excellent example of how even a factory chimney can give a focus to an otherwise dull landscape. The north end of the town, as seen from the river, presents a monotonous line of warehouse roofs rising steadily one above the other as they recede from the river — so monotonous that the Vauxhall chimney is a most welcome relief.

The value of a contrast in skyline is very curious, because the exact opposite is the rule with materials. Nothing looks worse in a rocky country than red bricks (except red tiles), and half-timber work is generally fatal where trees are rare.

My second theory is almost a corollary of the first. It is this: Where two or three long lines meet, it is well to emphasise the point of intersection. By long lines of course I mean such as are seen in perspective: the lines may be caused by the ground, by the walls, or by the roof. This is the reason why a finial helps nearly all gables, whether they have bargeboards or copings, why a flèche sits so nicely at the intersection of several roofs, and why a turret in the corner of a quadrangle appears so snug and appropriate.

But nowadays in ordinary practice we depend for our skyline almost entirely on chimneys. Partly because the use of cut and moulded brickwork has become so general, and partly because clients are now most outspoken about downdraughts, chimney stacks have of late years been growing in height. For efficiency and for economy they are best when built on the ridge; not on the eaves. For these reasons alone they would naturally appear to greater advantage. Chimneys rising direct from the eaves, unless attached by a gusset roof to the main roof, look unnaturally thin and weak, especially if "supported" by an iron tie. The effect is much improved if on plan they project considerably. A good building can be spoilt in many ways by its chimneys. They can be too numerous, which suggests bad planning; they can clash with other features and make the outline confused; they can be too high, which makes them look extravagant and the rest of the building too small; and—perhaps this is the worst of all—they can be made too small, a fault which leads to those fearful objects known in the trade as patent cowls.

I have a few illustrations of most of these points. The Gothic mansion at Narrow Water exemplifies the reverse of my theory: there are no long lines in the view, therefore the architect worked on the principle that "many a mickle makes a muckle," and emphasised the intersection of all his lines; and to make matters worse he has made a special feature of every single flue. The result is a perfect jungle of pinnacles and turrets, chimneys and finials—an awful waste of money and an architectural failure.

The exact opposite is seen in the sketch of the Nunnery at Salford Priors. There is such an absence of chimneys as to give the house the appearance of being uninhabited. Perhaps the nuns have no fires; in any case, they must find their home rather chilly, as it is built on the principle "of Hardwick Hall, more glass than wall."

An almost perfect skyline, to my mind, is that of Fytton Manor House. If it has a fault it is that the main roofs do not mitre on the same level. The charm of the contour appears to arise from the happy distribution of the parts and not from the parts themselves. Each one leads upward and onward to the next. Even the conservatory seems to fit against the gable and help the length of the façade.

The cottage at the Godstow old bridge follows somewhat similar lines. A chimney marks each end of the ridge; on one side it is built in and almost hidden by a low gable, while on the side shown in the photograph the chimney boldly projects, and is buttressed by a hipped lean-to roof. The whole makes a very complete and satisfactory outline, which gains very greatly by being duplicated by reflection in the river. That is a point which should be borne in mind by anyone designing a building which will adjoin a sheltered piece of water.

A further instance of a chimney successfully completing a ridge is seen at the Hall at Balliol. The flues from the men's rooms adjoining are incorporated into the end wall of the hall, and serve to emphasise the point where the roof meets the coping—a point which would have appeared characterless without them, for no finial could have finished a gable of that size. The bareness of the other end is masked by a gable over the high table bay flanked by the chimneys from the kitchens.

The sense of bareness which Balliol avoids is very noticeable in the Rathhaus at Molsheim. The apex stones and finials on the gables are lost in the vast expanse of roof. The coping also is far too thin, the result being that this great roof, which from its very size should have been commanding, becomes featureless and disappointing.

My third point is the value of a complimentary feature. This is perhaps most noticeable in Classic work. Think of the great dome of St. Paul's and the two western towers: how much they help one another and assist us to estimate the size of the dome. The source of the harmony lies in their resemblance. We call one dome and the other tower; but they both have a domical outline and are unmistakably parts of the same building even when supervening roofs hide any connection between them. Without these western towers the cathedral would have sunk to the level of several well-known buildings, where the dome is everything and the church only the support.

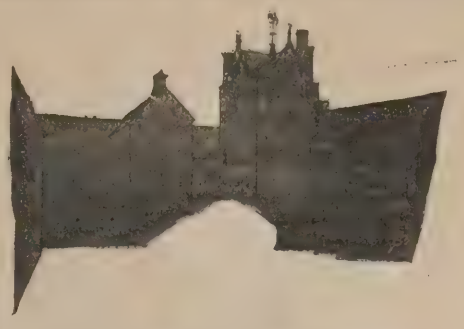
A large round tower gains very much if a turret clings to its side. The French, especially about the year 1500, made a frequent use of this form. If a tower was unsuited to a turret, they always built a second tower near, as at Amboise and Azay-le-Rideau. In the Inglinger Thor Stendal we have another treatment. Here the circular tower does not sit very comfortably on the square base, but it would have been infinitely more out of place without the angle turrets.

Another example of a complimentary feature of a rather different kind can be seen in houses of the F plan—the plan in which a small gable with a slight projection is placed in the middle of the façade and a larger and deeper gable near the end. In an open site the F plan is much more likely to give a good outline than the E, of which the architects of Elizabeth's time were so fond. Yachting men may perhaps agree with me that a yawl looks more dainty and complete and even larger than a boat of the same size which has only one mast.

My last theory is that the vertical portion of an outline should be kept as subordinate as possible. Vertical features are, of course, necessary, often constructional, but if possible they should not be prominent on the skyline.



FYTTON MANOR HOUSE, ST. GERMANS, NORFOLK.



COMBE SYDENHAN MANOR, SOMERSET.

Nature provides us with an example in the stem of the larch tree, Scotch fir, and many others, but she generally contrives to batter the lowest portion and to conceal the upper. I have already pointed out how the conservatory at the Nunnery and the lean-to at the Godstow cottage complete the picture and provide a gradual finish at the base, which is almost as important as a definite feature at the apex. The base to Cæsar's Tower at Warwick Castle is almost double the size of the vertical portion. Mr. H. W. Brewer, in those wonderful architectural compositions which he has been publishing for the last thirty years, gives many instances of excellent skylines, but they are all of the upward and onward type: vertical features he has in plenty, but not against the horizon. Mont St. Michel, that grand personification of the Church Militant, has hosts of towers and buttresses which rise sheer up to giddy heights, but with the exception of a small portion of the piers against the great Hall of the Knights, the sublime outline is not the result of high walling. The effect of too much vertical outline can be seen in the Palazzo Vechio at Florence, a building whose tower fits on the main block like the shaft on to the handle of a T-square.

This is as far as my theories carry me. To recapitulate:—In order to obtain a good skyline, it is well to have a marked contrast with the natural and artificial surroundings; to



THE NUNNERY, SALFORD PRIORS.

emphasise the intersection of two or more long lines; to provide a compliment to any strongly-marked feature; and to take care to keep the vertical portion of the outline as subordinate as possible to the inclined.

I endeavoured to satisfy myself that a dormer should have a sharper pitch than the main roof on which it rests, but after some consideration I came to the conclusion that it depends on how much of the main roof is visible. The larger the roof the steeper the better. The dormers may follow the same slope or they may not; in either case they can fit very snugly, provided they are not too long. A very steep dormer which hides too much of the main roof is like a man with a big nose and a receding forehead. It seems to show an unnatural proportion, curious perhaps, but *not* intellectual. We often see dormers of too large dimensions or too near adjoining dormers. That is another instance of failure in proportion. The castle at Hameln has four very large and elaborate dormers which can just find room to balance on the eaves without elbowing each other off. The main roof is quite lost, with the result that the skyline becomes as crowded with large features as that of Narrow Water is with the chimneys and pinnacles.

I remember hearing a story that a pupil once asked Mr. Norman Shaw what pitch he should make a dormer. Mr. Shaw sketched the dormer in freehand. The pupil measured it and finding that the angle was 51 deg. delighted Mr. Shaw



RATHHAUS, MOLSHEIM.

by telling him that it was exactly the same as the Pyramids. The angle of the Pyramids is generally considered to be the acme of perfection—for a pyramid; but it was a mere coincidence that Mr. Norman Shaw's dormer should have the same angle.

One of the blessings for which we have to thank the Gothic revivalists is the reintroduction of the gable. The eighteenth century was all for cornice and coping and a featureless skyline. Pediment is all very well when seen in full elevation, but as to suit that point of view the pitch needs to be very low, the effect is lost in acute perspective. So enamoured however were our great-grandfathers with this flatness that it is very doubtful whether there exists a gable that is more than sixty and less than a hundred years old. So many English towns were rebuilt during the age of the hip and coping that I hardly know an English street of gables, although before Queen Anne lived and died the continuous row was invariably the rule. We have a good many in Chester, but not a street *full* of gables. The streets in some old German towns show what we have lost. No form of roof can give such an endless play of light and shade, such variety of outline, and yet preserve the identity of every building. The market place at Munster contains a large sprinkling of sixteenth and seventeenth century gables. In our English streets we are now getting a few gables, but chiefly where expense is *not* the first consideration. The excellence of large Welsh slates as a covering for roofs of 30 deg. tends to maintain to-day the fashions of eighty years ago. On the other hand, in the thousands of little villas—single and semi-detached—which, like mushrooms, spring up in the suburbs, gables, hosts of little gables, can be seen, but hardly ever a large one. A large gable requires to be carefully designed; the small ones only can follow the stock pattern.

I find that Mr. Statham, in his book on modern architecture, comes to the exact opposite conclusion with regard to a street full of gables. He declares that our modern examples are only designed by architects who make a fetish of their skyline; he warns us that there is a risk in the long gutters between adjoining buildings, and adds that the attics under longitudinal ridges are much more uncomfortable than those under cross gables. He ends by recommending flat roofs on town buildings and obtaining a skyline by building some blocks higher than others. A skyline composed of square lumps can look extremely well. I do not think that anyone would deny that who has sailed up New York harbour and seen from three miles or so—not less—the grouping of the sky-scrapers; but to see a row of square lumps every time you look along the street is quite another matter, and surely it is just as difficult to construct a flat roof as a gutter, and the flat roof is more costly, at any rate in the City of Liverpool, where the Health Committee have decided that such a roof is an outside wall within the meaning of the Act, and must therefore be constructed of brick, stone, or other incombustible material.

The superstition that uniformity is the perfection of architecture still lingers to spoil many a skyline. The fallacy is manifest. A building can only appear uniform from one particular point of view; if that point is the only one, or if the great majority of people can be induced to view it from there, then uniformity becomes ideal. Vanbrugh carried the principle to its logical conclusion in the great carriage-drives which lead up to his country houses. Some of our public buildings, and many abroad, have a large place in front and converging streets beyond it. Under such conditions uniformity can be seen to proper advantage. But on a site with a greater width than the open space in front, or on one approached sideways or diagonally by a principal thoroughfare, uniformity often leads to disaster. One half of the building blocks the view of the other half, the balance of parts is lost or distorted, and features become prominent (such as the roof behind the pediment) to which little or no attention has been given. If more thought were given to large buildings they could be designed to look their best from the points from which they are most often seen. The tower at the Brussels Law Courts, although by itself most majestic and monumental, appears foreshortened and narrow from the square opposite the main entrance, and cannot be properly seen from any point within a mile. It looks its best from the rising ground two or three miles beyond the lower tower. Considering these circumstances we may fairly ask, Was the tower worth the great cost?

Let me close with a sentence from Mr. Ingress Bell: "In a building the skyline is the most important line, for the relief of solid against solid cannot be so sharply defined as the relief of solid against vacancy, and the play of light and shade, which we can give to our façades, is as nothing to the contrast of their dark margins with the clear air above."



NARROW-WATER HOUSE, NEAR NEWRY. "Fuss."

R. I. B. A.

PRIZE DRAWINGS, 1901.

THE annual exhibition of the students' work in the competitions of the Royal Institute of British Architects, which closed on Saturday last, afforded evidence of much industry, and some matter for reflection. There has not been such a large muster of the forces architectural for a considerable time.

The popular subject this year without question has been the Tite Certificate and £30 for travel in Italy, a moderate ambition established to specially foster the study of Italian architecture. It is a matter for regret that the object of the prize is in a large number of instances entirely ignored by the competitors and weird and strange wanderings of fancy are exhibited. The subject of the study was "An Entrance Gateway to a Public Park." This tempting project elicited twenty-six more or less commendable efforts. The prize, as already announced in our columns, has been awarded to the design under the motto "Corona" (W. Fairbairn), whose conception fulfils the object of the founder. The drawings are in pencil, feelingly executed and delicately tinted in lampblack: they are carried out in the Corinthian order. In general character the design is somewhat commonplace, being of the triumphal-arch form, and it would be entirely orthodox were it not for the somewhat incongruous introduction of Jacobean elements into the sculpture; but the whole set out is most commendable. Ten guineas is awarded to the clever and original design "St. George" (Ralph Knott); a double colonnade flanks the entrance, an advantage not possessed by the prize design, which in this respect looks somewhat thin. This is a common error into which nearly all the competitors have fallen. The design is somewhat worried by the over-verticality of the massive iron grille which entirely fills up the intervening spaces between the columns. The equestrian figures are rather dwarfed, and the perspective would be improved by the elimination of a questionable sky effect. The drawings are rigourously executed, and there is evidence of power in the representation of the sculpture and decoration, though the former suffers considerably from violence of form. Honourable mention is accorded to "Marble Arch" (W. A. Mellon), the most ambitious of the three designs selected, and perhaps of any hung; but the design is full with a big idea of scale which is an important element absent from a large number of those exhibited. The attic of the building, however, is very crude and

unfinished. The whole is carefully worked out, although the draughtsmanship leaves much to be desired.

"Le Nord" misses the idea in the exuberance of free treatment of nondescript. "Civis" is a simple Classic design with a rather elongated treatment of arcade having segmental heads. "Pencil" is certainly among the most interesting sets of spirited drawings, and an excellent sketch is included; it exhibits knowledge of what the author is doing. "Fiori" has good points, but it is a fine conception sadly marred by the view, which does no justice to the design. "Fiori" should know and can do better with such a design!

"Alfio" exhibits a good perspective, but "Boadicea" is rather stage-struck. "Nep," "Spes" and "Rus in Urbe" have all worked hard. The last-named has a great monumental frieze which needs more plain surface. The design under the device "Lion" is one of the best in the room: it exhibits good, clear, ink line-work and is of pleasing and dignified architectural character. The author has certainly scored by recessing his colonnade, which would have a fine effect; it is utilised in a practical manner as a pathway. The perspective does the design scant justice, and is blotted with vagaries, wormy skies and unhealthy trees, which neither inspire admiration nor advance the author's reputation; but it makes one wonder at the preference of uncanny and questionable impressions for simple nature.

Twenty-two competitors entered for the Soane Medallion and £100. A worthy subject was set for this important studentship—a design for a "Club House in a Large City." A similar subject was set in 1882 It failed then, although an award was made. It has failed still further in 1901, no award being made, though an honorarium of thirty guineas is granted each to "Ars" (M. J. Dawson), "Hiawatha" (H. Munro Cautley), and "Ionic" (J. B. Fulton). "Ars" is noticeable for a softly-tinted perspective and fairly good plan. "Hiawatha" submits a generally careful set of drawings, and the same may be said of "Ionic," in which Mr. Fulton has moderated his imagination and mannerisms in an excellent, if somewhat overwrought, set of designs.

The reason of the competitors' failure is not far to seek, and the Royal Institute has done wisely to mark its displeasure at the weak spot, which, as in 1882, is the plan. No one seems to have enquired what would be the requirements of working a club of even modest dimensions. Criticism would therefore entail an exposition of the planning of a club. "Ultimus" shows good work; "Thistle" a free perspective; while "Thor" is an echo of 1882 in the line of the perspective. "Q. E. F." has a softly-tinted perspective, which is not improved by the curved bay windows. A number of the designs ought not to have been submitted; they take up valuable space, which the crowded gallery can ill afford.

In the domain of construction the Grissell medal and £10 10s. goes to "Pons Asinorum" (Edwin Forbes) for an excellent design, the only comment being that it would look almost as well in stone; we think that it should be unmistakably wood; this can certainly be said for the pleasing and simple lines adopted by both the authors of the designs marked respectively "Shingle" and "Forward." Fifteen other competitors of varying merit responded.

The competition for the Pugin Travelling Studentship is not so keen this year, the conspicuous feature being the absence of distinctive measured work and what might be termed practical studies. H. W. Cotman justifies his position as Student by his large collection of somewhat small studies drawn with considerable power and feeling, the character of which savours somewhat of the Architects' Note-Book; the sketches have certainly been made with the object of study and investigation. Mr. Cotman submits some measured work from Norwich cloisters. A. J. Pitcher and J. Forbes-Smith are honourably mentioned. The former has interesting measured work from Tewkesbury Abbey and Malvern Priory and the latter a full and conservative display with much careful and painstaking work. The most distinctive and interesting feature of the competition, and perhaps of the whole exhibition, are the vigorous and powerful pencil sketches of Shirley Harrison, and they deserve longer notice than it is possible to give here. It is a pleasure to see such strong artistic individuality linked to architectural study. Mr. Harrison's exhibit is most attractive. Frederick Horth has a large and varied display, including some good colour-work from Antwerp. J. C. Cook shows a sketch of Westminster cloisters "virtually untouched," but why proclaim in blacklead this virtue, and why ever retouch a sketch? Mr. Cook, however, shows good powers of work. Heaton Comyn, C. B. Pearson and Harry Phibbs make up the number of competitors in this interesting struggle.

The Owen Jones Studentship requires a notice to itself. Six competitors entered and as anyone of them would have made an excellent Student the selection must have been somewhat difficult. Hervey Rutherford, who is the prizeman, has an excellent collection, beautifully drawn. Ramsay Traquair runs him very close and is awarded a medal, while E. Bennett has honourable mention; the latter is not so strong in the examples of old work he submits, but his original designs of colour work, especially of the yacht, have called forth much enthusiastic comment.

The measured drawings are interesting but have not this year risen to the high level of some former years. The silver medal and £10 10s. goes to "Stafford Knot" (Lawrence Bright) for an admirable delineation of Kirby Hall; £5 5s. to A. Wyatt Papworth for that strange building, St. John's, Westminster; and a similar award to H. F. Traylen for drawings of Burghley House, which seem to lack a really good plan. "Semper Fidelis" has an excellent set of that most interesting building, the Guildhall at Exeter.

At St. Matthias's Church, Earl's Court, S.W., a memorial to the late Rev. J. P. F. Davidson, vicar of St. Matthias, is to be erected, in the form of a lofty screen on the present low wall crested with metal work which separates the chancel from the nave. A great many of the subscribers were in favour of a rood screen, but in the present uncertainty of the law on such matters, chancellors in different dioceses taking opposite views and deciding according to their personal predilections, it was considered useless to apply for a faculty for a rood. The memorial screen is to be of oak, light and open, so as not to interfere with the view of the altar and stained east window, and designs are in course of preparation. The memory of Mr. Davidson will also be perpetuated in the church by new choir stalls and the adornment of the pulpit with carved work.

GLASGOW ROYAL INFIRMARY COMPETITION.

Action by the Glasgow Institute of Architects.

WE have received from the Secretary of the Glasgow Institute of Architects the following copy of a letter addressed by the Institute to the Chairman and Managers of the Glasgow Royal Infirmary:—

Recognising it to be your earnest desire that the Infirmary, when reconstructed, should conform to the most modern standards of design in this class of building, and that the subscribers and the general public have a right to expect this, we, the Glasgow Institute of Architects, as a body of technical experts in such matters, feel it to be our duty to state that, in our opinion, this result will not be achieved if the reconstruction is proceeded with according to the plans selected by your sub-committee in the recent competition. We attribute this failure not to any lack of zeal on the part of your committee, or of ability on the part of the competing architects, but mainly to the manner in which the competition was initiated and carried through, and that in the following respects among others:—

(1) That along with the printed conditions provided for the competition there were issued two sets of sketch plans as indicative of alternative arrangements which the sub-committee recommended, and which were stated in the accompanying report to be drawn by or under the direction of two members of the sub-committee respectively. (2) That a Jubilee block to be situated on a particular part of the site was insisted upon as an integral part of the scheme.



OF BALLIOL COLLEGE, OXFORD.

The results of these elements in the conditions were:—

(*a*) That the competitors and the assessor were hampered in the exercise of their individual judgment as to the main points of importance in such a building, namely, the distribution of the various buildings with respect to each other for convenience of working and of all for the freest access of sun and air.

(*b*) That the competitors were placed in the invidious position that, in the event of the schemes recommended by the committee not proving themselves to be in accord with their judgment and experience, they were bound, in departing from them, to meet with disfavour from those influential members of the committee who would enter upon the examination of all the plans with minds necessarily biassed in favour of those which they themselves had put forward, while reserving their position as judges.

(*c*) That as the result, the proposal that plan E be accepted, which became the finding

of the meeting, was moved by the gentleman who was actually the author of the scheme which was adopted and worked out in detail by this competitor.

(3) That neither of the sketch plans issued are in accord with the present-day principles of hospital design, as might indeed be expected, seeing that their authors have not enjoyed the training which would qualify them as surgical, medical, or architectural experts; that, in fact, the plans are in many vital particulars inadequate and out of date, and that these faults are naturally displayed equally in the selected design, which is but an elaboration of one of them. A corroboration of this assertion with regard to the radical faultiness of the plans in question is furnished by the fact that six out of the ten competing architects found it necessary, in spite of risk of possible consequences already alluded to, to entirely throw over the schemes furnished to them, and that among this number are found all the four architects from outside of Glasgow (two from London and two from Edinburgh) who were presumably invited specially on account of their knowledge of hospital design.

Such being the opinion of the Institute after a very mature and careful consideration of the whole subject, we would most earnestly urge the managers, before committing themselves and the public to the erection of any portion of the building, as designed, to have the plans submitted to one or more independent hospital authorities of recognised and outstanding position for consideration and report.

Apart from the all-important question of the erection with the public funds of an entirely adequate and modern hospital, we, the Institute of Architects, feel it necessary to lodge a protest against the setting-aside by the sub-committee, without any reason given, of the award of the professional assessor, Dr. Rowand Anderson—the more so that a simple majority of one was considered sufficient to overturn his judgment—as liable to prejudice the success, alike for promoters and architects, of future competitions in Glasgow. And we have further to state that the erection of a Jubilee block, such as is proposed, seven storeys high, and in the position selected, will, if proceeded with, dwarf and irretrievably injure for all time the external appearance of the cathedral. The foregoing statements represent the unanimous finding of the Glasgow Institute of Architects at a meeting specially called to consider a Report of the Council on the question, and as the matter is not only one of the greatest public importance but of extreme urgency, owing to the proposal of your sub-committee to proceed at once with the erection of the northern block, it has been communicated to the public press at the same time as it is submitted, with our earnest prayer for its consideration, to yourselves.



THE KAJEN, HAMBURG.

Correspondence.

Lightning Conductors.

To the Editor of THE BUILDERS' JOURNAL.

LONDON, E.C.

SIR,—While agreeing with the writer of the article on this subject in your issue for January 2nd that cases of damage by lightning to buildings supposed to have been protected by conductors are far more numerous than they should be, I consider that the remedy he appears to advocate, far from preventing such occurrences, would tend to make them more frequent. Unfortunately the subject of protection against lightning is often supposed to be a very simple matter, whereas it is a most complicated subject. Some of the misconceptions which I consider are largely responsible for the errors in practice are indicated in the article in question and foster the ideas (1) that lightning is a "fluid" stored up in a thundercloud; (2) that the only problem is to carry this "fluid" away without obstruction; and (3) that lightning conductors attract lightning. Other remarks to which I must take exception are that the practice of using copper chains for conductors has more or less survived; that a drain can be used to obtain satisfactory "earth"; and that coke is used for the purpose of retaining moisture. I must also object to lightning being termed erratic, if by this it is intended to imply that it follows no laws. These little misconceptions which, unfortunately, are not confined to architects, are responsible for many of the cases of misapplied and faulty conductors, and the consequent failure of so-called systems of protection. It would be as well if architects and others responsible for buildings thoroughly understood the action of lightning and the means necessary to ensure freedom from damage, but no one could expect to master the subject without devoting many years of study to it, and there are already so many subjects of importance which it is absolutely necessary for architects to know that I think very few would be able to spare the time for what is, in my opinion, the most difficult subject connected with architecture. I have seen specifications by architects which have left nothing to be desired; but, on the other hand, I have seen many in which (apparently as a result of some study) extraordinary pains have been taken, and extra expense incurred, to make the conductors almost useless. This question is one more than any other for experts, and why, therefore, should an architect take trouble and responsibility when by leaving the matter entirely in the hands of a specialist in whom he has confidence he can avoid blame in the event of a damage which may have very serious consequences. One fact is certain—any structure can be rendered absolutely proof against damage by lightning by the application of a proper system of defence, but safety cannot be gained without a thorough knowledge of the subject.—Yours truly,

ALFRED HANDS.

To the Editor of THE BUILDERS' JOURNAL.

SIR,—I am much obliged to Mr. Hands for his criticism of my article and have carefully read his letter with a view to ascertain what precautions he advocates against possible accidents; but unfortunately the result is negative. Mr. Hands pithily remarks: "One fact is certain—any structure can be rendered absolutely proof against damage by lightning by the application of a proper system of defence, but safety cannot be gained without a thorough knowledge of the subject." Thus he ends his letter, just as I was hoping to glean what was this "proper system of defence." Is knowledge in this important matter like a patent medicine, in the hands of a few and only to be obtained by going to a particular place for it and then accepting in faith whatever is given us? There are other points in Mr. Hands' letter I cannot profess to understand, nor can I find that I said anything in my article about lightning being a fluid "stored up in a thundercloud." Every schoolboy knows the primary cause of thunderstorms. As to Mr. Hands' remarks that "lightning conductors attract lightning," what are they for if they do not attract the electricity in their immediate neighbourhood when it gets into dangerous proximity with the building the conductors are intended to protect? Mr. Hands has indeed finished his letter too soon. No doubt he can give the conclusion at another time.—Yours truly,

CHARLES E. SAVERY.

Quarry Notes.

Effect of the Sun on a Monument.—At Indianapolis, U.S.A., is a soldiers' monument which is the chief pride of that city. The huge mass of stone sways from side to side as the rays of the sun strike it. In the forenoon, when the sun is shining on it, the monument bends to the west, because the stone composing the east walls are expanded by the heat and tend to throw the structure toward the west. At noon it leans toward the north. In the afternoon it leans toward the east. The variation is slight, but it exists. On very hot days the bending is more pronounced than on cooler days.

Emery, one of the hardest substances known, comes from the island of Naxos, in the eastern Mediterranean, whence it has been exported for the last two centuries or more. The beds are in the north-east of the island. There are about 300 men engaged in the trade, all of whom have to be married. The material is much too hard to be dug out or even blasted. Great fires are lighted around the blocks till the natural cracks expand with the heat, and levers are then inserted to prize them apart. This system is continued until the blocks are reduced in size to masses of a cubic foot or less, and they are then shipped as if they were coal. There are said to be 20,000,000 tons yet available at Naxos, and the last reported year's export was 3,950 tons.

POSITION OF ARCHITECTURE IN AMERICA.*

THE past year has been one of prosperity for the American Institute of Architects. Our debts are paid and we have a balance on hand in our treasury. We have a journal of our own to represent us before the world, and we have a dignified home, in which we all take the greatest pride, where our growing possessions are handsomely housed and which we hope may for a long time to come serve as a centre of national usefulness and influence.

I now desire to draw your attention to four general subjects. I wish briefly to review the relations of our National Government towards the art of architecture, our attitude towards the youth of our profession, the condition of our professional intercourse with one another, and our position in regard to the art to which we have devoted our life-work.

Relations between Architecture and the National Government.

As a national institution, our first duty is to our country. We all wish to help to our utmost those in authority in their endeavours to make our Government architecture more worthy of the greatness and intelligence of the Republic. In the City of Washington the whole country has an admirable object-lesson. No city is more full of architectural warnings. None better exemplifies in its buildings what is and what is not architecture. One does not need a professional education to feel mortified at the sight of certain buildings that have been thrust upon these beautiful highways in comparatively recent times, though what architecture is and of what it is capable is thrown in the face of the most stolid citizen whenever his eye is turned beyond the crowded avenue to the green park and the long lines of the marble Capitol, and to the great white dome rising grand and noble above them into the morning mists.

As we feel all this very deeply we have reckoned it a great privilege that the National Government has, of late years, consulted with our officers and members regarding work in charge of the Treasury and several other Departments. On these occasions, and at all other times, we have advocated in an unselfish manner all measures that might lead to added dignity in our permanent Government buildings and greater stateliness throughout our National Capital. If great Government buildings are to be scattered about the country, if a boulevard is to traverse the National Capital, if the future buildings for the Government are to be effectively placed in this beautiful city, if the White House, in which we all take such pleasure and pride, needs to be increased in size, we want each and all of these works carried out by the best artistic skill that the country can produce and by nothing less efficient. Nor are we alone in this wish. So far as I have observed, the public aspires to even better things than our best talent produces. They want the very best. Now that architecture is a matter of active interest to great numbers of people in all parts of the country, it ought to be possible to bring to life again the admirable artistic spirit which one hundred years ago planned the City of Washington, and built its earlier and best monuments.

The Institute anxiously desires thus to promote the improvement of architecture controlled by the National Government, and we have an opportunity to see what has been accomplished by the Government, under its new system, in the exhibition that is arranged for this meeting of the drawings for those Government buildings that are in charge of private architects.

Concerning the Supervising Architect's Report.

The current newspapers state that the Supervising Architect of the Treasury has advised in his report that the supervision of Government work designed by private architects be in charge of the Government office. I hope our good comrade will find some other remedy for whatever difficulties there are in applying private practice to public work. An architect's business is to build buildings, not to sell drawings. The designer's supervision, at least of artistic details, is most essential to success, and it is certainly common opinion that all over this country the constructive portions of great buildings are superintended for private corporations by their architects in more energetic and economical ways than those that the Government has usually been able to adopt. It seems to me, therefore, that if the Supervising Architect has had some unfortunate experience, or if the Government demands more exactness and routine than private clients, the employment of a really efficient clerk of works on every building, paid for by the Government and under the control of the architect, in addition to his supervision, would probably afford a full cure for such trouble as may exist.

We never discuss the question of Government architecture without recognising the attitude held from beginning to end by the present Secretary of the Treasury. We have formally thanked him before now, but we cannot forget the broad and liberal views he has always held towards our art. We cannot forget his great and patient consideration of those members of the profession who have dealt with him on these subjects, and the singleness of purpose with which, in spite of discouraging rebuffs, he has held firmly to a large-minded and intelligent course. By his loyal deference to high professional standards, he has set architects an example of how they themselves should regard their own professional dignity. If the present method of conducting the architectural work of the Government produces, as we hope it will, a great result, it will be due in the first instance to Secretary Gage.

Architects' Assistants.

No subject can be of more serious interest to the Institute than its relations with the youth of our profession. One of our committees has considered for us, and will report to us upon our relations with the architectural schools and the junior societies. Many of our Chapters have taken steps towards unity of effort between the young and the old. To make progress in membership from the junior societies to the Chapters easy and natural and desirable should be our first endeavour. Indeed in this country such a task ought to be easy. One of the greatest charms of our profession is the joyous atmosphere of youth and buoyancy and hope in which we work. The art itself is young with us. It is only within a few years that architecture has become the life-work of thousands in our country, and if, in establishing the profession, we have made many halting steps as artists, and if, in the swift turn of the wheel of progress, a man only too quickly comes to regret his early productions, yet we are all conscious of constant advance and full of faith for the future. We are all looking forward and not back. The assistants who form our office families, and in co-operation with whom our work is produced, are young. They are ambitious youths, who, at home and abroad, have had every advantage of education in art and engineering. They and we work together in the full belief, that, even if the future of architecture does not lie with us yet, at least it is to have a great future here. Everywhere the pace set is that of youth, and the rapidity of our building operations makes our work so arduous and full of strain that the strong and vigorous only survive. There are no old architects among us. If an architect last at all he lasts young.

The young may nerve themselves to exertion by the thought that Raphael's career, with its abundant production, was over at thirty-seven. It is left to those of us who are older to remember that, though Bramante is said not to have seen Rome and the Pantheon until he was fifty-five years old, yet he was still young enough to form, after that age, his monumental style, and to evolve the work that has made him one of the great leaders of our craft. Recalling this, we, too, feel young, and take new hope and courage. We can scarcely prize too highly this happy, joyous, progressive, youthful spirit. As we thus keep young and hopeful, it should be easy for us, and, indeed, we should be eager to increase, in all practical ways, the cordiality of our relations with those who are our juniors in the profession, and who, we hope, are to be our successors in the Institute.

Some Charges.

When we consider our professional relations towards each other we open up a large field for discussion, for our efforts to promote the efficiency of the profession have been sharply criticised. One hesitates to discuss the question lest it obtain more importance than it deserves, but, as it is a live subject, it is well to see how far the criticism is merited.

It is charged that we are slack in administering discipline to those that play the game unfairly. That we "countenance men of eminence, who are not men of principle," and that our "present members are too weak to point the finger of scorn at the culprits in their midst." We are told that unless we enforce a standard of honourable practice more strictly we shall fall in public esteem, and the action taken by the Judiciary and Executive Committees this year in certain cases has seemed to some people inadequate. It is not for me to say whether this opinion is just, though one would suppose that our critics did not hold it to be a grave matter to be compelled to defend one's honour before our Judiciary Committee. One would think that censure by the American Institute of Architects was a light and unimportant thing, leaving no scar or no regret. Is it true that any of us think this? If we were the defendants, would the technical degree of criticism on our professional conduct matter much, compared with the misery of the thought that our comrades had criticised us and proved their right to do so? You may be sure that other men are made much as we are.

Although few of us would be in the Institute if discipline were its only object, still it is very desirable that we should claim a high standard of conduct, and even of etiquette, from our fellow members. It is one of the objects of our association. We may consider that we are agreed upon this. We all feel this so strongly that, when professional opinion attributes improper conduct and when adequate discipline does not follow, there is a widespread outcry that your directors and Judiciary Committee are weak-kneed. This course of reasoning is not just.

The subject of discipline involves really the larger question of professional ethics, and this is an opportune moment to discuss whether our standard is advancing, and whether our conduct towards one another is improving, and what we can do to further desirable improvement. This matter has difficulties of its own, for opinions may differ, fairly, at least, in regard to such details of professional conduct as are conventional and usual, rather than moral. Some of the opinions held of such matters are unsupported by legal right or by general business morality. In fact, they all are governed ultimately by public opinion, and the important thing is to have that in a healthy state.

Our controversies centre mainly around competitions, but no one can deny that even in this nerve-destroying and objectionable side of an architect's work public sentiment is far more healthy than it was. Probably we cannot do away with competitions, but the public in a short time always accepts what the self-respect of the profession courageously demands. To-day there are far more competitions that are limited and paid than formerly, and to the great benefit of employer and employed. To-day far more architects insist on these restrictions, and in the long run they gain by it. Public opinion has governed very strictly far more hateful things even than competitions—for instance, the practice of duelling; and it can be trained, and I believe it is being trained, to ameliorate competitions.

A Code of Professional Ethics.

As one instrument towards obtaining a healthy public opinion, the "American Architect" prints weekly the code of ethics that is recommended by the Boston Society of Architects. It is as follows:—

SECTION 1.—No member should enter into partnership, in any form or degree, with any builder, contractor, or manufacturer.

SECTION 2.—A member having any ownership in any

* Summary of the President's address at the annual convention of the American Institute of Architects held in December last.

building material, device or invention, proposed to be used on work for which he is architect, should inform his employer of the fact of such ownership.

SECTION 3.—No member should be a party to a building contract except as "owner."

SECTION 4.—No member should guarantee an estimate or contract by personal bond.

SECTION 5.—It is unprofessional to offer drawings or other services "on approval" and without adequate pecuniary compensation.

SECTION 6.—It is unprofessional to advertise in any other way than by a notice giving name, address, profession and office hours, and special branch (if such) of practice.

SECTION 7.—It is unprofessional to make alterations of a building designed by another architect, within ten years of its completion, without ascertaining that the owner refuses to employ the original designer, or, in the event of the property having changed hands, without due notice to the said designer.

SECTION 8.—It is unprofessional to attempt to supplant an architect after definite steps have been taken toward his employment.

SECTION 9.—It is unprofessional for a member to criticise in the public prints the professional conduct or work of another architect except over his own name or under the authority of a professional journal.

SECTION 10.—It is unprofessional to furnish designs in competition for private work or for public work, unless for proper compensation, and unless a competent professional adviser is employed to draw up the "conditions" and assist in the award.

SECTION 11.—No member should submit drawings except as an original contributor in any duly instituted competition, or attempt to secure any work for which such a competition remains undecided.

SECTION 12.—The American Institute of Architects' "schedule of charges" represents minimum rates for full, faithful and competent service. It is the duty of every architect to charge higher rates whenever the demand for his services will justify the increase, rather than to accept work to which he cannot give proper personal attention.

SECTION 13.—No member shall compete in amount of commission, or offer to work for less than another, in order to secure the work.

SECTION 14.—It is unprofessional to enter into competition with or to consult with an architect who has been dishonourably expelled from the "Institute" or "Society."

SECTION 15.—The assumption of the title of "Architect" should be held to mean that the bearer has the professional knowledge and natural ability needed for the proper invention, illustration and supervision of all building operations which he may undertake.

SECTION 16.—A member should so conduct his practice as to forward the cause of professional education and render all possible help to juniors, draughtsmen and students.

We thus become familiar with what we agree to in unprejudiced moments. It is a still better thing for us to discuss these matters in a friendly way at these meetings. The more we meet and talk with each other the more opinions crystallize, the better we know each other the less likely we are to yield to that hustling and crowding spirit that is at the root of any troubles that reach our Judiciary Committee, and it is one of the chief advantages of our Institute that it leads to that acquaintance and association of architects from all parts of the country which best subdues the mean or selfish hustler. Indeed, the older of those among us must all recognise that the term "unprofessional conduct" is now applied by general consent to practices which not long since were of not unusual occurrence, and that a distinct advance in this direction has accompanied the increase in numbers and power of the Institute.

But to demand a definite written code of ethics is to ask for something difficult of attainment. They have never been simple to frame and their enforcement has brought many a church and association to grief. In our case it would be difficult to state precisely what code should be enforced, even if it were agreed that any should be enforced. Happily, though we may feel helpless to form a code that we all agree upon, yet all these codes were, in fact, summed up once in a very few sentences that well might be printed in those journals which now print our less widely accepted codes. These sentences inevitably form the basis of all our discipline. Differ as we may in small details, we all know that upright, professional conduct means nothing but being a gentleman; and we are sure that all codes of professional ethics finally reduce to the Golden Rule. A healthier subject for our attention, and one that interests us all more than the discipline of the unworthy among us, is

The Due Reward of Youthful Genius,

well-trained skill, and honorable professional life. If we succeed in making membership in the Institute a goal eagerly sought for, it might go far towards eliminating the need of discipline. Surely most can be gained in an association of educated gentlemen by offering the hope of distinction, by honouring excellence, rather than by chastising the unworthy. For this reason I commend to your attention the changes in the by-laws proposed at Pittsburgh, and now to be acted upon, which provide that with certain exceptions all candidates for admission to membership shall be graduates from some recognised architectural school, or shall have passed examinations held by the Institute. Still more, I would give my urgent and hearty approval to the new and happy idea that our secretary has evolved of an annual election through the directors and the convention delegates of a certain number of Associates to be Fellows, because they have distinguished themselves in successful work.

Our constitution states that an election as Fellow shall be for professional merit. It has always been our aim and intention that a high standard should he maintained for the Fellowship grade, and that in some way the name of Fellow shall indicate professional distinction.

In the Institute, as in any long-established association, the young often feel as if they stood no chance for honours with those more prominent in the profession, but in an election of the sort proposed the young would take an equal stand with the old. Good work alone would count, and we should be sure that prominence and the title of Fellow would be due, not to accident or seniority, but to a general agreement among his comrades that a man is worthy of honour. With these distinctions open to our Associates, I think we should soon cease to complain that men who stand aloof from us reap the advantages in honour and remuneration that have been made possible for them by years of toil on the part of those in our Chapters. Instead of our seeking members, I think membership will be sought by all desirable men. We are asked in print "to show that an obscure man in the right is more to be honoured than an eminent man under suspicion," and we are told that if we do this the younger architects "will gladly ally themselves with the organisation and give it the new life that is vitally necessary now." The action now proposed will, I think, in a measure answer this demand.

Improving the Profession.

Let us now pass from the criticisms on our efforts "to promote the practical efficiency of the profession." Then we are met promptly by quite different criticism on our attitude towards architecture as an art. It is charged that, as a body, we do not encourage original work, and that architecture, as understood by those influential in our affairs, is only a repetition of old forms and well-worn ornaments, applied without reason and as veneers to absolutely new constructive methods. Even if varied opinions assert themselves, it is said that most of us produce nothing but imitations, more or less feeble and inappropriate, of Parisian work, of Mediæval England, of Italy in the fifteenth century or of Classic Rome itself. Perhaps the professors of architecture are worse than the architects themselves. They are described as "brooding like a blight over their schools," as lauding "symbols and figments," as "harkening to echoes," as pilfering "the spontaneity and charm of youth," and as setting up "the infallibilty of tradition." But the body of American architects, as a whole, is included in these anathemas, and we are told that the hope of the art lies with a new school that is to encourage indigenous and inventive architecture for America.

Those of us who have had as long a professional life as myself remember that in our early days the world of architecture was going to be changed by adherence to Mr. Ruskin's formulas, if not by loyalty to mediæval ideas. Since then, the pendulum has swung backwards and forwards, until we are coming to think that it does not matter whether the swing is to the right or to the left, but only whether the clock thus regulated is true to time. The chief value of any new movement is to be found in what it produces, and I believe that when it produces the interesting results we sometimes see it will be found that they rest on immutable laws, well known and applicable to other and quite different work, and we shall find it passes for new only because of new or enthusiastic methods of presentation.

New Men and Old Styles.

Happily, as I think, the horror of adapting to our uses ornamental forms endeared by long association is not widespread. Most of us shudder to think what our land would be if subjected to "a liberation of the creative impulse." This fear of plagiarism never affected architects in other ages. Wilars d'Honcourt, for instance, after sketching the chapels of Rheims, writes: "In the next page you may see the elevations of the chapels of the Church of Rheims on the outside from the beginning to the end, just as they are. In the same manner will be those of Cambray if they are rightly made." Forthwith he makes his piers at Cambray like his sketch of Rheims, which really varied somewhat from the actual work now to be seen there. Nor are other arts affected by this fear.

Most of us recognise, and are moved to enthusiasm, by a good design even when presented to us in a strange and novel guise. Let us then welcome the help of our critics whenever they show us anything true and beautiful and good.

I believe that I have thus laid before you in a general way the business that must receive your consideration, and those live issues regarding which our course is watched and is of importance. I trust we may have the wisdom to settle all these questions so that the Institute may prove itself worthy of its position as the national expression of a hard-working, scholarly, hopeful, youthful profession—to whom the necessities of bread-winning are made light by love for the art they practise.

Builders' Notes.

Workmen's Compensation Insurance Rates have dropped much since the Act came into force. The insurance companies' rates compared with the original figures are somewhat as follows, although they vary:—

	Original Tariff.	1900 Rates.
Quarriers	45s. ..	10s.
Building Trades	45s. ..	5s. to 7s. 6d.

The Bristol Master Builders' Association held its annual meeting last week, when the following officers were elected for this year: Mr. E. Walters, president; Mr. George Wilkins, vice-president; Messrs. E. I. Neale, J. Lovell, F. N. Cowlin, F. A. R. Woodward, A. Dowling, J. Eastabrook, C. A. Hayes, and W. K. Thomas, committee; and Mr. G. Humphreys, treasurer.

Building on Salisbury Plain.—Lord Ailesbury, whose property in the parish of Collingbourne Ducis adjoins that of the War Office, about half a mile from Ludgershall Station, and one and a half miles from the huge barracks about to be built at Tidworth, and close to the Perham Down training ground, is about to develop this end of his estate by letting land in large or small plots for building purposes.

Tasteless Builders.—The Hampstead Borough Council recently received a letter from Sir Richard Temple requesting the Mayor to call a public meeting of residents "for the purpose of promoting some movement to check tastelessness, inconsiderateness, and unnecessary destruction of the beauties, amenities, and interests of Hampstead on the part of architects, agents and builders." The suggestion was referred to a committee.

London County Council.—At last week's meeting of the Council (the first since the Christmas recess) the estimate of £89,000 submitted by the Finance Committee for the erection of buildings, &c., for an epileptic colony on the Horton estate, Epsom, to accommodate 300 insane male epileptic patients and staff, was approved.

The Nottingham Master Builders' Association held its annual meeting recently, Mr. W. Edgar (the retiring president) being in the chair. The audited cash account for the year was presented by the treasurer, Mr. J. W. Woodsend, and showed an increased balance in hand. The chairman gave a short account of the work of the association during the past year, showing that several matters of importance and interest to the trade had been dealt with. The officers for the coming year were then elected as follows:—President, Mr. Henry Vickers; vice-president, Mr. Frederick Fish; treasurer, Mr. J. W. Woodsend; hon. sec., Mr. James Wright.

THREE NOTABLE BRIDGES.

AT a meeting of the Institution of Civil Engineers held on December 18th three papers were read dealing respectively with Glasgow Bridge; the railway bridge over the Fitzroy River at Rockhampton, Queensland; and the Niagara Falls and Clifton steel arch bridge. Mr. B. H. Blyth, M.A., M.I.C.E., was the author of the first, Mr. W. J. Doak, B.E., A.M.I.C.E., of the second, and Mr. L. L. Buck, M.I.C.E., of the third.

Glasgow Bridge.

Mr. Blyth's paper dealt with the taking down and rebuilding of the bridge over the Clyde at the Broomielaw, Glasgow, constructed by Telford in 1833. It mentioned the reasons which induced the Corporation of Glasgow to obtain, in 1892, an Act of Parliament for the construction of a new bridge of four spans, and later, in 1894, to obtain another Act, repealing the former and authorising a bridge to be built which, while considerably increasing the width and strengthening the foundations, still preserved Telford's original elevation. The bridge, as rebuilt, consisted of seven spans varying between 52ft. and 58ft. 10in. Each of the piers was carried by four 15ft. cylinders, which were sunk by means of pneumatic pressure to a depth of 75ft. below springing-level. Centering was provided for all the seven arches, and all the arches were completed before any of the centres were struck. The piers were of freestone masonry faced with granite, and the archstones were of granite throughout. Provision was made for gas, water and electric mains under the pavements. The work was begun in 1895, and completed and opened for traffic on May 24th, 1899.

The Fitzroy River Bridge.

Mr. Doak's paper described the railway bridge over the Fitzroy River, connecting the central railway system of Queensland with the deep-water port of Broadmount. It carried a double line of way of 3ft. 6in. gauge, and consisted of two 250ft. spans and three 100ft. spans. The open-caisson method was adopted for sinking piers Nos. 1 and 2 in the river bed, piers Nos. 3 and 4 being on land. Concrete in bags was first laid round the inside edge of the caisson, and the filling-in up to low-water level was accomplished by lowering the concrete through the water in skips. The rest of the concreting was performed in the open air in the ordinary way. For the 250-ft. spans a hog-back Linville truss was adopted, the curve of the top boom having a radius of approximately 538ft. The depth of the girder at the ends was 16ft. 6in., and at the centre 30ft. 9in. The web-bracing consisted of a double system of vertical posts and inclined ties. The cross girders were suspended to the lower ends of the vertical posts by tongue plates. The main girders were 26ft. apart from centre to centre. The 100ft. spans were carried by simple rectangular Linville trusses, 16ft. 6in. deep, with a single system of web-bracing panels. The main girders were designed to carry on each track a train-load of 0·66 ton per lineal foot, preceded by two B15 engines weighing 51·7 tons each. In floor-beams a working-stress in tension of 7·5 tons per sq. in. for dead load and 5 tons per sq. in. for live load was adopted; in main girders 7·5 tons per sq. in. for dead load and 6 tons per sq. in. for live load.

The Niagara Bridge.

Mr. Buck's paper described the bridge crossing the Niagara River between Niagara Falls and Clifton. The first structure on this site was a suspension bridge erected by the late Mr. Samuel Keefer, M.I.C.E. This had been widened and subsequently rebuilt by the author; and when the question arose of further increasing its capacity, to provide for the passage of electric trolley-cars, the author recommended the substitution for it of the steel arch bridge described in his paper. The river at the site of the bridge being 180ft. deep and having a current of between 4 and 5 miles per hour, falsework was out of the question. For several reasons it was decided to brace the ribs instead of the spandrels of the arch; but the author doubted whether a braced-rib arch was as economical as one with braced spandrels, and, after experience of both types, favoured the latter where it could be used. The bridge consisted of a main span of 840ft. and two end spans, one of 190ft. and one of 210ft. The main span was a two-hinged parabolic braced-rib arch, supporting the floor system by means of vertical bents resting on the top chords of the arch at the main panel-points; the end spans were pin-connected inverted bow-string girders. The material was basic open-hearth steel, required to have an ultimate tensile strength of 62,000lbs. to 68,000lbs. per sq. in., an elastic limit of at least 33,000lbs. per sq. in., and an elongation of at least 20 per cent. on an original length of 8in. The floor was not horizontal, being 8ft. 6in. lower at the Canadian end than at the New York end. The rise of the arch, from the centre of the end pins to the centre of the rib-trusses at the crown, was 150ft. The span was divided into 20 main panels of 42ft. each, each of these panels being divided in the ribs into two equal sub-panels. The top and bottom chords of the arch ribs were united in solid web-sections at 10ft. 6in. from the centres of the end pins. These web-sections and the end posts bore on steel castings, which in turn bore on pins of 12in. diameter and 5ft. 10in. long. The pins were supported by cast-steel shoes, resting on seats in built steel shoes, arranged to distribute the pressure uniformly over the faces of the masonry abutments. The end spans were erected first by means of falsework and next the end bents of the main span were raised.

New Patents.

These patents are open to opposition until March 7th.

1900.—Kilns.—3,584. J. W. BRIGGS, "The Holm," Barton-upon-Humber. The object of this invention (which refers to "Scotch" and "Dutch" kilns) is to utilise the heat generated in one kiln for assisting to heat another kiln. This is accomplished by connecting the kilns by flues fitted with dampers. Less coal is required than under ordinary circumstances.

Traps.—3,868. J. BRUCE, 83 Limestone Road, Belfast. An opening is provided at the top of the syphon bend, large enough to admit the hand and arm, for cleansing purposes. It is fitted with a cover which runs in a groove or dovetail recess, and is made secure with cement or putty.

Swimming Baths.—15,395. J. STOTT, Vernon Works, Lee Street, Oldham. By providing the mixing cylinder with an extra pipe connected with the bath and with an auxiliary steam pipe, a constant circulation of the water is kept up, and a uniform temperature thus easily maintained.

The following specifications were published on Saturday last, and are open to opposition until March 14th. A summary of the more important of them will be given next week. The names in italics within parentheses are those of communicators of inventions.

1900.—41, RINCKLAKE, vaulted ceilings. 189, DESPREZ AND DUTHUIT, pulleys. 225, SOLON, manufacture of glazed bricks. 1,118, WHITTAKER, brick-making machinery. 2,473, DE MARCAY, electric arc lamps. 2,763, GJELLERUP, drawing boards. 3,534, EVERSHED AND VIGNOLES, LTD., AND EVERSHED, electric supply meters. 4,015, T. C. FAWCETT, LTD., AND FAWCETT, thrust bearings or footsteps for revolving shafts. 4,114, DENAEYER, manufacture of artificial stone. 4,358, SWINDELL, electric bell pushes. 4,388, THOMPSON (*Boden*), mathematical compasses. 4,721, MUSGRAVE, air-humidifying apparatus. 5,169, KNIGHT, apparatus for laying bricks for building. 5,183, NEWTON (*Carleton*), electric locks. 5,271 LEITMAYR, circular saws. 6,272, HAINES, filters. 13,294, IRBY, paint pot. 13,633, JUDD, expanding and contracting doors, windows, &c. 16,166, REISS, skylights and ventilating window. 17,825, BAXTER, machinery for washing or cleansing stone, sand, &c. 18,353, CHAUVIN, acetylene gas generators. 19,337, MCDONALD, acetylene gas generating apparatus. 20,343, ROBERTSON, shovels. 20,569, MCCONNELL, sash fasteners. 21,194, MASON AND MASON, water closets. 21,792, MACDONALD AND MACDONALD, smoke-testing appliances for drains. 21,890, THOMPSON, (*Joltes and* firm of *Zirtz and Bruno Gesellschaft mit beschränkter Haftung*), burners for incandescent gas light. 21,913, CLEMENS, presses for manufacturing facing bricks. 22,015, IMRAY (*Buente*), fireproof floors. 22,030, CROSS, doors or gates for elevator hatchways. 22,090, JOHANSON, means for automatically actuating the doors of lift wells.

Engineering Notes.

Institution of Civil Engineers: Meetings Postponed.—In consequence of the death of the Queen, all meetings of this institution are suspended until further notice.

The new Workhouse at Llwynypia, is being ventilated by means of Shorland's patent exhaust roof ventilators, supplied by Messrs. E. H. Shorland and Brother, of Manchester.

The Death is announced of M. Gramme, the eminent Belgian electrician. In 1867 and 1872 he patented electric batteries and the dynamo. For the latter he received 20,000f. from the French Government and the Volta prize of 20,000f. from the Academy of Sciences.

New Engineering Works at Yarmouth.—Messrs. W. F. Crabtree and Co. have erected new engineering works at Yarmouth covering an area of 3¼ acres, extending from Southtown Road down to the riverside. The buildings are of corrugated iron, and in the machine shop are two 12-ton travelling cranes. The works will be lighted by electricity.

Water Purification.—In the course of an application heard last week by the Railway and Canal Commission against the Southwark and Vauxhall Water Company and the Lambeth Waterworks Company in respect of their supply of water for domestic use, Mr. Charles Edward Cassall, public analyst, gave evidence of the analyses he had made of different samples, and, speaking generally, said they showed that the water was not sufficiently purified from dissolved organic matter or from organisms present in it. It was for the company to find out the best way of purifying the water. There was no doubt that a river polluted by sewage ought never to be used for a water supply, whatever the process of purification or filtration applied to it. However, given that the river was used, there ought to be adequate arrangements for purification, whatever those might be from an engineer's point of view. He had personal knowledge of the case of Chester. When he inspected the water supply there two or three years ago he found that it was heavily polluted. The local water company had dealt very effectively with this exceedingly unpromising material by adopting a superior and more thorough method of purification.

Fencing of Machinery.—The Chief Inspector of Factories desires to draw the attention of makers of machinery and appliances used in factories to the importance of adequately fencing the dangerous parts in the process of construction and fitting. While much progress has been made in applying guards to existing machinery, it is unsatisfactory to find that new machines, in other respects improved, are still sent out by the makers without due regard to this essential point, and that precautions which are taken as a matter of course in the case of those made for export are often omitted in the construction of similar machinery intended for use in the United Kingdom. Hence many serious and fatal accidents arise, and at best the fencing which can be carried out later by the purchaser is usually less effective and more costly, even apart from the risks attending delay. And further, it is obviously more easy when designing a machine to provide proper places for guards than to have to fit guards on to a machine designed without any provision being made for them. In fact, a machine otherwise well designed may be made almost valueless for trade purposes by the difficulty or impossibility of adapting to it those means of fencing which the law renders necessary.

Bricks and Mortar.

APHORISM FOR THE WEEK.

Old houses mended.
Cost little less than new before they're ended.
COLLEY CIBBER.

Our Plates. THE parish Church of Cockington stands in the grounds of Cockington Court, the country residence of Mr. Mallock. It is about two miles from Torquay, but within a quarter of an hour's walk from the railway station. The simplicity of the plan is one of its characteristics, and there are no transepts; there seems also to have been a careless disregard of regularity in the first instance, for, besides the fact that two adjacent walls are rarely at right angles, the windows in the north and south walls are not opposite to each other, the span of the arches in the nave arcades diminishes as we approach the chancel, and the capitals on the south side are carved, whilst those on the north are plain. Notwithstanding this, the general effect of the interior is good. The present entrance is at the west end, the south porch being now used as a vestry. On entering, an easy flight of steps leads to the nave; at the foot of these is the small but elegant font, which has a rather unique cover, and is further embellished with coats of arms displayed on each of the eight square compartments on its sides; among which are those of the Carys, Dinhams, Paulets and Carews. The wooden font-cover is entirely filled up with flat-relief carving, which has been carefully restored in one or two places where decayed. It does not lift off, the upper portion remaining stationary and the sides opening outwards, being secured by the original quaintly-wrought iron hinges. The pulpit was removed from Old Tor Church (to which it formerly belonged) about the year 1825. It is boldly carved, and still retains the original colouring and gilding. The design of the upper portion of the panels varies on each side, and is quite detached from the ground. It is also interesting to note that there is a great resemblance between the carved foliage around the pulpit at its floor level and that of one of the capitals of columns shown. The screen is a good example of late fifteenth-century work, but is rather mutilated. That portion which crosses the north aisle supported a rood-loft, the remains of which are kept in the north-east division of the church, and are intended to be refixed when sufficient funds have been collected for the purpose. No traces are to be seen of the steps which lead up to the small built-up doorway in the north wall which formerly gave access to the rood-loft; it is assumed that they occupied the same position as the private porch does at present. The tower was evidently at one time used for defensive purposes, or as a place of concealment, there being inside the door a long wooden bolt, which can be drawn out from a deep aperture in the wall (the bottom being lined with slate) and made to span the doorway, the end being inserted in an opening on the other side. There is also a fireplace on the first floor. The church, which is singular in not having any burial ground, was partially restored in 1882-3; a new organ was presented in 1893. Our drawings are by Mr. Josias C. Beare.

Extras. AT a recent meeting of the Barry School Board a member brought forward a proposal that in all future agreements between the Board and architects a clause should be inserted reserving to the Board the power of making alterations or purchases of material not specified in the contract The member in question said he did not wish to cast the slightest reflection on the profession of the architect, but they were responsible to the ratepayers for the spending of money and the extension of schools and they ought to see that their schools were extended under their own supervision. It would mean additional work to the Board, but he did not think they ought to consider their own time and convenience when extensions to schools and the purchase of additional materials were necessary. The chairman, however, very wisely pointed out that such an arrangement would not work, because it would mean that special meetings of the Board would need to be held almost continuously. In the past they had left these matters in the hands of the architects, and had been careful to get men of the highest professional reputation, and as far as he could remember he did not know of any architect going beyond what was a fair and reasonable exercise of the power vested in his hands. So the member's scheme was quashed.

Technical Education in London. A DAY SCHOOL for boys who propose to enter some branch of the cabinet-making, joinery or other wood-working trades was opened recently in the L.C.C. Shoreditch Technical Institute. The school will at first be under the control of Mr. S. Hicks, who holds a parchment certificate of the Board of Education as a trained teacher, and of an instructor who is an efficient foreman cabinet-maker, besides being a registered teacher of the City and Guilds of London Institute, with an Honours qualification. The services of additional teachers, especially in experimental science, will be secured as required. The object of the school is to enable boys who intend to enter some branch of the furniture or other woodworking trades to continue their general education, and at the same time to acquire such a knowledge of the artistic principles of design and of the scientific principles of construction, of the properties of materials, and of the use of tools, as will enable them at the end of a two or three years' course to enter a workshop with a full appreciation of the points to which they are expected to direct their attention, and with an intelligence so trained as to make them immediately of substantial value to an employer. The fee is £1 10s. a year, but the Board reserves the right to remit the fees in whole or in part in the case of boys whose parents are in receipt of not more than £2 a week. Further particulars may be obtained from the Secretary of the Institute, Pitfield Street, Hoxton, N.

Mr. Walter Crane on Sculpture. "ONE of the difficulties about monumental sculpture," said Mr. Walter Crane recently to an interviewer, "is that the Classical idea is too rooted in our midst. We must have the bareheaded figure in the open, which is ridiculous, and very opposed to the modern Englishman himself and his ideas of what is fitting. I should like myself to see—and very probably I shall see it if I live long enough into the present century—a great Pantheon with statues in niches, or else combined groups, with a certain architectural design, in the streets themselves. You might arrange national or local monuments in this fashion, with niches which could be filled from time to time. Try and weave it into your architectural scheme as it were, and so get a harmonious whole. Then, again, instead of dotting a statue here and a statue there, I would have groups designed to illustrate a man's work, with a medallion portrait of the man himself, with his record, on the pedestal."

A New Bill for Leeds. THE Leeds Law Society has issued a report in regard to certain clauses in the Bill which the Corporation is promoting in the next session of Parliament. The following are extracts:—Section 31. Attachment of brackets to buildings. Provision should be incorporated in this section that, notwithstanding payment by the Corporation in the first instance of compensation in respect of the attachment of the bracket, the Corporation shall be liable for any continuing or subsequent damage by vibration or otherwise resulting from such attachment. And the costs of assessing the damage, both original and accruing, should be borne by the Corporation and not be left for the determination of the assessing tribunal. There is no reason apparent to the Committee why the costs with regard to the acquirement of such an easement should be placed on a footing different from that relating to any other description of property.—Section 66. Provision for preventing the formation of cul-de-sacs. This is a provision which would materially increase the difficulties and expense of laying out many plots of building land. If the end of a proposed street terminated upon the boundary of an adjoining owner who was not prepared to lay out his land at the same time it would necessitate leaving 36ft. in width of the land for the whole extent of the estate being developed to provide a street at the end of the buildings, and would thus throw upon the owner the cost of providing the whole land for the street which the adjoining owner would subsequently be able to use without having contributed to the cost, except as to paving.

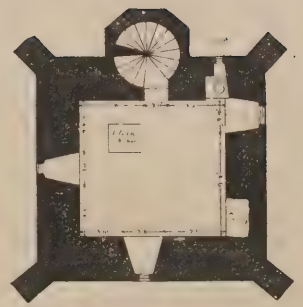
A Disgrace to the Florentines. THE versatile Italian art-critic Signor Ugo Ojetti publishes a strong protest against the "restoration" of Florentine monuments by the Municipality. The chief case mentioned is that of the famous Battistero of San Giovanni, which was covered with precious marbles by Arnolfo di Lapo towards the end of the thirteenth century. Exposure to the light and sunshine for centuries had given to these marbles a rich velvety colour, and the slight cracks which some of them exhibited constituted no danger to the edifice, as the wall is not built of marble, but merely covered with slabs. A year ago the cathedral authorities thought that the Battistero looked too old, and ordered it to be cleaned with pumice stone. "In the green marble slabs placed in position by Arnolfo di Lapo under the eyes of Dante," writes Signor Ojetti, "square holes were cut to support the beams which these new barbarians had ready for making the scaffolding Upon the scaffolding planks were laid, while matting was streched around to hide the work of re-embellishment. With acids, pumice stone and irons all the marbles which looked dirty were cleaned and scraped until they presented the appearance of youthful polish. Wherever the slightest crack was visible the stone, which had seen the dawns and sunsets of six hundred years, was cut away, and for yards and yards the fine old green marble was replaced with a dark marble of a colour like wet slate. The vulgar Ravaccione of a dirty-blue colour was substituted for the old white alabastrino; the edges were made sharp like razors, and looked horribly new. By degrees, as the scaffolding was taken away, the holes made for the cross-beams were filled up with stone of a 'howling,' and the interstices were filled up with painted cement. This has been done to six sides of the octagonal temple where all Florentines are baptised, and which for centuries was the cathedral of Florence. The Battistero, the most perfect example of early Tuscan art, now appears as brilliant as though it were new, and when the scaffolding and the planks are completely removed the doors by Andrea Pisano and Lorenzo Ghiberti, the statues by Danti, Rustici and Sansovino will seem in comparison dusty and lurid until someone takes it into his head to brush, wash, scrape and polish them also."

Further Acts of Vandalism. NOT content with these exploits the cathedral authorities have asked for £600 in order to "clean" in the same way the basis of the Giotto belfry. Meanwhile, no funds are forthcoming to execute works necessary for the preservation of artistic treasures in the church of San Pancrazio, the Palazzo di Parte Guelfa and the Church of San Lorenzo. San Pancrazio has been made into a cigar factory and divided into two storeys. In the Palazzo di Parte Guelfa frescoes by Giotto exist under the stucco in what are now firemen's headquarters; while the hall constructed by Brunellesco has been divided into three storeys, its pillars painted, some of its windows half built up, and the whole turned into an elementary school. Signor Ojetti's protest may help to induce the Italian public and the Government to intervene in preventing more vandalism of the kind described. Pressure of foreign public opinion will also be useful in convincing the Italians that masterpieces of art have a commercial value as attraction to sightseers, even if the Italians themselves are incapable of appreciating their beauty.

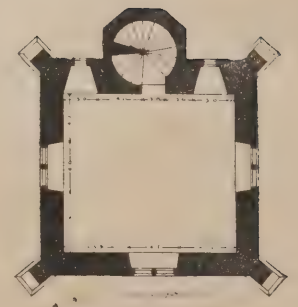
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THE BUILDERS' JOURNAL AND ARCHITECTURAL RECORD,
Wednesday, January 30th, 1901.





PLAN OF RINGING CHAMBER.



PLAN OF BELFRY.



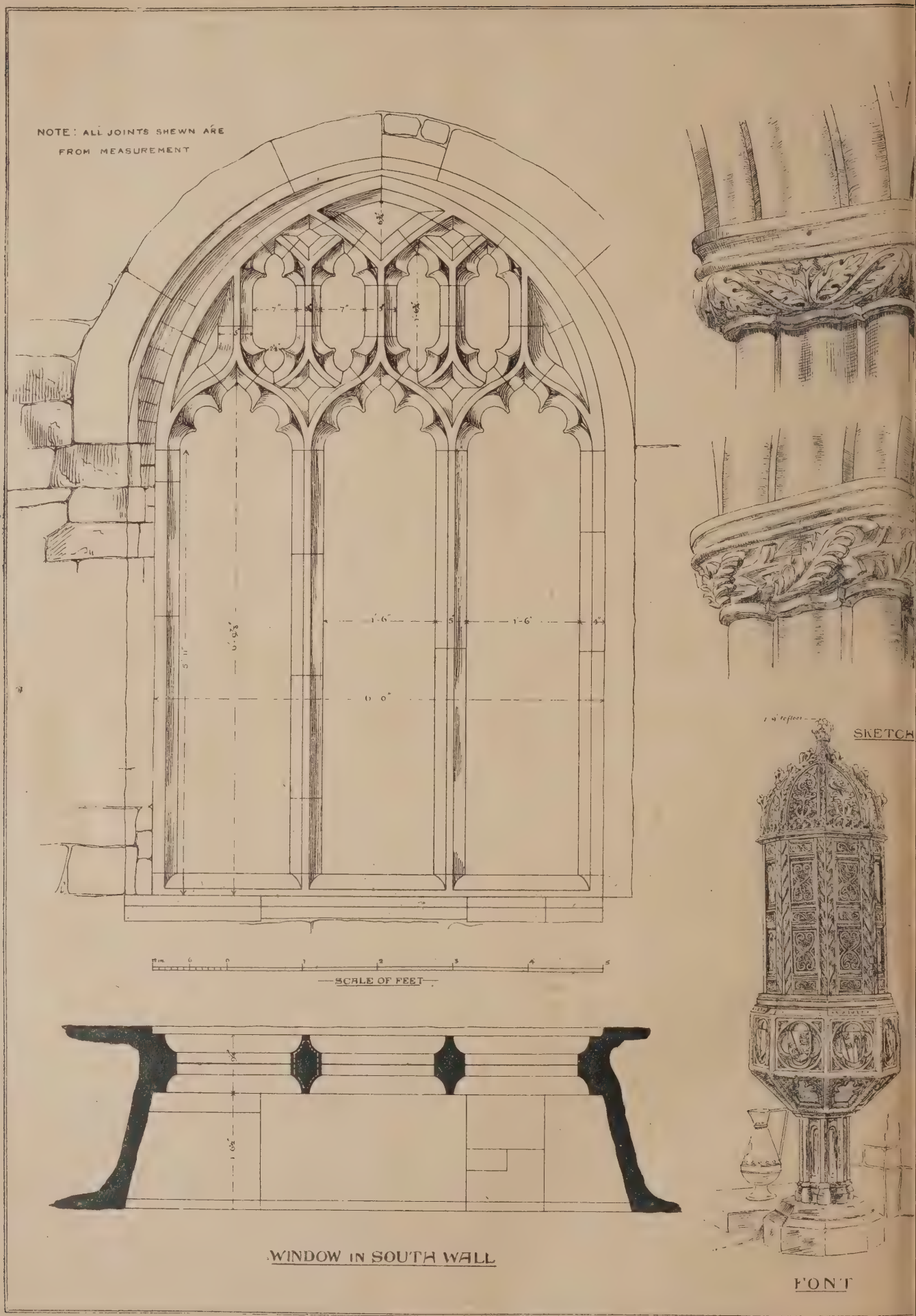
TRANSVERSE SECTION.

LONGITUDINAL SECTION.

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SCALE OF FEET

COCKINGTON CHURCH, DEVON. Measured and Drawn by JOSIAS C. BEARE.

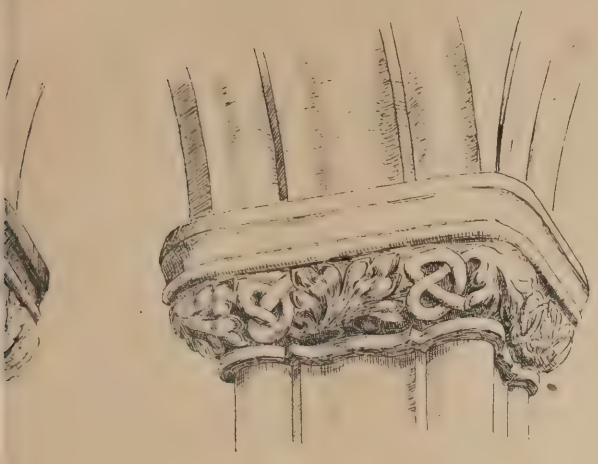
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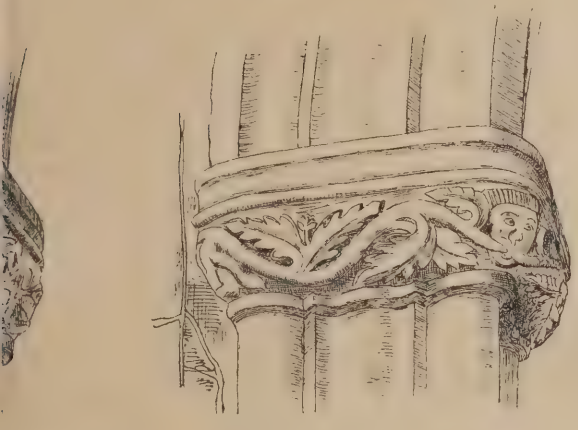


WINDOW IN SOUTH WALL

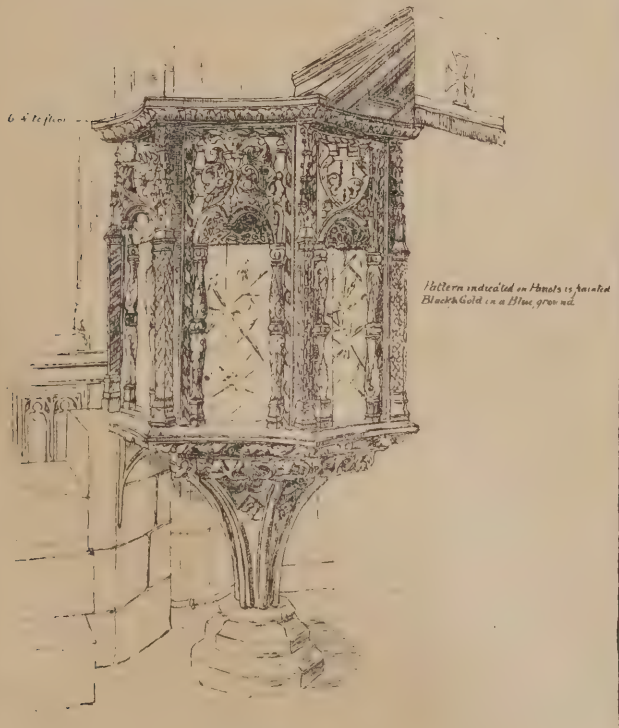
FONT

DETAILS OF COCKINGTON CHURCH, DEV

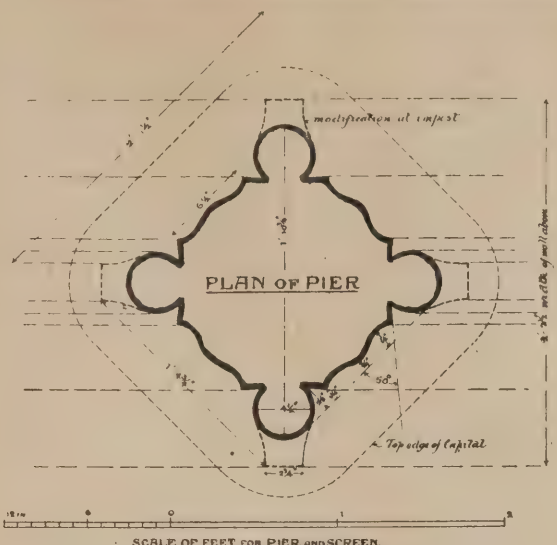


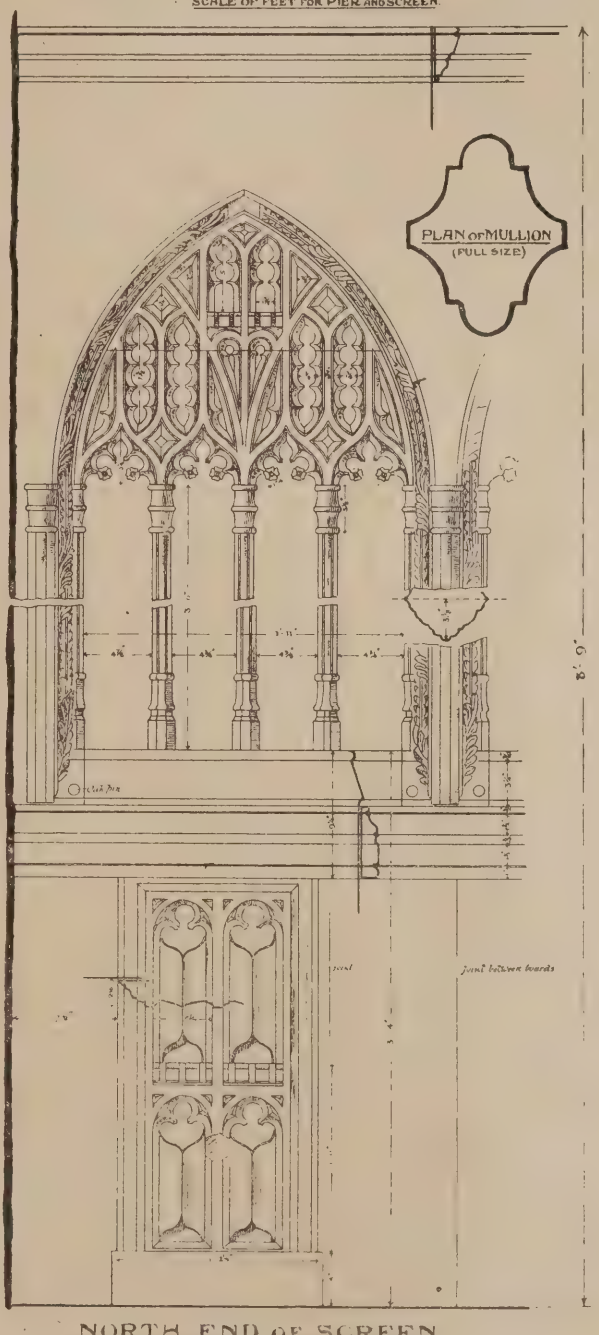


OF CAPITALS FROM SOUTH ARCADE



PULPIT





NORTH END OF SCREEN

Measured and Drawn by JOSIAS C. BEARE.

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Enquiries Answered.

The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional, or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Papering Walls.

MANCHESTER.—F. B. writes: "Suppose good Buxton lime were used for plastering walls after being run for six weeks previous to mixing for use, in what time would it be safe to (*a*) paint and (*b*) paper the walls? Some say it should not be done for two years, others that it may be done as soon as the plaster is properly dry, in which latter case the upholders of the first say that there is something in the lime which is injurious to paper, &c., and it takes two years to 'kill' it. Is this so?"

Providing the materials are properly made and laid, the walls can be papered or painted as soon as they are thoroughly dry. Allow the lime to mature for three months before using, especially for work that has to be painted. Brick walls should be well swept, the mortar joints cleared, and the whole surface thoroughly wetted before applying the plaster. The mortar used for the bricks is generally insufficiently matured and when confined by the plasterer's lime forces its way through the latter and frequently spoils the paint work. Thorough slaking and maturing will kill all acids or other offensive matters in lime. Some Portland cements contain acids which take two years, or even longer, to "kill." W. MILLAR.

Government Appointments.

WOKINGHAM.—J. H. writes: "Are there any architectural appointments under Government open to professional men more than forty years of age, and, if so, where may particulars be obtained?"

Permanent appointments under Government are not obtainable by men over thirty years of age, as a rule, though exceptions are occasionally made in favour of those who have previously held temporary appointments. The so-called "temporary" appointments, however, are numerous, and are given with little regard to age, being closely analagous to assistantships in ordinary architectural, engineering and surveying offices, with the advantages of good pay with prospect of increase, short and regular hours, and the probability of a steady man being retained for many years; but of course there is no pension on retirement, and there is always the possibility of dismissal. Applications should be made to the Chief Surveyor, Royal Engineers, Horse Guards, S.W.; the Director of Works, H M. Admiralty, Northumberland Avenue, S.W.; and the Chief Surveyor, H M. Office of Works, Great George Street, Westminster, S.W.; stating qualifications, age, salary required, and whether appointment is desired in London or at out-stations. The pay varies from 6s. per day for tracing or abstract clerks to 15s. per day for good architectural or engineering draughtsmen or quantity surveyors.

G. A. T. M.

Architects' Charges.

WOKINGHAM.—J. H. writes: "If an architect fills in a printed form of agreement for contract between an employer and a builder (with 6d. stamp), is he entitled to charge for such work, or is he liable to a penalty for making such a charge?"

The architect would be liable to a penalty if he were to charge costs, because such work can only be legally charged for by solicitors.

G. A. T. M.

R.I.B.A. Journal.

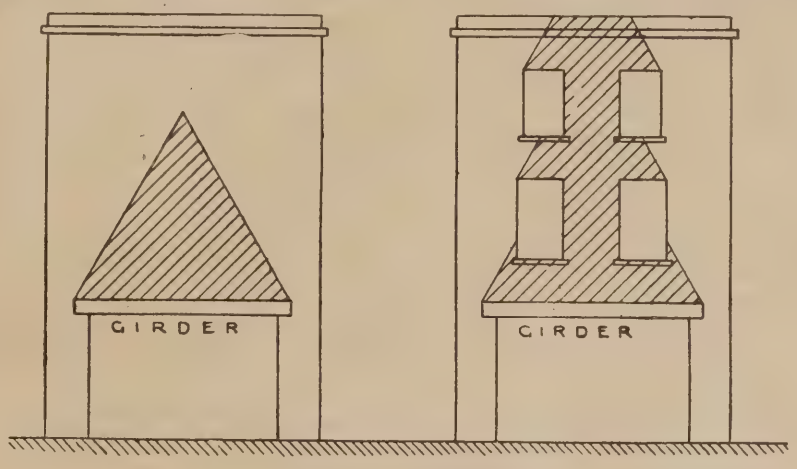
EDINBURGH.—PERSPECTIVE writes: "Where can I obtain a copy of the 'Journal of the Royal Institute of British Architects'?"

This can be obtained from the offices of the Institute, 9 Conduit Street, W., price 1s. 1d. post free. It is published fortnightly during the session and monthly during the recess.

Load on Girders.

STUDENT writes: "How can I calculate the weight of loading of any given thickness and height to be carried by a girder over any opening, as a shop window in (*a*) brickwork, (*b*) stonework; when floor joists are also carried by girder, the first floor being used as (*a*) warehouse, (*b*) living room? How can I calculate the weight of a V roof carried by a girder in the centre? Is there a book on the subject?"

Brickwork may be taken approximately at 1cwt. per cub. ft. A girder supporting a solid wall is relieved from part of the weight by the bonding of the brickwork, so that the minimum load is that portion of the wall contained within an equilateral triangle having the full length of the girder for a base. When the wall is perforated by openings, the case is somewhat different, as will be seen by a comparison of the two diagrams below, where the shaded part is that forming the load on the girder. In either case any portion of roof or floor supported by the shaded part must be added to the load. The same rule would apply to stonework if it is well bonded, but generally stonework is somewhat heavier and less reliable in its bond. The weight might for the latter be taken as 1¼cwt. per cub. ft., and the angle



LOAD ON GIRDERS.

as 75deg. from the horizontal. The allowance beyond weight of material for live load on floors is 1¼cwt. per sq. ft. for living rooms, and 2 to 2½cwt. for warehouse floors according to the class of goods to be stored. The length of girder by half the depth of floor from front to back will give the area supported by the girder, when a single system of joists is adopted. With a framed floor it will depend upon the arrangement how much of the load comes on the girder. The weight of a roof may be taken as 60lbs. per ft. super. of horizontal area covered. This is sufficient to allow for weight of ceiling, truss, covering, wind, snow, &c., but special cases must of course be specially calculated. In a double roof carried by a girder under the valley between the two sets of trusses, it will be the same as if the girder carried the whole of one roof. "The Practical Designing of Structural Ironwork" (Spon, 8s. 6d) gives the mode of calculating flitched and trussed beams, joists, girders, stanchions, columns, roof trusses, &c. The catalogues issued by shop-fitters are intended as pictorial advertisements, and do not give working details to enable other people to construct from them. HENRY ADAMS.

Performance of Contracts.

SOUTH WALES.—R. O. M. writes: "A (contractor) made a contract with B (building owner) to build a certain structure consisting very largely of iron—amount of contract, £1,000. The usual form of contract as issued by the National Association of Master Builders was signed. In the quantities was the following item:—Provide the sum of £ —— to be paid Messrs. C (sub-contractors) for the whole of the iron construction as specified in detail. The specification on this point is as follows: The whole of the iron construction to be supplied and fixed by Messrs. C. No details whatever were given. As soon as A signed the contract, the architect, without notice of any kind, placed the order for the ironwork with C, and gave instructions to proceed. A never had any control over C. The result was that C did not complete the work within the time stipulated, and consequently it was quite impossible for A to complete within his contracted time. When C had completed their contract they sent the account to the architect, which account was paid by B to be deducted by them from A's account. B now seeks to enforce penalty clause against A, and a sum of about £100 is involved. A has from the first consistently repudiated liability, claiming exemption under Clause 16 that C were not under his control. The architect, while not going against A, will not commit himself. He has not certified that the works could have been completed within the stipulated time. Is A liable for the time penalty?"

A is not liable. B has paid the sub-contractors, and has therefore recognised the contract for the supply of the ironwork as an independent contract with themselves. This takes the ironwork out of A's hands, and exonerates him from all responsibility in respect thereof. Not only is A exempt therefore by the very words of the contract, but this proceeding on the part of B substitutes a fresh contract for the original one, under which fresh contract A has nothing to do with the ironwork, or with any delay on the part of the sub-contractors for the same. A. O. H.

Upstairs Stable.

LONDON, S.W.—YOUNGSTER writes: "I enclose sketch (not reproduced) of the steel construction in the floor of an upstairs stable. I have calculated the weight of floor at 3cwt. per super. ft. Is this excessive? The horses are of a heavy class, and I thought that some allowance should be made for the pounding of their hoofs when in the stalls. I should specify the steel to be of either Morelands' or Dorman Long's manufacture."

The allowance of 3cwt. per ft. sup. is not excessive under the circumstances. Dorman Long's joists are of good material. The writer does not know that Morelands are also makers, but no doubt their work would be reliable. The scantlings given are suitable for the various parts. HENRY ADAMS.

Cast-iron Columns as Ventilating Shafts.

WAKEFIELD.—J. S. writes: "Is it desirable to take vitiated air from the ground floor of a building up through cast-iron columns running up to the first floor, supported by wide piers? In what way might this be done?"

There is no difficulty in making the columns answer for foul-air flues as desired, if the required horizontal sectional area be left in the remainder of the section, after deducting the space occupied by inlet or outlets. An oval hole with the long dimension vertical will be the best shape for inlet opening, and it would be advantageous to extend the corner brackets up to the level of top of hole.

HENRY ADAMS.

Fees for Valuation.

GALLATOWN.—KIRKCALDY writes: "In the case of an architect employed for valuation of house property for the information of one party only, what is the usual scale of fees adopted?"

The scale of fees adopted by the surveyors and valuers is agreed upon yearly, and is as follows: Estate and house property, for the first £100, 5 per cent.; from £100 to £1,000, 2½ per cent.; on all above £1,000, 1½ per cent.; by auction a commission on the amount of purchase according to the above scale; out-of-pocket expenses, advertising, printing, travelling expenses, &c., are charged in addition.

E. BRAND, P.A.S.I.

Duties of a Sanitary Inspector.

RIPLEY, DERBY. — STUDENT writes: "Kindly name a good book dealing with the work of a nuisance inspector. I want something showing how a man must proceed with this work, what power he has to abate nuisances, and the methods employed with regard to notices, &c."

The duties of a sanitary inspector (inspector of nuisances) are fully described in Willoughby's "Health Officer's Pocket-book" (Crosby, Lockwood and Son, London, 7s. 6d.). Ravenhill's "Elements of Sanitary Law" (Sanitary Publishing Company, Limited, 5 Fetter Lane, E.C., 6d. nett) will also be found useful. A thorough knowledge of the various acts of Parliament relating to sanitary matters, such as the Public Health Act 1875, the Public Health (London) Act 1891, &c., is, of course, absolutely essential in carrying out the duties of this office. In London, the sanitary inspector must possess the certificate of the Sanitary Institute, or some other diploma which is recognised by the Local Government Board.

T. E. C.

Surveyors' Institution Examination.

REDDITCH.—J. H. B. writes: "(1) Can I acquire enough knowledge to pass the Surveyors' Institution examination in surveying and levelling without personal instruction? (2) Is Usell's the best book on this subject?"

(1) We do not advise anyone who is studying for an examination to fix his standard so low as to be just able to "pass," and no more. Therefore, it *may* be possible for a candidate to acquire enough knowledge of surveying from books and by the free handling of the instruments used; but as there are many minor matters that could only be learned by personal instruction we say without hesitation that personal tuition is absolutely necessary for a thorough knowledge of the subject, and, in order to attain this, thoroughness should be the object of every well-intentioned candidate. The object of the examination is to make you learn for your *own* benefit, not to oblige the examiners. If you watch our advertisement columns you will see that open-air classes are held every spring in this subject. (2) Usell's "Practical Surveying" is perhaps the best book on the subject, but there is a smaller one by G. A. T. Middleton entitled "Surveying and Surveying Instruments."

R. W. C.

How to Detect Sapwood.

LONDON, N.—STUDENT writes: "How can sapwood be detected when inspecting floor joists, rafters, &c.? Does a dark-grey tint indicate sapwood? Kindly name a good text-book on French Renaissance architecture—I mean a book similar to Anderson's 'Italian' and Blomfield's (new 8vo.) 'English Renaissance.'"

Sapwood requires close inspection and a considerable amount of experience if it is to be detected with any certainty. When each annual ring is formed it is pervious and the tissues are full of fluid; but in process of time these thicken, and the channels become filled up and obliterated. Meantime, of course, new pervious rings are growing outside, and these are sapwood; while the inner rings are becoming denser, drier, and more indistinct—"duramen" or heart wood. In duramen tubes are hard and dense, dry and thickened. In alburnum (sapwood) tubes are permeable by fluids, and the rings easily visible. A dark-greyish tint does not necessarily mean sapwood, though it may occur in it. It is due to various causes, inferior material, stacking in damp places, bad seasoning, &c. We know of no good work on French Renaissance, but a series of articles upon this subject was published about five years ago in the "Building News."

R. W. C.

External Plastering of Houses.

LONDON, S.E.—WAVE writes: "I wish to finish some houses at the seaside externally with plaster in the manner of the old farmhouses of Kent, &c. Can you tell me the best materials to use in order to give a good durable result with a cream-colour finish. I imagine that ordinary rough-cast would hold the moisture too much for it to be durable. The houses would be built of rough stock bricks with joints left open for plaster or rough-cast."

Portland cement is undoubtedly the best material for external plaster work, as it will resist damp and the effects of weather longer than any other known plastic material. If cost is a consideration use stucco, which is considerably cheaper and more easily manipulated than cement. Common stucco was generally used for the exterior work mentioned, but rough stucco would be more suitable for your purpose. This is best done in two coats: rendering and setting. The material for the rendering coat is composed of three parts of coarse sharp sand to one of hydraulic or grey lime (not chalk) and one-fifth part of good ox-hair. The setting coat is composed of three parts of washed sharp sand and two of lime, similar to that used for the rendering coat. Great care must be exercised when laying and finishing the setting coat, so that no joints are shown, or else they would never dry out, especially if colouring matter is used. The work is generally finished with a hand float. If stone is to be imitated, finish by patting the surface with a "felt float." The staining of stucco to represent the colour of stone is done by diluting sulphuric acid with water and mixing it with liquid ochres to the required tints. A cream-colour finish can be obtained by mixing yellow oxide with the setting stuff before using. Rough-cast made with coarse stuff gauged with Portland cement will repel moisture.

W. MILLAR,

Lightning Conductors.

LOUGHTON, ESSEX.—S. H. J. M. writes: "Why do some experts recommend non-insulation of lightning conductors; is not the electricity in such cases liable to go from the tape into the copper clips and so enter the wall?"

See article on this subject published in our issue for January 2nd last.

Curved Roof for 60ft. Span.

KENT.—C. W. writes: "I should be glad to know whether a curved roof for a span of 50ft. as described on page 350 of THE BUILDERS' JOURNAL for December 5th last by Mr. Arthur T. Walmisley would be applicable for a span of 60ft. If so, what alterations (if any) would be necessary? Should the diagonal braces be put between or on the outside of 7in. × 1½in. timbers, forming the tie and curved members (as in the bowstring roof described in "Specification" No. 4.)? Which would be the stronger? Would it be necessary to have the iron roofing curved to the radius of the roof, or would straight 6ft. sheets be suitable? Would 8in. by 8in. larch posts carry such a roof?"

Of the two roofs referred to that by Mr. Walmisley is the better, and no doubt the same scantlings would be suitable for 60ft. span if the depth of the truss were increased from 5ft. to 7ft. 6in., and the rise from the 7ft. to 7ft. 6in. The radii for upper and lower curves would be about 42ft. and 62ft. The diagonal bracing will be more convenient outside the top and bottom members. The number of braces would be increased in proportion to span, 3ft. being retained for apex distance. Ordinary straight 6ft. sheets would probably give to the curve of the roof. If 8in. by 8in. larch posts are used to carry such a roof they should be double, and with two wall-plates under each end of truss. One at least of each of the posts should be driven into the ground not less than 6ft. to act as a stay against the wind carrying the whole thing over, or the second post may be placed as a strut at an angle of 25 degs. from the vertical and resting on a proper footing-piece. Such a roof should not be placed in an exposed situation.

HENRY ADAMS.

Professional Practice.

Clandon.—The interesting old village church of East Clandon, which was built in the thirteenth century, has recently been restored. The building had for many years been in a very dilapidated condition. The diocesan architect, Mr. T. G. Jackson, R.A., devised the scheme. Dealing first with the principal features of the work now completed, the old transept on the north side of the nave, which was converted into a family pew at the end of the last century with an apsidal back and ceiling of lath and plaster, thus reducing it to half its dimensions, has been restored to its original size. The restoration of this transept, which had been used of late years as a vestry, necessitated the construction of a new vestry, which has been placed on the north side of the tower, eading out of the transept referred to, thus continuing the line of the exterior wall of the transept to the end of the tower. By this means the fine old sloping roof on the north side of the church has been preserved and increased. A chamber has been constructed under the vestry to effectually heat the church with hot air. The tower, which had become dangerous, has been strengthened with oak beams and supports, and the upper portion of the exterior shingled with oak. The roofs, walls and windows have also received attention. The antiquated seats have been removed, and oak seating substituted throughout, whilst an oak pulpit has been erected. The unsightly old porch, built about a century ago, has been replaced by a new structure, and the south door—the principal entrance to the church—has been restored to its former condition. A marble pavement and an oak reredos have also been provided. The ancient clock, which had been for many years in a ruinous state, is succeeded by a new clock, supplied by Messss. Gillet and Johnston, of Croydon. A new organ, consisting of two manuals and nine stops, has also been installed by Messrs. Bishop and Sons, of London and Norwich. The appearance of the chancel has been altered by the four stained-glass windows which have been placed in it. Several interesting old features, which were covered up with plaster during the last century, have also been revealed by the restoration. Among these are the steps and opening to the rood loft on the north side of the nave; an old piscina in the transept; and an old door, presumably a priest's door, in the exterior of the north wall of the chancel. The small window, commonly called a "low side" window, was found to be partially blocked up, and has been opened to its original size, showing the original sill and an old oak beam let in above the window. In digging for a new buttress foundation at the corner of the tower, two large circular stones, each with a hole in the centre, were found. These were apparently the plinth of the old font. Tracings of old fresco paintings have been found on the inside of the tower wall and chancel arch. The lath and plaster ceilings in both nave and chancel have been removed, and have exposed to view open beams of the fifteenth-century roof, which has given additional height to the church. Some old foundations were found at the entrance to the chancel, from which it might be surmised that the original church consisted of the chancel only. The outside walls, which were covered with cement, have now been stripped and the original flint walls exposed. The work has been carried out by Messrs. Holden, of Oranleigh, under the personal supervision of the diocesan architect. The cost of the work, excluding the organ, amounts to just under £2,000.

Hathershaw, Oldham. — The Hathershaw Board School extension was opened recently. The alteration consists of the addition of two

new wings to the old school and the erection of an entirely new infants' school. The extension on the side next Ashton Road consists on the ground floor of one classroom for 50 scholars and a covered playground which is arranged so that it can at a small expense be made into an additional classroom. On the first floor the extension consists of a classroom for 50 scholars similar in every respect to the one under, and a cookery classroom; the latter is fitted with range, slopstone, drainer, shelves, &c., suitable for the special purpose for which it has been erected. At the opposite end of the old school on the side next Robinson Street the extension on the ground floor consists of a classroom for 50 scholars and a large manual instruction room; above these, on the first floor, a master's room, a classroom for 50 scholars and a classroom for 60 scholars has been built. The latter classroom has been specially fitted with a circular gallery and made suitable for teaching drawing and giving demonstration lessons. Both of the new wings are connected to the old building by short corridors which give easy access to the classrooms, stairs and playgrounds. In addition to the foregoing four new cloakrooms have been constructed out of old rooms. Four new ranges of lavatories have also been provided, and a new teachers' room has also been made. Two new lavatories and w.c.'s have also been made for the use of teachers. New windows have been put in. New heating apparatus has been provided, and the gas lighting and service has been entirely renewed. Two old playsheds have been taken down and have been re-erected in a new position. The elevations to the extensions have been made to correspond with the old school. The infant school has been erected at the top of the playground with its side to Schofield Street. It has been built with a central corridor 12ft. wide. There is one entrance only, situate at the end of the corridor next Ashton Road. On entering the school there is on the right-hand side a large cloakroom, with hot pipes fixed under the children's clothes; on the left-hand side a lavatory for scholars is provided, and a mistress's room, with lavatory and w.c., &c. Further, on the right, there are three classrooms divided by folding screens which can be pushed back against the walls, converting the three rooms into one large one. On the left there are three classrooms, similar in size to those on the opposite side, but divided by walls. One of these has been built for babies, and is arranged with w.c. and lavatory adjoining. Accommodation for 320 infants is provided. The whole of the classrooms have been provided with large tablets fixed on the walls in place of blackboards, and have been fitted with cupboards, some of which are glazed for the exhibition of scholars' work and objects of interest to the children. Heating cellars, &c., are arranged under the school. The elevations have been simply treated, and are Late Renaissance in style. The buildings have been faced with Accrington brick with terra-cotta and stone dressings. The playgrounds have been remade, and the whole of the site has been redrained. New offices have been erected in the playgrounds for the use of the scholars. The work has been executed by the following contractors:—Excavating, bricklaying, concreting, and ironwork, Mr. E. Stephenson; mason's work, Mr. J. Wagg; carpenter and joiners' work, Messrs. Schofield and Co.; plumbing, &c., Mr. E. Shaw; slating and tiling, Mr. J. Jackson; plastering, Mr. J. Hall; painting, Mr. S. Boyd; heating, Messrs. Barker, of Workington; ventilation, Mr. Schofield, Oldham; cloakroom fittings, Mr. J. Davenport; wood-block flooring, Messrs. Geary and Walker, London; gas lighting, old school and extensions, Messrs. Stanley Bates. The whole of the work has been carried out from plans prepared by Messrs. Winder and Taylor, architects.

Montrose.—A new savings bank has just been opened in Castle Street. It is built on the old gable-endie pattern and is in the Scoto-Flemish style. The ground floor has three semicircular windows with heavily-moulded corners, while the entrance door is of carved oak work. On the second storey the windows are of the mullion form with tracery tops. There is a mahogany counter on the ground floor, the latter measuring 36ft. by 24ft. The walls have wooden dados with two oak chimney-pieces, the ceilings being heavily panelled in plaster work. In the rear an agent's room has been provided, and in this is a large stone safe. Upstairs is the directors' room, at the front. The other portion of the floor is reserved for the caretaker, and the top portion will be used for a store. The whole building is lighted by electricity. Mr. John Sim, C.E., was the architect. The following were the contractors:—Mason, Mr. Andrew Brown; joiners, Messrs. J. and F. Craigie; plumbers, Messrs. C. Wood and Co.; slaters, Messrs. J. Lindsay and Son; plasterers, Messrs. J. Burness and Son; upholsterer, Mr. Alex. Grieve; painters, Messrs. Middleton and Son.

Roundthorn, Oldham.—The new mixed school was opened recently. The new buildings will allow the old premises to be used exclusively for the infants. The new mixed school is situated on a rising slope to the west of Aspull Street and behind the existing school, regarding it from Roundthorn Road. It is designed on the central hall principle—that is, groups of classrooms are placed on all sides of a central hall with which they communicate and from which only they are entered. Every classroom in addition may be seen and superintended by the headmaster from the hall. The central hall is 52ft. 3in. long and 33 ft. wide and is surrounded by ten class-rooms of varying sizes, four accommodating 60 children, four for 50, two for 40, and a class of 60 seated in the hall; total accommodation, 580. Two pairs of classrooms are capable of being converted into single rooms by the removal of sliding screens. The plans have been arranged so as to permit of future extension of two class-rooms, giving a nett increase of 100 places, so that the ultimate accommodation would be 680. There are spacious entrances, cloak rooms, and lavatories for boys and girls respectively, also masters' and mistresses' private rooms. These latter rooms are so placed as to command a view of the playgrounds. There is no gymnasium, but the central hall has been fitted up for this purpose. Owing to the sloping nature of the land, which has a fall of 25ft., there is a basement under a portion of the school which has been utilised as a cookery room, &c., covered playgrounds for girls, heating cellar, and storeroom. The boys' playground is on the higher side of the school, that for the girls on the lower side, the building being placed midway on the site. In the lower playground is situated the caretaker's house facing up to Aspull Street. The building is constructed of bricks, and faced with Accrington stocks, with stone bands, mouldings, and copings. The entrances are marked by towers. The floors are laid with wood blocks, and the central hall floor is spaced out with dark oak strips for exercising and marching. The entrances have tiled floors and walls. The work has been carried out under the superintendence of Mr. A. J. Howcroft, architect, 12 Clegg Street, Oldham, by the following firms:—Messrs. John Spencer and Bros., excavating and draining; Messrs. S. and J. Smethurst, bricklayers' work; Messrs. S. and J. Whitehead, masons' work; Messrs. Mallalieu and Milne, carpenters' and joiners' work; Messrs. R. Chadwick and Sons, plumbers' work; Mr. Robert Fletcher, slaters' work; Mr. H. Wigglesworth, plasterers' work. Mr. W. F. Spencer has put in the heating, and Mr. W. Caton the lighting and ventilating installations. The wood block flooring has been laid by Messrs. Turner, Heason and Mitchell, of Manchester, and the tiling by Mr. Joseph Jackson. The iron fencing and gates have been made by Messrs. J. Jones and Sons, of Manchester.

Woolfold.—A new Sunday school has been opened for the Mission Church. It is 45ft. long by 36ft. wide, composed of strong wood framing to sides and gables, covered with corrugated iron sheeting outside, and ¾in. boarding inside, which is stained and varnished. The roof is formed of five wrought-iron principals, and also covered with ¾in. boarding and corrugated-iron sheeting. The height of the building is 11ft. to eaves, and 21ft. to ridge. There is also a large cellar with copper boiler, &c., and arrangement for parties. The heating is on the low-pressure system. The building has been erected by Mr. James Byrom, contractor, Woolfold, under the supervision of Messrs. Robt. Pritchard and J. Joseph Kendall. The plumbing work has been done by Mr. T. Shaw and Son, plumbers, Elton, and the painting and decorations by Mr. John Brooks, decorator, Woolfold. The plans have been prepared by Mr. Marshall Hamer, Woolfold. The cost has been about £400.

Law Cases.

An Unsuccessful Claim for Extras.—At Market Harborough County Court recently Messrs. Tate and Eastwood, builders, claimed £37 from George Gardiner as extra charges in connection with the erection of six cottages, the contract price for which was £1,046. The case was remitted from the High Court, Justice Bigham deciding that costs should follow the event. The chief question for decision was whether the architect, or the person acting for him, was the sole judge of what were extras, and whether his certificate was final. Mr. Nicholson (for the plaintiffs) stated that more work was done than the specifications called for, and also that the delay in the completion of the work for which £10 was charged was occasioned principally by the defendant not having grates and other things ready. The extras, or variations as they were described, were, it was stated, necessary in order to make good work, but his Honour in answer to that said if the defendant chose to have a skew house, or liked to have the roof on the ground and the basement in the air, it would be no business of the builders; and he then held that according to the contract the architect was to be sole arbiter. He nonsuited the plaintiffs, and granted the application for "locomotion costs."

Sanitary Accommodation in Factories.—In giving judgment in the recent case of *Tracey* v. *Pretty and Another*, heard in the Queen's Bench Division of the High Court of Justice, the Lord Chief Justice said that questions of very considerable difficulty were raised, and he expressed his judgment with great hesitation. He came to the conclusion that the appellant was entitled to judgment. The substantial question which arose was whether upon a summons for penalties under sub-Section 3 of Section 22 of the Public Health Acts Amendment Act, 1890, for neglect to comply with a notice given by a factory inspector, it is competent for the magistrates to receive evidence upon the merits as to the necessity for the sanitary accommodation required by such notice. The difficulty arises from the fact that the powers of the factory inspector in the matter are given by reference to the powers of the sanitary authority under the Public Health Act; and it had to be determined to what extent the powers of the sanitary authority were transferred under the general words used. His Lordship thought that if a notice could be given by a factory inspector under sub-Section 2 of Section 22 it had the same effect, if not appealed against for all purposes, as a notice given by the sanitary authority. Mr. Justice Grantham, Mr. Justice Bruce and Mr. Justice Darling concurred with the judgment of the Lord Chief Justice. Mr. Justice Phillimore, in the course of his judgment, said that at the close of the second hearing of the case his opinion was in favour of the respondents, and he still remained of the same opinion. There was no rule of law that in all sanitary acts the sanitary requirement must be left to the sanitary authority to determine upon. There was no trace of any provision anywhere making the opinion of the inspector conclusive; and direct legislation was required to make it so.

Paving of "Highways."—In the Queen's Bench Division of the High Court of Justice the case of *The Urban District Council of Leigh-on Sea* v. *King* was recently heard before Mr. Justice Bruce and Mr. Justice Phillimore. This was an appeal, by case stated, from the decision of justices of Essex dismissing an in-

formation preferred by the surveyor of the Leigh Urban District Council, the appellants, against Mr. R. S. King, the respondent, objecting to the proposals of the appellants in reference to paving, channelling and making good Rectory Grove, on the ground that it was, in whole or in part, a highway repairable by the inhabitants at large. Mr. Justice Phillimore, at the request of Mr. Justice Bruce, gave judgment first, in the course of which he said that he did not think that in every case where an additional highway was laid out the conditions of Section 23 of the Highway Act (5 and 6 Will. IV. c. 50) must be fulfilled, although that was generally the case. He thought the section only applied when the road was "made by and at the expense of any individual or private person, body politic or corporate," and it was clear that if the parish itself through its surveyor made a road, it would not come under this section, as the later provisions of the section itself showed. It was, however, more probable that this highway was intended to be a substituted one to which Sections 84 to 92 would apply. The contention of the appellants was far-reaching. Not only was the new highway not repairable by the inhabitants, though they had used it since 1842, but the old closed highway ought to be opened, and could now be opened; the owner of the soil, who had enjoyed undisturbed possession of the soil of the old highway for the same period, would have his property seriously injured, and the parishioners, the subsequent highway board (if there was one), and the present appellants would have been and be now indictable for suffering the old highway to go out of repair. He was of opinion that judgment should be given for the respondent. Mr. Justice Bruce agreed that there was evidence to support the finding of the justices.—Appeal dismissed.

Old Buildings: An Action for Trespass.—At Stonehouse County Court his Honour Judge Woodfall recently delivered judgment in the case of *Jones* v. *Water*, an action to recover £50 damages for trespass in not removing the wall of an old building sold by the Corporation to defendant, and standing upon ground which the Corporation had sold to plaintiff, which, by the conditions of sale, defendant had to remove. His Honour said the facts proved at the trial were as follows:—In 1897 the Corporation of Plymouth offered for sale certain lots of real property, of which plaintiff purchased lot 68, and defendant lot 67. The particulars of lot 67 stated that with the lot should be sold certain building materials, part of which were then erected on lot 68, and the special condition of sale stated that the purchaser of lot 67 should, within a specified time, take down and remove all buildings, the materials of which were included in his purchase, and should clear and level the same to the satisfaction of the surveyor of the vendors, and in case of default on the part of the purchaser the vendors might do and perform the said work and recover the cost from the purchaser. Defendant thereupon instructed his builder (Mr. May) to remove the buildings, and he, finding the wall he was removing comprised or terminated in a chimney-breast which was subject to an easement for lateral support of the adjoining house, saw the assistant borough surveyor and required directions what he was to remove. The assistant surveyor furnished him with a plan which excluded the chimney-breast. The builder then removed the whole of the remaining buildings and materials, and left the chimney-breast standing. It was admitted that defendant had carried out his obligation with the exception of the chimney-breast, assuming there was an obligation to remove that. Plaintiff alleged that it became necessary to remove this breast. On application defendant refused to remove it, and the Corporation refused to take action against him or to remove it themselves. Plaintiff then removed it at a cost of £20. The removal necessitated the building of a wall costing about £17, but in any view of the case he was of opinion that he would not be entitled to recover more than the actual cost of removing the wall. On these facts it was argued that the chimney-breast being defendant's property the fact of its being on the land of plaintiff entitled the latter to damages for trespass. He could not accept such a statement as a full or accurate proposition of law. If defendant had placed his chattel on the land, and against plaintiff's wall, no doubt he would have committed a trespass; but the act of defendant complained of was an omission to do something, and he thought it was clear that mere non-feasance did not constitute trespass. Again, assuming that defendant was under an obligation to remove the chimney-breast (and it was open to argument if he was), such obligation arose entirely out of his agreement with the vendors. Moreover, the same agreement provided for a breach thereof by defendant and gave to the vendors, and to the vendors only, a means of enforcing it. How could plaintiff avail himself of an agreement to which he was neither party nor privy? In his opinion plaintiff had disclosed no cause of action against defendant, and he nonsuited her with costs.

Masters and Men.

Coventry Builders' Wages.—All the men engaged in the building trade in Coventry have received an intimation from the Master Builders' Association of a proposed reduction of wages, to come into force on April 1. An alteration of working hours during the winter is also contemplated. Bricklayers, carpenters, painters, and labourers will be chiefly affected.

Glasgow Joiners' Dispute.—A large number of the men are now apparently willing to work for 9d. per hour. This portends an early settlement of the whole question. Meanwhile arrangements are being made for employing joiners in place of the men who are on strike. Arrangements are to be made for withdrawing as many non-union men as possible from the shops. The report by the General Committee of the Master Wrights' Association is to the effect that, beyond the 1,200 joiners who are on strike, a number of men are working at 9d. per hour in shops where the reduction notice is posted.

Carpenters' and Joiners' Dispute at Cromer.—The dispute between the Cromer branch of the Amalgamated Society of Carpenters and Joiners and the local builders came to a climax on Saturday, the men having refused to accept the minimum terms offered by the masters. The decision was not come to by the men unanimously, the voting being:—For the refusal of the terms, 31; against, 26. The strike is not therefore likely to seriously affect the masters. No notice was given by the local Union of the intention of the men to strike, and this has brought forth a formal protest on the part of the masters as to the mode adopted.

Birmingham Building Trades Dispute.—The difficulty that had arisen respecting the working hours of builders' labourers in Birmingham has been amicably settled. A month ago the employers gave notice to the workmen's section that in future they would require the labourers to commence work at the same time as the workmen they were assisting—carpenters, masons, or plasterers. The men asked for a rise of a halfpenny an hour, and the matter has just been considered by the wages board. The men connected with the National Association of Gasworkers and General Labourers and the Federated Labourers pointed out that the effect of the employers' demand would be that builders' labourers, except those working for plasterers, would work half an hour less per day than at present, and they wanted this made up in higher wages. The employers replied that their only object was to alter the hours of the men assisting the plasterers. At present the labourers start half an hour later than the skilled workmen—a very inconvenient arrangement. Carpenters' and masons' assistants would in no way be affected by the proposed change. The men's representatives were satisfied with this explanation, and signed an undertaking that this class of men should start at the time required, and the notices on both sides were withdrawn.

The Northern Building Dispute.—A conference was held last week at the Leeds Builders' Exchange Club between the executive of the Northern Centre of the National Building Trades Employers' Federation and representatives of the London Order of Bricklayers. The end of a long discussion left the question of peace still in the balance. The employers tried to secure a settlement which would avoid any misunderstanding such as that which arose out of the agreement in connection with the plasterers' dispute in 1899, and this display of firmness led to two or three adjournments for private consultation. Eventually the delegates accepted the principle of arbitration in relation to the Newcastle dispute only, but could not, without consulting the general body of men, come to an agreement as to who should be the arbitrator and what should be the bases of arbitration. The employers suggested the President of the Board of Trade (the Right Hon. G. W. Balfour, M.P.) or his nominee as the arbitrator, and that whatever the nature of the award it should not affect the locked-out bricklayers in the four northern counties (outside the Newcastle area), who must return to work under the rules and at the wages in force at the dates that the lock-out notices were posted. The delegates could not give any definite assurance that the men would resume their employment on the terms indicated. Failing the men's acceptance shortly the masters threaten a general lock-out. It would begin with the operatives of Lancashire, Cheshire and Yorkshire, and the National Federation would be asked to enforce action throughout the country.

Keystones.

Change of Address.—Mr. Hubert Norman, architect, has removed his offices from Swan Yard Chambers to 14 Market Square, Northampton.

Wansford Parish Church is to be restored under the direction of Mr. J. C. Traylen, architect, of Stamford. About £2,000 will be required to complete the works.

Artisans' Dwellings in Omagh.—The Omagh Urban Council have decided to forward a memorial to the Local Government Board in favour of a scheme for the acquirement of land on which to erect artisans' dwellings.

Haddington Abbey (Parish Church).—In reference to Mr. Thackeray Turner's letter printed on page 476 of our issue for last week, Mr. William Proudfoot, secretary of the restoration committee, writes to the "Times":—"We are not all vandals north of the Tweed, and Mr. Thackeray Turner may rest assured that in this instance no offensive modernisation of the transept will vex the soul of the Society for the Protection of Ancient Buildings."

St. Bride's Avenue, London, cost £10,000, and was designed by John Buonarotti Papworth, in 1824, who was: an architect, designing all sorts of buildings, from country mansions to a palace for the accommodation of Wilhelm I., King of Wurtemberg; an artist, one of the original eighteen members of the Associated Artists in Water-colours; an author and a copious contributor to periodical publications; and a landscape gardener, assisting in the laying out of the grounds of Chatsworth for Prince Leopold and Princess Charlotte. He designed a national monument to commemorate the victory of Waterloo, which was rejected by the Royal Academy. His admirers, however, compared it with the work of Michael Angelo.

Will of Mr. J. Buckley-Wilson.—Probate of the will, which bears date July 31st, 1900, of Mr. James Buckley-Wilson, F.R.I.B.A., architect, of 15 Castle Street, Swansea, who died on December 6th last, son of the late Mr. James Wilson, F.S.A., of Bath, has been granted to the testator's brother, Mr. John Henry Wilson, of 1 Belmont, Bath. The testator bequeathed to his said brother £25; to his nephew, Henry Richard Wilson, £25; and to Edith Jane Wilson, £25. Mr. James Buckley-Wilson left the residue of his estate to Cyril Spencer, or in the event of his death to Edith Irene Wilson, and his estate has been valued at £3,530 4s. gross, including personality of the nett value of £3,113 18s. 10d.

The Fisherlads' Institute at Grimsby is to be altered and enlarged at a cost of £4,000. Mr. J. J. Cresswell is the architect.

New Police and Fire Station at Oldham.—A Local Government Board enquiry was held recently into an application by the Town Council for sanction to the borrowing of £10,230 for a new police and fire station, and dwellings for the men at Townfield.

New Buildings at Romford Cottage Hospital have been erected at a cost of about £470. The alterations comprise the turning of the old operating-room into a special ward for cases of severe illness or for serious accident cases. It therefore became necessary to build another operating-room.

The River Tay.—Dr. Hugh Macmillan has prepared for press an important work on the Highland part of the course of the Tay, dealing with Strathfillan, Glendochart, Killin, Loch Tay, Kenmore, Taymouth Castle, Aberfeldy, Strathtay, Dunkeld, and it is illustrated with over 50 vivid pictures of the district by Mr. Scott Rankin, a well-known local artist. The book will be published by Messrs. H. Virtue and Co., Limited, of Ivy Lane, London.

Mr. George Wade, who has just been commissioned to execute a statue of the late Premier of Natal, Sir Harry Escombe, is at present engaged on a life-size statue of Lord Sandhurst, late Lieutenant-Governor of Bombay, for the Bombay municipality. A few years ago he executed a statue of the Duke of Connaught, also for Bombay, and he has recently finished a memorial of the late Sir Charles Keith for Aldershot, consisting of a statue with four corner figures representing the branches of the service in which Sir Charles Keith served.

New Public Baths at Leeds are proposed to be erected by the Leeds Corporation for the York Road and Bramley districts in York Road, on which it is also proposed to erect a public library. The cost of the buildings—exclusive of the expenditure on the site—will be £15,000. The Council is to be asked to sanction three premiums of £50, £30, and £15 to be offered for the best designs of a suitable building. It is proposed to erect baths for Bramley in Broad Lane, and the cost—exclusive of the site—is estimated at £8,000. In this case three premiums of £30, £20, and £10, are proposed to be given for the best designs.

Thatched Houses Permitted.—The Pershore (Worcestershire) District Council recently considered a proposal which came before them for the erection of a house with a thatched roof. It was pointed out, however, that the by-laws did not permit these old-fashioned roofings to be constructed. Mr. Sheldon protested against the abolition of thatched houses, which were one of the chief features of picturesque Worcestershire; they were also cool in summer and warm in winter. The Council very wisely took the same view, and it was agreed to take steps with the view of permitting thatched houses to be erected.

British Archæological Association.—At a meeting held on January 16th, the Rev. H. J. D. Astley, hon. editorial secretary, read some notes contributed by Mr. L. D. Jones, of Bangor, on "Yr Eglwys Wen" (The White Church). The remains are situated about seven miles from Bala, and form a rectangular level space 45ft. by 15ft. It is proposed to undertake a thoroughly systematic exploration of the site later on in order to determine, if possible, the nature of the buildings which seemingly originally existed on this spot. A paper was also read by Mr. Patrick, contributed by Dr. Fryer, on "Norman Fonts in North-East Cornwall." These fonts form a group of nine in the parishes of Altarnon, Callington, Jacobstow, Landrake, Lancost, Launceston, Lerzant, Lawhitton, and Warbstow. They are all of the Transitional Norman period, and very much resemble one another, both in design and workmanship; they are particularly interesting as affording further evidence of the existence of a band or school, or perhaps a guild, of carvers and masons. The hon. secretary announced that by the invitation of the mayor and corporation, the congress this year will be held at Newcastle-on-Tyne.

A New Parish Church at Hinksey is being erected. Only a portion has as yet been built, the eastern end wall being finished off temporarily with plaster and a temporary altar. A large carved oak screen, surmounted by an organ loft and rood of Gothic design will eventually be placed in the church.

Messrs. Radley, Robson and Mackay.—In consequence of the retirement of the senior partner and the sudden decease of Mr. Mackay, the old-established business of Messrs. Radley, Robson and Mackay, art dealers and upholsterers, will in future be carried on at 16 Old Bond Street and 10 Bruton Street by the sole remaining partner, Robert Robson.

The Ancient Parish Church of Eglwys Brewis has been reopened after undergoing repair under the superintendence of Mr. W. Weir, of the Society for the Protection of Ancient Buildings. A feature of the restoration has been the preservation of the ancient character of the building and the careful retention of everything that marks its history from the time of its first erection in the thirteenth century.

The Last Vacant Piece of Land on the Embankment, consisting of an area of 9,000ft, between the offices of the Metropolitan Asylums Board and the National Telephone Company, has recently been let by the Corporation of London upon building lease. The rental charged is only £1,700 per annum, which works out at 3s. 8d. per foot. Two years ago it is said that a bigger offer was declined.

A New Town Hall at Govan has been opened. The site of the Town Hall is on the Govan Road, at the corner of Summertown Road. The building, built of red sandstone, is in the Renaissance style. The estimated cost was between £20,000 and £30,000, but this amount will be somewhat exceeded. The architects are Messrs. Thomson and Sandilands, West George Street, Glasgow, who were selected in competition.

Swansea Harbour Offices Competition.—The report of the adjudicator on the Swansea Harbour Offices competition was submitted to the executive of the Swansea Harbour Trust last week. There were 97 sets of plans sent in, and those of Mr. E. Seward, Cardiff, were adjudged to be the best, and he obtained the first prize of £100. Messrs. Fairhurst and Thornley, Blackburn, secured the second prize of £50. The adjudicator was Mr. W. M. Fawcett, of Cambridge.

Artisans' Dwellings at Wakefield formed the subject of a Local Government Board Enquiry recently. The Corporation propose to purchase and close fifteen houses in different parts of the city, and to erect artisans' dwellings on a piece of land near the sewage and electric works. The property to be acquired is for street improvements in Drury Lane, Marygate, and Warrengate. Subsequently an enquiry was held as to the expenditure of £3,500 for works of sewage.

Municipal Houses at Brighton.—The Sanitary Committee of the Brighton Town Council have recommended the erection of thirty artisans' dwellings on the Lewes Road site to accommodate 156 persons. There are to be three blocks of four houses each, and three blocks of six, the latter to be all four-roomed houses, while of the former half are to have four and the other half five rooms. The committee estimate that the four-roomed houses can be let at 6s. and the five-roomed at 7s. per week, to repay the cost in 40 years. The houses will be situated in Dewe Road.

A new Epidemic Hospital at Arbroath is about to be erected at an estimated cost of nearly £13,000. The site fixed for the new hospital is at Hercules Den. The buildings will consist of an entrance lodge, an administrative block, and pavilions for various infectious diseases. Accommodation is provided for 35 beds in all, with operating ward, and two beds for an observation block. There is also a wash-house and laundry block. It is expected that operations for the construction of the buildings will be commenced in the beginning of February.

Street Improvements at Coventry.—The Local Government Board have sanctioned the application of the Town Council with regard to the exchange of land in New Buildings for the improvement of that street, and the borrowing of £2,000 for the construction of the road from St. Patrick's Road to Cheylesmore.

Registration of Irish Plumbers.—A deputation of members of the Parliamentary Committee of the Irish Trades Congress has just waited upon Mr. George Wyndham, Chief Secretary for Ireland, in Dublin, to urge his support of the aims of the Congress, including the registration of plumbers under statutory powers. In the course of a sympathetic reply, Mr. Wyndham expressed his sense of the importance of plumbers' work, and his opinion that a number of deaths and a great deal of disease were attributable to defective sanitation and to bad work by incompetent plumbers.

New Companies.

Cornhill Land and Building Company, Limited.

This company was registered on December 28th, 1900, with a capital of £10,000 in £1 shares to adopt an agreement with J. Stevenson, and to carry on the business of land and property owners, builders, &c. The first directors (to number not less than three nor more than seven) are to be appointed by the subscribers.

Crystalline Tile Company, Limited.

This company was registered on December 28th, 1900, with a capital of £12,000 in £1 shares to carry on the business of glass, cement, tile and chemical manufacturers and merchants, &c. The first directors (to number not less than two nor more than seven) are to be appointed by the subscribers.

H. F. Hichisson and Craggs, Limited.

This company was registered on December 28th, 1900, with a capital of £6,000 in £5 shares to acquire the business carried on at 12 Loampit Vale, Lewisham, and elsewhere in Kent, as J. G. Hichisson and Sons, and to carry on the business of timber importers, &c. The directors are H. F. Craggs, J. W. Moyses and R. Craggs. Registered office: Loampit Vale, Lewisham.

London Brick Company, Limited.

This company was registered on December 28th, 1900, with a capital of £1,000 in £1 shares to acquire the business of a brick manufacturer now carried on at Enfield, Fletton, Woodstone, and Stanground, in the counties of Middlesex, Huntingdon and Northampton respectively, as the London Brick Company, and to carry on the business of brickmakers, &c. The directors are to be appointed by the subscribers. Registered office: 7 Archway Road, Upper Holloway, N.

Bradford Brick and Tile Company, Limited.

This company was registered on December 28th, 1900, with a capital of £40,000 in £1 shares (20,000 preference) to acquire the business of brick and tile manufacturers, &c., carried on by a company of the same name (incorporated in 1868), and to carry on the business of brickmakers, &c. The directors are A. Turner, J. Bairstow, G. Watkinson, jun., and S. Watkinson. Registered office: Upper Seymour Street, Leeds Road, Bradford.

Pioneer (St. Anne's) Building Company, Ltd.

This company was registered on December 28th, 1900, with a capital of £5 000 in £1 shares to purchase or lease land in or near Alexandra Road and Clifton Street, St. Anne's-on-Sea, with certain dwelling-houses erected or in course of erection thereon, to acquire any other lands or buildings at St. Anne's-on-Sea, and to carry on the business of property owners and dealers, contractors, stone, lime, brick, and timber merchants, &c. Registered office: 20 Moore Street, South Shore, Blackpool.

Joseph Walker, Limited.

This company was registered on December 28th, 1900, with a capital of £15,000 in £1 shares to acquire the business carried on at the Victoria Bridge Timber Yard, Victoria Bridge, Leeds, as Joseph Walker, and to carry on the business of timber merchants, sawmill proprietors, timber growers, wood workers, builders, contractors, builders' merchants, &c. J. Walker is governing director for life. Registered office: 66 Water Lane, Leeds.

Jennings Pump Engineering Company, Limited.

This company was registered on December 28th, 1900, with a capital of £5,000 in £1 shares to acquire the sole agency for Great Britain and certain other countries for the Jennings Patent Centifrugal Pump, to carry on the business of centrifrugal pump manufacturers, sewerage, ventilation, and other machinery and apparatus, &c. The subscribers are to appoint the first directors. Registered office: 166 Fleet Street, E.C.

Twigg and Co., Limited.

This company was registered on December 29th, 1900, with a capital of £10,000 in £1 shares to carry on the business of quarry owners, builders, contractors, brick, stone, timber, and hardware merchants, carriage builders, engineers, &c. The first directors (to number not less than two nor more than seven) are to be appointed by the subscribers.

Greenbank Estate Company, Limited.

This company was registered on December 29th, 1900, with a capital of £2,000 in £10 shares to acquire any lands and buildings in Lancashire or elsewhere, and in particular at Rawtenstall and Bacup, and to carry on the business of land and property owners, builders, brick, tile, and terra cotta makers, &c. The first directors (to number not less than three nor more than five) are R. Worswick, R. Worswick, jun., J. A. Worswick, Mrs. J. Worswick, and Mrs. S. Duncan.

Jarmin Brothers, Sons and Co., Limited.

This company was registered on December 29th, 1900, with a capital of £2,000 in £1 shares to acquire the business carried on at 23 Hither Green Gardens, Lewisham, Kent, by R. Fawsitt, H. J. Jarman, and W. T. Knott, and to carry on the business of builders, contractors, plumbers, gasfitters, decorators, gas and electrical engineers, ironmongers, &c. The first directors (to number not less than two nor more than five) are R. Fawsitt and H. J. Jarman. Registered office: 23 Hither Green Gardens, Hither Green Lane, Lewisham, Kent.

W. R. Renshaw and Co., Limited.

This company was registered on December 29th, 1900, with a capital of £100,000 in £1 shares to acquire the business of engineers and ironfounders carried on by W. R. Renshaw and Co., and to carry on the business of builders of rolling stock, engine and boiler makers, wood workers, miners, smelters, and metallurgists, tool makers, motor-car builders; to acquire and turn to account any patents, real and personal property; to erect any mills, factories, warehouses, and other buildings. The first directors (to be not less than three nor more than six) are W. Heath, W. J. Renshaw, A. E. Renshaw, and W. R. Renshaw. Registered office: Phœnix Engineering Works, Stoke-on-Trent, Staffordshire.

London Securities, Limited.

This company was registered on December 29th, 1900, with a capital of £50,000 in £1 shares (49,000 ordinary and 1,000 deferred shares) to acquire and turn to account land, house, and other property; to erect dwellings for the industrial classes; as builders, contractors and decorators, club or hotel proprietors, &c. The first directors (to be not less than three nor more than five) are to be elected by the signatories, R. A. Dowse, F. Welford, H. B. Haynes, E. Winn, E. W. Randall, A. J. Poulter, and E. C. Scott.

Merch Land Company, Limited.

This company was registered on December 29th, 1900, with a capital of £1,000 in £1 shares to acquire and turn to account land and buildings in England or Wales, and to carry on the business of builders, &c. Registered office: St. Mary Street, Cardiff.

C. Gude and Son, Limited.

This company was registered on December 29th, 1900, with a capital of £11,000 in £1 shares to acquire the business of C. Gude and Son carried on at 177 Dalston Lane, N., and to carry on the business of housebreakers, contractors, engineers, builders, builders' merchants, gravel merchants, carmen, &c. C. Gude is the governing director.

Coalbrookvale Collieries Company, Limited.

This company was registered on December 24th, 1900, with a capital of £40,000 in £10 shares to carry on the business of landowners, miners, clay workers, &c. The first directors (to number not less than two nor more than five) are W. Barnes and F. W. Barnes (managing directors). Registered office: Derby Buildings, 24 Fenwick Street, Liverpool.

Abraham Booth, Limited.

This company was registered on December 24th, 1900, with a capital of £5,000 in £10 shares to carry on the business of a land, building and investment company, and the business of builders, contractors, brick, tile, pipe and pottery manufacturers, timber, sand and lime merchants, auctioneers, house and estate agents, farmers, &c.

Colet Estates, Limited.

This company was registered on December 29th, 1900, with a capital of £15,000 in £1 shares to carry on the business of land and property owners and agents, builders, contractors, decorators, stone, sand, lime, brick, timber, and hardware, merchants, &c. The first directors (to number not less than three nor more than seven) are A. Moore, H. Baddeley, T. Moore and W. Baddeley. Registered office: 7 Leadenhall Street, E.C.

Aberthaw Portland Cement Manufacturers, Lim.

This company was registered on December 29th, 1900, with a capital of £20,000 in £1 shares (10,000 preference) to acquire the business of a Portland cement manufacturer carried on by E. T. Ferrier at Rhoose, near Cardiff, and to carry on the business of manufacturers of and dealers in slate, cement, lime, limestone, plaster, artificial stone, whiting, bricks, tiles, timber, hardware, and building materials of all kinds. Registered office: Rhoose, near Cardiff.

Thomas Read (Berkhampstead), Limited.

This company was registered on December 29th, 1900, with a capital of £6,600 in £1 shares (2,000 "A" and 4,600 "B") to adopt an agreement between Burton, Brine and Read, Limited, and Margaret A. Close, for the acquisition of the business of sawmill proprietors and timber merchants carried on at Great Berkhampstead, Herts. The first directors are T. R. Burton and H. C. Blackmore. Registered office: Chapel Street, Berkhamstead, Herts.

Dawson, Neal and Co., Limited.

This company was registered on December 29th, 1900, with a capital of £55,000 in £1 shares (30,000 preference) to acquire and carry on the business of builders' merchants carried on by P. J. Dawson and G. Barnes at Mendip Wharf, Battersea, and Durham Wharf, Wandsworth, S.W., as P. J. Barnes and Co., and the business of a carman and cartage contractor, tar paviour, and asphalter carried on by George Neal, at The Farm, Wandsworth Common, and Warple Way, Battersea, S.W. The first directors (to number not less than three nor more than five) are P. J. Dawson, G. Barnes, J. Voller, and J. H. Watson (nominee of G. Neal). Registered office: Mendip Wharf, York Road, Battersea, S.W

Manor Brickworks, Limited.

This company was registered on December 22nd, 1900, with a capital of £2,000 in £1 shares to take over the business carried on at Thundersley, Essex, as the Manor Brickworks, and to carry on the business of brick, tile, pipe and terra-cotta manufacturers, &c.

Hudson and Martin, Limited.

This company was registered on December 22nd, 1900, with a capital of £11,000 in £100 shares (35 preference) to take over the business of English and foreign timber merchants, builders' factors, and marquee proprietors now carried on at Gillingham, in the county of Dorset, as Hudson and Martin. Registered office: Grammar School Road, Gillingham, Dorset.

Lount Firebrick and Sanitary Pipe Co., Lim.

This company was registered on December 27th, 1900, with a capital of £10,000 in £1 shares to carry on the business of brick and clay merchants, brick, tile, and pipe manufacturers, builders' merchants, &c. The number of directors is to be five; the subscribers are to appoint the first. Registered office: The Works, Lount, near Ashby-de-la-Zouch, Leicestershire.

Llandebie Limeworks, Limited.

This company was registered on December 24th, 1900, with a capital of £15,000 in £1 shares to carry on the business of quarry owners, quarrymen, lime burners, limestone, building stone and clay merchants, cement manufacturers, colliery and mine owners, fuel and brick makers, coke and gas makers, iron and steel converters, &c. The first directors (to number not less than three nor more than seven) are to be appointed by the subscribers.

Cumberland Park Estate, Limited.

This company was registered on December 22nd, 1900, with a capital of £200 in 160 £1 "A" shares and 80 10s. "B" shares to acquire the Cumberland Park Estate, Acton, and to carry on the business of landowners, builders, contractors, brick, timber, and hardware merchants, &c. The first directors (to number not less than three nor more than five) are to be appointed by the subscribers. Registered office: 369-371 Brixton Road, S.W.

Worcester Fireclay Company, Limited.

This company was registered on December 24th, 1900, with a capital of £5,000 in £1 shares to acquire and carry on the business carried on by the Worcester Fireclay and Blue Brick Company, Limited (in voluntary liquidation), at Westbourne Bridge Wharf, Amberley Road, Paddington. The first directors (to number not less than three nor more than five) are C. G. Crowden (managing director for life) and R. S. Arnell (assistant managing director).

Joseph Turner and Sons, Limited.

This company was registered on December 24th, 1900, with a capital of £15,000 in £5 shares to acquire the leasehold property and business of J. Turner, quarry owner and stone merchant, of Worrall, Ecclesfield, Yorkshire and elsewhere, and to carry on the business of quarry owners, stone merchants, contractors for public and other works. J. Turner is sole governing and managing director. Registered office: The Priory, Middlewood, Bradfield, Ecclesfield, Yorkshire.

Ravensworth Brick and Tile Company, Limited.

This company was registered on December 22nd, 1900, with a capital of £8,000 in £10 shares to acquire the business of the Ravensworth Brick and Tile Company now carried on at Birtley, Durham, and to carry on the business of brick and tile manufacturers, &c. The first directors (to number not less than three nor more than seven) are B. Cochrane, J. H. Cochrane (managing director) and D. G. Cochrane. Registered office: 110 Pilgrim Street, Newcastle-on-Tyne.

TENDERS.

Information from accredited sources should be sent to "The Editor." Results of tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the Work.

ALDERSHOT.—For the erection of four shops at the corner of High Street and Wellington Street, for Mrs. L. B. Goldman. Mr. Geo. Ashby Lean, architect and surveyor, Palace Chambers, Westminster, S.W.:—

Wm. Smith	£4,500 0	Martin Wells & Co.	£3,915 0
Lawrence & Sons	4,372 0	G. Kemp	3,890 0
Wm. Watson	3,960 0	J. Harris	3,647 5
H. J. Williams	3,950 0		

ALDERSHOT.—For alterations to Messrs. Allen & Lloyd's mineral water factory. Mr. Geo. Ashby Lean, architect and surveyor, Palace Chambers, Westminster, S.W.:—

M. Bateman ... £1,050 | G. Kemp ... £1,025

ASHTON-UNDER-LYME.—For the execution of street works, Queen Street, &c., for the Hurst Urban District Council. Mr. Samuel Sluit, Surveyor to Council, Council Offices, King Street, Hurst:—

Isaac Powell ... £4,778 0 0 | J. & J. Woodhead Ashton-under-Lyme* ... £4,521 10 8

* Accepted.

BRIGHTON.—For alterations and additions at No. 60 Queen's Road, for Mr. A. G. Sharman. Mr. W. C. F. Gillam, M.S.A., architect, Brighton:—

Saunders Bros.	£697	G. R. Lockyer	£639
Titcomb & Son	667	W. Brown & Son	560
S. H. Diplock	645	H. J. Penfold*	547

* Accepted.

BRIGHTON.—For alterations and additions at Nos. 3, 4 & 5 Bond Street, for Mr. A. G. Sharman. Mr. W. C. F. Gillam, M.S.A., architect, Brighton:—

W. Brown & Son	£796 0 0	W. & S. Garrett	£724 0 0
H. J. Penfold	737 0 0	G. R. Lockyer	692 0 0
Titcomb & Son	735 0 0	J. Barnes*	677 0 0
S. H. Diplock	729 0 0	Saunders Bros. *	575 10 0

* Accepted.

CARDIFF.—For the erection of an electric tram depot, Pendyris Street, for the Corporation. Mr. W. Harpur, C.E., Borough Engineer, Town Hall, Cardiff:—

W. H. Ingleson	£8,388 11 0	Melhuish Bros.	£7,179 0 0
A. J. Howell	8,150 0 0	E. Turner & Sons	7,032 19 2
G. Cousens & Co.	7,693 8 10	C. C. Dunn	7,024 8 6
G. Griffiths	7,682 19 4	J. S. Chubb & Co.	6,984 0 0
J. H. Venning	7,671 8 0	W. T. Morgan	6,930 0 0
Jas. Allen	7,661 16 11	E. R. Evans & Bros.	6,927 0 0
S. Shepton & Sons	7,484 17 0	Price Bros.	6,870 0 0
F. Cousens	7,481 8 5	J. Thomas	6,869 0 0
W. E. Willis	7,277 17 3	D. W. Davies, Cardiff*	6,774 0 0
W. Symonds & Co.	7,260 5 6		
D. Thomas & Son	7,222 0 0		
Knox & Wells	7,220 0 0		

* Accepted.

HERTFORD.—For the execution of road works, Queen's Road, &c., for the Corporation. Mr. J. H. Jevons, C.E., Borough Surveyor, Hertford:—

Griffiths & Co, Limited	£2,512	J. Smart	£2,130
Wallan & Inns	2,386	G. F. Tomlinson	2,062
Jos. Jackson	2,242	Free & Sons	1,952
S. Saunders	2,209	A. T. Catley, London*	1,797
Laurance & Thacker	2,148		

* Accepted.

LONDON.—For the erection of new staircases, and various alterations at Morton's Theatre, Greenwich, for Mr. Arthur Carlton and co-directors. Mr. Alfred Roberts, architect, 18 Nelson Street, Greenwich, S.E.:—

Lole & Lightfoot	£1,963	H. Groves	£1,779
W. Mills	1,798	T. D. Leng*	1,670

* Accepted.

MINEHEAD, Somerset.—For the erection of market buildings, The Parade, for the Urban District Council. Mr. W. J. Tamlyn, architect, Minehead:—

J. Steer	£2,660 0 0	Passmore & Derrick, Minehead*	£1,612 10 0
C. Bryer, jun.	1,802 6 0		
Hurford & Son	1,620 0 0		
J. Burgess	1,614 0 0		

* Provisionally accepted.

MITCHAM.—For the erection of a house and shop at London Road. Messrs. Chart, Son & Reading, architects, Croydon:—

Stewart & Sons	£1,598 0 0	Burges & Sons	£1,175 0 0
E. J. Burnand	1,268 0 0	Bacon*	1,098 10 0
Haydon	1,234 0 0		

* Accepted.

MOUNTAIN ASH, Wales.—For the erection of a chapel, for the English Baptist Trustees. Mr. T. W. Millar, architect, Mountain Ash:—

Jenkins & Sons	£3,475 0 0	D. Harris, Mountain Ash*	£3,200 0 0
F. Mills	3,456 7 8		
J. L. James	3,188 0 0		

* Accepted.

[Architect's estimate, £3,341.]

NEWBRIDGE, Mon.—For additions to the Beaufort Arms Hotel, for Messrs. Webb Bros & Co. Mr. F. R. Bates, architect, 26 Westgate Chambers, Newport, Mon.:—

Pugh & Co.	£1,862	C. T. Morgan, Newbridge*	£1,737
J. Jenkins	1,755		
Leadbeter Bros.	1,750		

* Accepted.

NOTTINGHAM.—For the erection of a basket warehouse, Radford Road, for Mr. P. Mathieson. Messrs. Sands & Walker architects, Angel Row, Nottingham:—

T. Whittaker	£3,250	F. Messom	£2,960
J. Hodson & Son	3,244	J. H. Williamson & Co.	2,950
J. H. Vickers, Ltd.	3,229	T. Long	2,935
J. Cooper & Son	3,000	T. Lees Bros.	2,903
W. Manle	3,000	J. G. Short, Sneinton, Nottingham*	2,832
T. Cuthbert	3,000		
Wm. Crane, Ltd.	2,965		

* Accepted.

NUNEATON.—For the erection of electric lighting station for the Urban District Council. Mr. J. S. Pickering, C.E. Council Offices, Nuneaton. Quantities by Engineer:—

W. Cunliffe	£2,878 6 8	T. Smith, Nuneaton*	£2,509 6 1
J. Shilton	2,825 16 6		
J. Dallon	2,580 0 0		

* Accepted.

SHIPLAKE-ON-THAMES.—For the erection of a boathouse, with rooms over, on the Boling Court Estate, for Mrs. English. Messrs. Geo. Ashby Lean & Son, architects and surveyors, Palace Chambers, Westminster, S.W.:—

Collin & Cattley	£1,619 0 0	Ruffell Bros.	£1,459 0 0
Lewis & Brother	1,525 0 0	Walden & Cox	1,382 6 0

STOCKPORT.—For the erection of tramcar shed, workshops, &c., for the Corporation. Mr. John Atkinson, C.E., St. Petersgate, Stockport:—

Byrom	£5,956 4 0	M. Lane	£5,220 0 0
Burgess & Galt	5,880 0 0	D. Eadie	5,200 0 0
Robinson & Sons	5,790 0 0	J. Briggs	5,168 0 0
T. Hoe	5,788 18 0	W. Pownall, Stockport*	4,900 0 0
D. Mullaney	5,494 0 0		
H. Bardsley	5,270 0 0		

* Accepted.

THORPE.—For additions to The Cottage, Thorpe, for Mrs. Wm. Birkbeck. Messrs. Bottle & Olley, architects, Great Yarmouth:—

Downing & Son	£1,230	Youngs & Son, Norwich*	£1,087
Carter & Wright	1,194		
J. S. Smith	1,117		

* Accepted.

COMPLETE LIST OF CONTRACTS OPEN.

DATE OF DELIVERY.		WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
		BUILDING.		
Feb.	1	Huntingdon—Mortuary	Corporation	Borough Surveyor, High Street, Huntingdon.
"	1	Halifax—Workshop, &c.		W. Richardson and Son, Hall Street, Halifax.
"	1	Halifax—Warehouse, &c.		J. Drake and Son, Architects, &c., Queensbury.
"	1	Port Talbot, Wales—Excavating, &c.		Port Talbot Iron and Steel Works, Post Office Chambers, Port Talbot.
"	1	Upton Park, E.—Wall	St. George's-in-the-East, Guardians	G. A Wilson, Vestry Hall, Cable Street, E.
"	2	Cardiff—Shops, &c.		Teather and Wilson, Architects, Queen Street, Cardiff.
"	2	Scion Chapel, Llanwrin—Manse		R. P. Morgan, Architect, Towyn.
"	2	Cullagh, Rathcabbin—Labourer's Cottage		H. Dooly, Clerk of the Council, Board Room, Workhouse, Birr.
"	4	Frome—Separation Wards at Workhouse	Union Guardians	J. A. Beynon, Architect, Nunney Road, Frome.
"	4	Ealing—Workmen's Cottages	Urban District Council	C. Jones, Engineer, Public Buildings, Ealing.
"	4	Darlington—Rebuilding Hotel	West Auckland Brewery Co., Ltd.	F. H. Livesay, 107 Newgate Street, Bishop Auckland.
"	4	Maesteg, Wales—Cottages	Gelli Builders' Society	Mining Offices, Maesteg.
"	4	Nottingham—Car Shed, &c.	Tramways Committee	A. Brown, City Engineer, Guildhall, Nottingham.
"	4	Pollington-cum-Balne, Yorks—Classroom	Schools	H. B. Thorp, Architect, Goole.
"	4	Southend-on-Sea—Additions to School	Ashington and South Fanbridge School Bd.	W. Y. Hobbiss, 57 High Street, Southend-on-Sea.
"	4	West End, Southampton—Additions to Laundry	South Stoneham Union Guardians	W. H. Mitchell, Son and Gutteridge, 9 Portland Street, Southampton.
"	4	Burgess Hill, Sussex—Isolation Hospital	Cuckfield Rural District Council	G. T. Hine, 35 Parliament Street, Westminster.
"	4	Eastbourne—Electric Lighting Station	Electric Light Committee	Borough Engineer, Town Hall, Eastbourne.
"	5	Darlington—Mixed School	School Board	G. G. Hoskins, Architect, Court Chambers, Darlington.
"	5	Aldershot—Ward Block, &c.	Urban District Council	N. F. Dennis, Surveyor, Aldershot.
"	5	Grantham—Sunday School		G. Camplin, 11 Elmer Street, Grantham.
"	5	Halifax—Houses		F. Hall, 29 Northgate, Halifax.
"	5	Halifax—Mason's Work	Corporation	J. Lad, Borough Engineer, Town Hall, Halifax.
"	5	Windsor—Lime	Royal Gaslight Company	J. H. Strange, 2 Victoria Street, Windsor.
"	5	Sutton—Artisans' Dwellings, &c.	Great Northern Railway Co.	Company's Engineer-in-Chief, Amiens Street Terminus, Dublin.
"	5	Dundalk—Goods Warehouse	Great Northern Railway Co.	Company's Engineer-in-Chief, Amiens Street Terminus, Dublin.
"	6	Willesden—Pupil Teachers' Centre	School Board	G. E. T. Laurence, 22 Buckingham Street, Strand, W.C.
"	8	Fernhurst, Sussex—Schoolroom	School Board	J. Hill, The Cross, Fernhurst.
"	8	Leeds—Stables, Coach House, Saddle Room, &c.	Dr. Sydney Rumbold	F. Mitchell, 9 Upper Fountaine Street, Leeds.
"	9	Carlisle—Church Works		Johnstone Bros., 39 Lowther Street, Carlisle.
"	9	Londonderry—Wing		E. J. Toye, Architect, Strand, Londonderry.
"	9	Newport, Isle of Wight—Reparations		J. B. Colson, 45 Jewry Street, Winchester.
"	11	London, S.W.—Home	Union Guardians	E. T. Hall, 57 Moorgate Street, E.C.
"	12	Whitby—Electric-light Station	Urban District Council	W. S. Gray, Clerk, Council Offices, Whitby.
"	12	London, N.—Water Tower, &c.	Islington Borough Council	A. H. Tiltman, 51 Russell Square, W.C.
"	12	London, W. Generating Station	Shoreditch Borough Council	Kincaid, Waller and Manville, 29 Great George Street, Westminster.
"	14	Lowestoft, Suffolk—Boys' Home	London County Council	Architect's Department, County Hall, Spring Gardens, S.W.
"	15	Ashford, Middlesex—Two Board Schools	School Board	Fleetwood, Son and Eversdon, 3 New Court, Lincoln's Inn, W.C.
"	19	Kingston-upon-Hull—Erection of School Buildings	School Board	Brodrick, Lowther & Walker, Architects, Lowgate Hill, Kingston-upon-Hull
"	20	Lewick—School	School Board	R. D. Gansen, Clerk, School Board Offices, Lewick.
"	21	Liscard, Wallasey—Car Sheds, Stores, &c.	Wallasey Urban District Council	J. H. Crowther, Engineer, Great Float, near Birkenhead.
"	21	Liscard, Wallasey—Engine and Pump House	Wallasey Urban District Council	J. H. Crowther, Engineer, Great Float, near Birkenhead.
		ENGINEERING.		
Feb.	1	Whitby—Extensions, &c., to Waterworks	Rural District Council	J. Rickinson, Robin Hood's Bay, Yorks.
"	1	Sunderland—Electricity Plant, &c.	Corporation	J. F. C. Snell, Engineer, Dunning Street, Sunderland.
"	1	London, S.W.—Electricity Meters	Battersea Borough Council	Town Clerk, Municipal Buildings, Lavender Hill, S.W.
"	2	Bradford—Electrical Equipment	Tramways Committee	City Surveyor, Town Hall, Bradford.
"	2	Wigan—Plant	Electric Light and Tramways Committee	H. C. Bishop, Borough Electrical Engineer, Town Hall, Wigan.
"	4	Boston, Lincs.—Rifle Range	Corporation	W. H. Wheeler, Borough Surveyor, Town Hall, Boston.
"	4	Shillamil, near Tavistock—Rifle Range		Tavistock Armoury, Tavistock.
"	4	London, S.W.—Machines, &c.	Middlesex County Council	H. T. Wakelam, County Engineer, Guildha'l, Westminster.
"	4	Glasgow—Railway	Glasgow and South-Western Railway Co.	Engineer's Office, St. Enoch Station, Glasgow.
"	4	Basford, Notts—Extension of Mains	Rural District Council	G. and F. W. Hodsen, Bank Chambers, Loughborough.
"	5	Great Yarmouth—Boilers, &c.	Corporation	Preece and Cardew, 13 Queen Anne's Gate, Westminster.
"	5	Goole—Repair of River Pumps	Urban District Council	G. England, Clerk to the Council, Goole.
"	6	Dover—Water Mains	Town Council	H. E. Stilgoe, Town Hall, Dover.
"	6	Lymington—Sewer Outfall Repairs	Town Council	J. P. Jones, 83 High Street, Lymington.
"	6	Southend-on-Sea—Motor Cars	Corporation	A. Fidler, Borough Engineer, Southend-on-Sea.
"	6	London, E.C.—Locomotive Tenders	East Indian Railway Company	C. D. Young, Company's Secretary, Nicholas Lane, E.C.
"	6	Brotherton, Yorks—Bridge	North-Eastern Railway	W. J. Cudworth, Engineer, N.E.R. Co., York.
"	8	Blantyre, Scotland—Sewers, &c.	District Committee	W. L. Douglass, 3 Clydesdale Street, Hamilton.
"	8	Aberdeen—Condensers, &c.	Electric Lighting Committee	J. A. Bell, City Electrical Engineer, Cotton Street, Aberdeen.
"	8	Hull—Dynamo	Works Committee of Corporation	T. G. Milner, Treasurer, Town Hall, Hull.
"	9	Battey—Dynamos	Corporation	Lacy, Cliffehugh and Sillar, 2 Queen Anne's Gate, Westminster.
"	9	Edinburgh—Engine and Dynamo	Lord Provost, Magistrates, and Council	Resident Electrical Engineer, Dewar Place Station, Edinburgh.
"	11	Edinburgh—Gasworks, Plant, &c. (10 Contracts)	Gas Commissioners	W. R. Herring, Manager, Gasworks, New Street, Edinburgh.
"	14	Brighton—Tramway Feeder Cables		J. B. Holliday, Tramways Engineer, Brighton.
"	15	Valetta, Malta—Arc Lamp Carbons		Superintendent of Public Works, Malta.
"	15	Kirkcaldy—Boilers	Corporation	W. L. Maundoc, Town Clerk, Kirkcaldy.
"	18	Wimbledon—Boilers, &c.	Urban District Council	F. B. Spencer, Electrical Engineer, Durnford Road, Wimbledon
"	19	Swansea—Heating	School Board	A. W. Halden, Clerk, Dynever Place, Swansea.
"	19	Manchester—Connecting Lines	Lancashire and Yorkshire Railway Co.	Engineers' Office, Hunt's Bank, Manchester.

COMPLETE LIST OF CONTRACTS OPEN—*continued.*

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
	Engineering.—*Continued.*		
Feb. 21	Huelva, Spain—Telephone System	Corporation	Commercial Department of the Foreign Office, Whitehall, S.W.
„ 28	Wellington, New Zealand—Engines	Town Council	J. Duthie & Co., Limited, 23 Lime Street, London, E.C
Mar. 2	Bournemouth—Electric Cars	Urban District Council	F. W. Lacey, Borough Engineer, Municipal Buildings, Bournemou
„ 2	East Dereham—Purifiers	Town Council	H. Kitson, Gasworks, East Dereham.
„ 4	Luton—Wiring	Waterworks Committee	Borough Engineer, Luton.
„ 4	Lincoln—Boring	Committee of Works	P. Griffith, 54 Parliament Street, Westminster, S.W.
„ 11	Santandar, Spain—Floating Dredger	Burgomaster en Werthonders	Corporation Offices, Santander.
April 1	Amsterdam—Electrical Plant	Argentine Government	Director, Town Printing Works, Achterburgwal 213, Amsterdam.
„ 10	Rosario—Harbour Works		Commercial Department, Foreign Office, S.W.
	IRON AND STEEL.		
Feb. 1	Dublin—Rails, &c.	Great Northern Railway Co. (Ireland)	T. Morrison, Secretary, Amiens Street Terminus, Dublin.
„ 6	Great Yarmouth—Rails	Town Council	J. W. Cockrill, Borough Surveyor, Town Hall, Great Yarmouth.
„ 6	Leeds—Poles, &c.	Tramways Committee	City Engineer's Office, Municipal Buildings, Leeds.
„ 15	Valetta, Malta—Joists		Superintendent of Public Works, Malta.
„ 20	Sheffield—Two Iron Staircases	Wadsley Asylum Committee	Clerk of Works, Wadsley Asylum, Sheffield.
„ 22	Glasgow—Rails	Corporation	J. Young, 88 Renfield Street, Glasgow.
	PAINTING AND PLUMBING.		
Feb. 4	Manchester—Painting	Lancashire and Yorkshire Railway	Engineer's Office, Hunt's Bank, Manchester.
	ROADS AND CARTAGE.		
Feb. 1	Aylesbury—Granite	Highways Committee	R. J. Thomas, County Surveyor, County Hall, Aylesbury.
„ 1	Hoole, Chester—Granite	Urban District Council	C. Atken, Urban District Council Offices, Westminster Road, Hoole.
„ 1	Stockport—Works	Highways and Sewers Committe	J. Atkinson, Surveyor, Central Buildings, St. Petersgate, Stockport.
„ 1	Stockport—Materials	Highways and Sewers Committee	J. Atkinson, Surveyor, Central Buildings, St. Petersgate, Stockport.
„ 2	London, W.—Works and Materials	St. Marylebone Borough Council	J. P. Waddington, Engineer to the Council, Town Hall, Marylebone.
„ 2	Burntisland, Scotland—Sewer, Road, &c.	J. Shepherd	W. D. Sang, Kirkcaldy.
„ 2	Norwich—Materials, &c.	County Council	J. H. B. Heslop, County Surveyor, Norwich.
„ 2	Slough—Granite and Flints	Urban District Council	Town Surveyor's Office, Slough.
„ 2	Haslemere, Surrey—Making-up Roads	Rural District Council	E. L. Lunn, 36 High Street, Guildford.
„ 2	Norwich—Granite	County Council	T. H. B. Heslop, County Surveyor, Norwich.
„ 2	Sleaford, Lincs.—Granite	Urban District Council	E. Clements, Urban Council Office, Sleaford.
„ 4	Grimsby—Materials		H. G. Whyatt, Borough Engineer, Town Hall, Grimsby.
„ 4	Normanton—Streets, &c.	Urban District Council	A. Hartley, Surveyor, County Chambers, Castleford.
„ 4	Withington, Lancs.—Sewering, Paving, &c.	Urban District Council	A. H. Mountain, Surveyor to the Council, Town Hall, Withington.
„ 5	London, S.E.—Levelling	London County Council	Architects' Department, 18 Pall Mall East, S.W.
„ 5	Bicester—Highway Repairs	Rural District Council	J. W. Tubb, Chesterton Fields, Bicester.
„ 5	Bicester—Stone	Rural District Council	J. W. Tubb, Chesterton Fields, Bicester.
„ 5	Dover—Materials	Town Council	Town Clerk, Castle Hill House, Dover.
„ 5	London, S.W.—Making-up	Wandsworth Borough Council	Council House, East Hill, Wandsworth.
„ 6	Featherstone, Yorks.—Street Improvements	Urban District Council	F. B. Rothem, Surveyor to Council, Featherstone.
„ 6	Rushden, Northants—Works	Urban District Council	W. B. Maden, Town Surveyor, Vestry Hall, Rushden.
„ 6	Balby-with-Hexthorpe, Yorks.—Street Works	Urban District Council	R. A. H. Tovey, Clerk, Council Offices, Balby.
„ 6	Hove—Wood Paving	Corporation	Borough Surveyor, Town Hall, Hove.
„ 7	Chatham—Materials	Corporation	C. Day, Borough Surveyor, Town Hall, Chatham.
„ 7	Gainsborough—Granite	Urban District Council	R. D. Fraser, Surveyor, Council Offices, Gainsborough.
„ 9	Woodbridge, Suffolk—Materials	Rural District Council	G. Cook, Surveyor, New Street, Woodbridge.
„ 9	Midhurst, Sussex—Materials	Rural District Council	A. G. Gibbs, Council Offices, Midhurst.
„ 11	Church, Lancs.—Paving	Urban District Council	W. C. Wood, Surveyor, District Council Offices, Church.
„ 11	Leamington—Road Works	Corporation	W. Normanville, Borough Surveyor, Town Hall, Leamington.
„ 12	Mansfield—Making-up	Corporation	R. M. Vallance, White Hart Chambers, Mansfield.
„ 12	West Ham, E.—Materials	Borough Council	Borough Engineer, Town Hall, Stratford, E.
„ 13	East Retford—Materials	Rural District Council	T. Henry, Surveyor, Retford.
„ 14	London, S.E.—Materials	Lambeth Borough Council	H. Edwards, Borough Engineer, Town Hall, Kennington Green, S.E.
„ 18	Essex—Broken Granite	County Council	Chief Surveyor, County Offices, Chelmsford.
	SANITARY.		
Feb. 4	Abridge, Essex—Drainage Works	Ongar Rural District Council	W. N. Jarvis, Surveyor to the Council, Ongar.
„ 4	London, S.E.—Removal of Dust	Bermondsey Borough Council	Town Hall, Spa Road, Bermondsey.
„ 4	Withington, Lancs.—Sewering	Urban District Council	A. H. Mountain, Surveyor to the Council, Town Hall, Withington.
„ 5	Leyton, Essex—Sewer	Urban District Council	W. Dawson, Town Hall, Leyton.
„ 5	Hove, Sussex—Scavenging		Town Clerk, Town Hall, Hove.
„ 16	Evesham—Sewerage Works	Corporation	R. E. W. Bevington, Bank Buildings, Wolverhampton.

COMPETITIONS OPEN.

DATE OF DELIVERY.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	BY WHOM ADVERTISED.
Feb. 9	Donaghadee—Water Supply and Sewerage System		J. Colville, Clerk, Newtownards, R.D.C., Workhouse, Newtownards.
„ 13	Bristol—Alterations, &c., to Petty Sessional Court	£100, £50	P. Addie, City Valuer, Market Chambers, Bristol.
„ 14	Ballarat, Australia—Statue		J. W. Nedwell, Hon. Sec., Soldiers' Statue Fund, Ballarat, Australia.
March 25	Basford—Sewerage Scheme		C. J. Spencer, Clerk, Public Offices, Basford.

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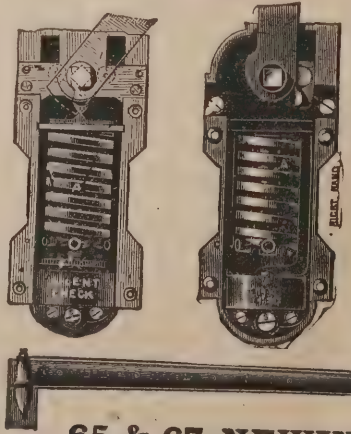
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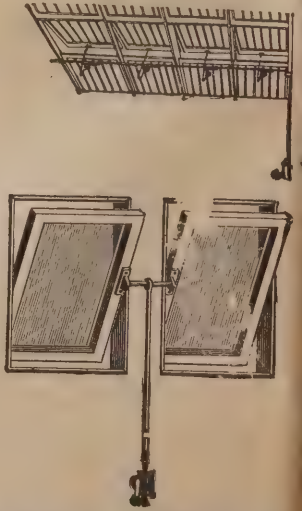
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